E/B/R

ECONOMIC AND
BUSINESS REVIEW

CONTENTS

THE IMPACT OF IMPLICIT ELECTRICITY MARKET COUPLING ON THE SLOVENIAN-AUSTRIAN BORDER ON THE EFFICIENCY OF CROSS-BORDER TRANSMISSION CAPACITY ALLOCATION AND SOCIAL WELFARE IN SLOVENIA

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ABSTRACT: *On the Slovenian-Austrian border cross-zonal capacities (CZCs) are currently allocated at explicit auctions, although in the future to comply with the European Target Electricity Model one can expect implicit auctions within market coupling to be implemented. Via a simulation, this paper aims to study the impact of implicit electricity market coupling on the Slovenian-Austrian border on the efficiency of CZC allocation and social welfare in Slovenia. The simulation results show that the use of implicit auctions would increase the efficiency of CZC allocation, reduce the price of electricity and increase the volume of trading in the Slovenian electricity exchange market. Further, implicit market coupling on the Slovenian-Austrian border would increase social welfare in Slovenia.*

Keywords: *market coupling, implicit auctions, day-ahead electricity market, Slovenia*
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1. INTRODUCTION

Electricity trading is conducted on the basis of long- and short-term contracts for the purchase or sale of electricity without constraints within an individual country in the EU. However, cross-zonal trading on energy borders among EU member states is limited by cross-zonal capacities (CZCs) (Meeus, Vandezande, Cole & Belmans, 2009). CZCs can be allocated by transmission network system operators (TSOs) by using various non-market- or market-based methods.[3] As non-market methods are prohibited by legislation (Regulation (EC) 1228/2003), since 2006 CZCs have been allocated at explicit or implicit auctions on all energy borders within the EU (Zachmann, 2008).

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3 For a more detailed explanation of the market and non-market methods of allocating CZCs, see Kristiansen (2007a).

At explicit auctions, orders for the purchase of CZCs are submitted separately from orders for the purchase or sale of electricity. Each cross-border electricity trade consists of two transactions: the purchase of CZCs at an explicit auction and the purchase or sale of electricity in a bilateral or exchange market. When CZCs are being allocated at exchange markets at the same time as orders for the purchase and sale of electricity, this is referred to as an implicit auction (Kladnik, Artač, Štokelj & Gubina, 2010).

In July 2011, the Agency for the Cooperation of Energy Regulators (ACER) published the Framework Guidelines on Capacity Allocation and Congestion Management for Electricity in compliance with the requirements of Regulation (EC) 714/2009 and defined the method of implicit auctions within market coupling for the Target Electricity Model for short-term CZC allocation within the EU (ACER, 2011).[4]

The main measures used to evaluate whether CZC allocation is better by means of implicit auctions than through explicit auctions are the better price convergence and greater efficiency of CZC allocation (Jullien, Pignon, Robin & Staropoli, 2012).[5]

Greater efficiency in CZC allocation enables TSOs and market participants to have larger volumes of cross-border trade and quality price signals for the value of CZCs. Consequently, TSOs have a more accurate basis for decision-making with regard to investments in the transmission network and for market participants with regard to the cross-zonal purchase or sale of electricity. An improvement in CZC allocation efficiency is therefore also reflected in greater social welfare (Kristiansen, 2007a).

The unified and competitive "Northern Market" is regarded as the first example of price market coupling in Europe. The Northern Market developed gradually. In 1991, the Norwegian National Exchange Market was established, which by 2000 was liaising with the neighbouring four countries and had grown into a regional market. Sweden joined in 1996, Finland in 1998, part of western Denmark in 1999, and eastern Denmark in 2000 (NordPool, 2004).

Northern Market integration was followed by the trilateral price market coupling (TLC) of the Belgian, French and Dutch markets in 2006. The German and French markets were price coupled in 2007. In 2009 and 2010, the German market integrated with the Danish and Swedish markets through volume market coupling. In 2010, the TLC was merged with the price market coupling of the German and French markets in a unified price market coupling of the Central West Region (CWE). In the same year, the Polish and Swedish markets were price coupled as well. The Slovenian market joined the market coupling implementation processes in January 2011 when the Slovenian and Italian markets were price coupled. In the same year, the Norwegian and Dutch markets were also merged

4 Market coupling can take the form of either price or volume market coupling. With price market coupling, the trading platform algorithm is able to determine prices, quantities and flows for each of the coupled markets, whereas with volume market coupling only the net flows across the borders are calculated (Pellini, 2012).

5 For a more detailed description of the differences between explicit and implicit auctions, see Jullien et al. (2012) and Belpex (n.d.).

through volume market coupling (Farrington, 2011). The Czech and Slovak markets were price coupled on 31 August 2009 (SEPSAS, 2009). Since 1 April 2010, the Finnish and Estonian markets have been price coupled as well (Tere, 2010). Since 11 September 2012, the Hungarian market has been price coupled with the Slovak/Czech markets (CEPS, 2012).

The coupled markets or regions differ due to their use of various trading systems, market rules, and exchange markets closing times. For this reason, six power exchanges (APX, Belpex, EPEX, GME, NordPool and OMIE) joined forces in a project to integrate the regional markets to form a joint European market through which the mentioned differences are being dealt with (Farrington, 2011).

ELES, the Slovenian TSO, and BSP, the Slovenian electricity exchange, have been engaged in CZC allocation on the Slovenian-Italian border through implicit auctions since January 2011. On the Slovenian-Austrian border, CZCs are allocated by means of explicit auctions. Since this is not in compliance with the ACER target model, it is expected that in the future implicit auctions will be carried out on this border as well. Although on the Slovenian-Croatian border CZCs are allocated through explicit auctions, the CZC allocation will not be changing in the near future because there is no active power exchange in Croatia and so it is not possible to conduct implicit auctions. There are no interconnectors between Slovenia and Hungary and CZCs are thus not allocated on the border between these two countries.

The purpose of this paper is to study the impact of implementing implicit auctions on the Slovenian-Austrian border in the Slovenian electricity exchange market by means of a simulation. We investigate whether implementing implicit auctions on this border would be more effective than the existing explicit auctions in terms of CZC allocation. In addition, the impact of implicit auctions on the Slovenian-Austrian border on social welfare in Slovenia is analysed.

In the paper, we verify the hypotheses that, following the implementation of implicit auctions on the Slovenian-Austrian border the electricity price differences between the Slovenian and Austrian electricity exchange markets will decrease (*H1*), the average electricity price in the Slovenian electricity exchange market will decrease (*H2*), the efficiency of the available CZC utilisation will increase (*H3*), the trading volume in the Slovenian electricity exchange market will rise (*H4*) and that social welfare in Slovenia will increase (*H5*).

The paper is structured as follows. Section 2 provides a brief review of the literature on electricity market integration and on different capacity allocation mechanisms. In section 3, we present the theoretical background on how CZC allocation influences social welfare. In section 4, we describe the data and outline the simulation of implicit auctions on the Slovenian-Austrian border. In section 5, we analyse the results of the simulation. Finally, the findings and conclusions are summarised in section 6.

2. LITERATURE REVIEW

The economic literature on electricity market integration and capacity allocation mechanisms can be classified in three main categories. The first category consists of literature that analyses the impact of different market integration models on the degree of competition in electricity markets. The second category highlights the inefficiencies of the explicit auction mechanism for allocating CZC. The third category researches the impact of introducing implicit auctions on the efficiency of allocating CZC and on social welfare.

Borenstein, Bushnell and Stoft (2000) show that the introduction of a transmission capacity between two separated symmetric monopoly markets fosters competition and, moreover, that even a modest expansion of transmission capacity between markets that suffer from market power problems may have very high payoffs in terms of increased competition in electricity markets. Harvey and Hogan (2000) explore the comparative effects on competition of nodal pricing vs. zonal pricing and conclude that nodal pricing supports the market and expands the range of tools available to mitigate market power. Joskow and Tirole (2000) provide a study of the effects of market coupling/splitting bid-based pools with financial transmission contracts and bilateral contracting systems organised with tradable physical transmission contracts in constrained two-node and three-node networks. In their study, they argue that physical transmission contract rights may have worse welfare effects than financial transmission contracts rights because they can be withheld from the market, thereby reducing effective transmission capacity and introducing production inefficiency. Further, Neuhoff (2004) explores the comparative effects on competition of market coupling/splitting with financial transmission contracts vs. bilateral trading with physical transmission contracts and concludes that market coupling/splitting reduces the market power of generation companies compared to a market design relying on bilateral trading with physical transmission contracts. Gilbert, Neuhoff and Newbery (2004) extend previous studies by analysing a larger range of cases for different market designs and by studying welfare effects when transmission rights are obtained in an auction or inherited as legacy rights. Ehrenmann and Smeers (2005) and later on Ehrenmann and Neuhoff (2009) explore the comparative welfare effects of introducing two different capacity allocation design options (an integrated market design or a coordinated transmission auction) and demonstrate that an integrated market design performed better. In addition, Jullien et al. (2012) compare the two design options and come to the same conclusion that an integrated market design is more efficient than a coordinated transmission auction.

The second category of the literature provides an assessment of the inefficiencies of the explicit auction mechanism for allocating CZC. Analysing the results of auctions held for the Dutch-German interconnector and for the French-England interconnector, Newbery and McDaniel (2002) find that with explicit auctions CZCs are underused as a result of no flows netting. Moreover, imperfect arbitrage is present as the average price of daily capacity is lower than the monthly and annual prices. Similarly, while assessing the performance of the Kontek cable and of the interconnector between West Denmark and Germany Kristiansen (2007b) also finds evidence of imperfect arbitrage. Bunn and Zachmann

(2010) demonstrate that with an explicit auction, a generator which is both a dominant player in one market and a competitive player in another, has an incentive to acquire transmission rights to export against the price differential, thus resulting in inefficient use of cross-border interconnections. In addition, Bunn and Zachmann (2010) claim these inefficiencies occur because the energy and transmission markets are decoupled through the ex ante nature of the capacity auctions. Implicit auction approaches with nodal pricing would preclude these inefficiencies. Meeus (2011) computes a performance indicator for no-coupling, volume market coupling and price market coupling auction mechanisms on the Kontek Cable between Denmark and Germany and finds that price coupling is able to outperform both no-coupling and volume-market coupling.

The third category of the literature focuses on the impact of implicit auctions on the efficiency of allocating CZCs and on social welfare in the integrated markets. Hobbs, Rijkers and Boots (2005) analyse the potential impact of market coupling for the Belgian and the Dutch markets before the start of the Trilateral Coupling project among Belgium, France and the Netherlands. The authors estimate the project's welfare effect by simulating a Cournot Nash equilibrium model with five alternative market settings. The results show that, if the Belgian incumbent plays strategically, the change in the aggregate social surplus due to the market coupling is quite significant, but it occurs at the expense of Dutch consumers. On the other hand, when the Belgian incumbent acts as a price-taker, market coupling brings about a smaller increase in the aggregate social surplus, but it is more equally distributed among Belgian and Dutch consumers. Finon and Romano (2009) analyse the effect of market integration on electricity prices, showing that consumers living in countries with a high variable cost of capacity enjoy a price fall at the expense of consumers living in countries with a low cost capacity. Similarly, Pellini (2012) analyses the impact of market coupling in the Italian electricity market and confirms that, in the Italian case, market coupling maximises the use of the interconnection capacity with neighbouring countries, allows flows-netting, eliminates inefficient arbitrage that may occur with the explicit auction mechanism and increases the welfare gain of the coupled markets.

There are also some studies investigating the market coupling of the Slovenian and Italian electricity markets. The study of GME, Borzen and BSP (2008) identifies four efficiency gains from the adoption of implicit auctions on the Slovenian-Italian border. Namely, lower operational risks, lower trading risk/cost, higher liquidity of markets and more efficient use of the interconnection capacity. In addition, while analysing price convergence between the Slovenian and Italian electricity markets after the implementation of market coupling Parisio and Pelagatti (2014) find that the two markets are still far from being strongly integrated in terms of prices. Further, Cavaliero (2013) shows that the introduction of implicit auctions on the Slovenian-Italian border has influenced the efficiency of CZC allocation since in 2011 and 2012 the cross-border flows determined by market coupling resulted to be efficient in 100% of cases, compared with 98.2% guaranteed by the previous mechanism based on an explicit auction.

An empirical assessment of the effect of the market integration of the Slovenian and Austrian electricity markets from introducing implicit auctions on the Slovenian-

Austrian border is still to be carried out. Therefore, this paper aims to contribute to the empirical literature on market integration, presenting a comprehensive investigation on the efficiency of the CZC allocation and the welfare effect caused by the use of implicit auctions on the Slovenian-Austrian border.

3. CAPACITY ALLOCATION AND SOCIAL WELFARE

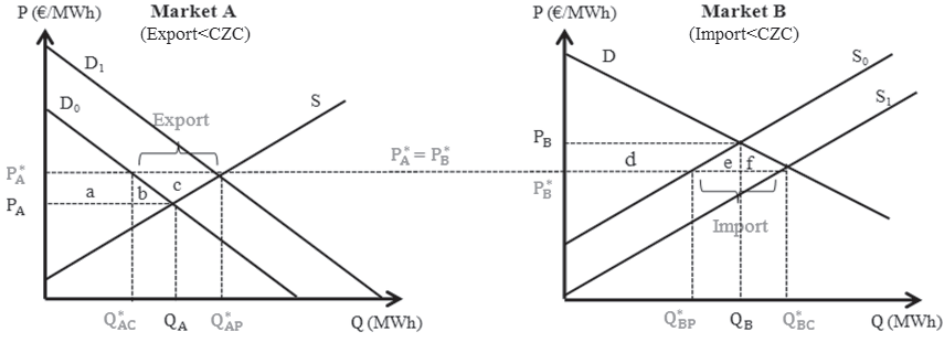
Connecting two isolated electricity exchange markets is possible if interconnectors or CZCs are available. In order to conduct cross-border electricity transactions, a market participant has to gain the right to use CZCs. The CZCs of an individual interconnector pose a quantity constraint on trading between the two markets (Neuhoff, 2004).

If the CZCs are not fully utilised and there is no transmission network congestion between the two markets, electricity prices in both markets are equalised (Figure 1). Let us assume that at the beginning the electricity price (P_A) in Market A is lower than the electricity price (P_B) in Market B and therefore Market A will export electricity to Market B. Exported electricity is bought in the export area of Market A (additional purchase of electricity in Market A shifting the position of demand D_0 to position D_1), and is sold in the import area of Market B (additional selling of electricity in Market B shifting the position of supply S_0 to position S_1). Consequently the electricity price in Market A will increase and decrease in Market B. If CZCs for the export of electricity from Market A to Market B are sufficient, the prices in both markets will equalise $P^*_A = P^*_B$ (Adamec, Indrakova, & Pavlatka, 2009).[6]

The producer surplus in Market A increases since the electricity produced in this market can be sold by the producers at a higher price than before the market coupling (area a+b+c). The consumer surplus in Market B increases as well because the electricity in this market can be purchased by consumers at a lower price than before the market coupling (area d+e+f) (Figure 1) (Jacottet, 2012). On the contrary, the consumer surplus in Market A decreases since consumers have to purchase electricity at a higher price than before the market coupling (area a+b). Further, the producer surplus in Market B is also decreased because the electricity produced in this market can be sold by the producers at a lower price than before the market coupling (area d) (Figure 1) (Jacottet, 2012).

6 For mathematical proof that market prices equalise if there are no CZC constraints between two or more markets, see Coenraad (2011).

Figure 1: *Social welfare effects of market coupling with an uncongested interconnection*



Sources: Adapted from Jacottet, 2012; Adamec et al., 2009.

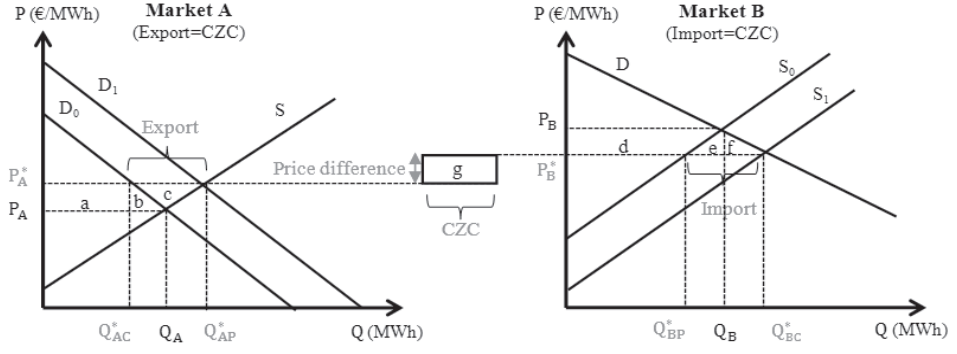
Notwithstanding the mentioned losses of individual participants in Markets A and B, the coupling of the two markets has net benefits for them both. Namely, the losses of an individual market participant are compensated for by the gains of other participants in this market. The social welfare of both coupled markets, between which CZCs are not fully utilised, is greater than the social welfare of the two isolated Markets A and B when calculating the net benefits due to the increased exports in Market A (area c) and the net benefits from increased imports in Market B (area e+f). The areas c, e and f represent the increase in social welfare due to the coupling of the two markets without CZC constraints between them (Figure 1) (Jacottet, 2012).

If the CZCs between the two markets are fully utilised, network congestion occurs and electricity prices in both markets are not equalised (Figure 2). With CZC allocation, electricity prices between the two markets are drawn nearer to the moment when the last CZC unit is allocated between the two markets. After CZC allocation, the price in an individual market is formed according to the remaining orders for the purchase or sale of electricity in that market (Coenraad, 2011). In this case, the quantity of electricity exchanged between Market A and Market B is equal to the complete CZCs available between the two markets. Exported electricity is purchased in Market A at price P^*_A and sold in Market B at price P^*_B. The difference between prices P^*_A and P^*_B, multiplied by the CZCs used, represents income of system operator from the network congestion (area g) (Figure 2) (Adamec et al., 2009).

In two coupled electricity markets between which CZCs are fully utilised, the price in both markets is not equalised, since Market B cannot import sufficient quantities of electricity from Market A as it would wish to based on the price difference. Nevertheless, because the electricity offer flows from the lower to the higher price range, the prices of the two markets are brought closer together, yet not to the extent as in price market coupling between two markets without CZC constraints between them (Coenraad, 2011).

The social welfare of two coupled markets between which CZCs are fully utilised is greater than the social welfare of two isolated Markets A and B when calculating the net benefits due to the increased exports in Market A (area c) and the net benefits from the increased imports in Market B (area e+f) and the congestion rent (area g) (Figure 2). Areas c, e, f and g represent the increase in social welfare due to the coupling of two markets with CZC constraints (E-Bridge, 2009). The increase in social welfare due to the coupling of two markets with CZC constraints is smaller than with the coupling of two markets where the CZCs are not constrained (Coenraad, 2011).

Figure 2: *Social welfare effects of market coupling with a congested interconnection*



Sources: Adapted from E-bridge, 2009; Adamec et al., 2009.

Explicit and implicit auctions (considering the assumptions that CZCs are allocated in completely competitive markets where market participants have all information available, there are no uncertainties, and where the results of trading are completely predictable) lead to the same result when calculating the social welfare (Ehrenmann & Neuhoff, 2009).

In practice, the mentioned assumptions are not completely realised, leading to inefficiencies that reduce the social welfare (Creti, Fumagalli & Fumagalli, 2010). Due to market power abuse by market participants and unreliable information resulting from the two-stage process of cross-border transactions (first, a market participant acquires the right to use CZCs at explicit auctions, and then it conducts a transaction for the purchase or sale of electricity), explicit auctions are less efficient than implicit ones because cross-border transactions for the purchase or sale of electricity are conducted concurrently with CZC allocations between the two markets (Consentec & Frontier Economics, 2004).

4. MARKET COUPLING SIMULATION ON THE SLOVENIAN-AUSTRIAN BORDER

4.1. Data sources

Data were acquired from various sources. Data on CZCs on the Slovenian-Austrian border were acquired from the Central Allocation Office website (CAO, n.d.). Data on CZCs on the Slovenian-Italian border and data on offers for purchases or sales in the Slovenian day-ahead market were acquired from the internal materials of the Slovenian electricity exchange – BSP (BSP, 2012). Data regarding the price on the day-ahead market on the Italian electricity market were acquired from the Italian electricity exchange website – GME (GME, n.d.). Data regarding the price on the day-ahead market on the Austrian electricity market were acquired from the Austrian electricity exchange website – EXAA (EXAA, n.d.).

Data were based on an hourly level for all 365 days or 8,784 hours in 2012 during which electricity was traded. The data consist of 351,196 offers for the sale of electricity on the Slovenian day-ahead market and 241,784 offers for the purchase of electricity on the Slovenian day-ahead market. In addition, 17,566 CZCs on the Slovenian-Italian border, 17,566 CZCs on the Slovenian-Austrian border, 8,784 prices of electricity in the Italian day-ahead market and 8,784 prices of electricity in the Austrian day-ahead market were used.

4.2. Reference scenario

Prior to assuming the implementation of implicit auctions on the Slovenian-Austrian border, short-term CZCs are being allocated at explicit auctions. Consequently, according to the gained rights to use CZCs at explicit auctions and their business strategy, Slovenian market participants can enter their offers for the purchase and sale of electricity in the order book of the Slovenian electricity exchange market and Austrian market participants in the order book of the Austrian electricity exchange market. Since the Slovenian electricity exchange market is connected to the Italian electricity exchange market via implicit auctions within the market coupling, the order book of the Slovenian market is combined with the order book of the Italian electricity exchange market.

The calculations of actual/reference trading results were made with the EuroMarket trading system that is used by the Italian and Slovenian electricity exchanges (Mercatoelettrico, n.d.). The trading results in the Slovenian electricity exchange market were calculated on an hourly basis for all hours of the leap year 2012 based on data from the common order book of the Slovenian and Italian electricity exchange markets, taking into account that the rights to use CZCs on the Slovenian-Italian border were allocated at implicit auctions.[7]

7 As the Slovenian and Italian electricity exchange markets were coupled in 2011, the calculation of both the reference and the simulation scenario also needs to consider the Italian electricity exchange market (the northern zone).

In addition, the short-term CZCs on the Slovenian-Austrian border allocated at explicit auctions were also used in the reference scenario. Results calculated on such bases are treated as the reference scenario.

4.3. Simulation scenario

For the purposes of analysing the impact of using implicit auctions on the Slovenian-Austrian border in the Slovenian electricity exchange market, the explicit auctions for allocating CZCs on the Slovenian-Austrian border are replaced by a simulation of the use of implicit auctions for allocating CZCs on that border.

In the simulations for the Slovenian-Austrian border and the Slovenian-Italian border, the rights to use CZCs are granted at the same time as offers for the purchase or sale of electricity. The calculations of the trading results of the simulation scenario were conducted by a programmed calculation in Excel that simulates the operation of the EuroMarket trading system algorithm. The programmed calculation was based on the assumptions explained in section 4.3.1. The trading results in the Slovenian electricity exchange market were calculated on an hourly basis for all hours of the leap year 2012 based on data from the common order book of the Slovenian, Italian and Austrian electricity exchange markets, taking into account that the rights to use CZCs on the Slovenian-Italian border and on the Slovenian-Austrian border are allocated at implicit auctions. Results calculated on such bases and with such a simulation are treated as the simulation scenario.

4.3.1. Assumptions

In 2012, the Italian market price for the northern zone (P_{GME_Nord}) was higher than the Slovenian market price (P_{BSP}) for 6,962 hours, which means that Slovenia exported electricity with the utilisation of complete CZCs in the direction Slovenia-Italy. For 1,800 hours, the Italian market price for the northern zone (P_{GME_Nord}) was the same as the Slovenian market price (P_{BSP}), where electricity was imported into Slovenia for 14 hours with the utilisation of part of the CZCs in the direction Italy-Slovenia, and for 1,786 hours electricity was exported from Slovenia with the utilisation of part of the CZCs in the direction Slovenia-Italy. For 22 hours, the Italian market price for the northern zone (P_{GME_Nord}) was lower than the Slovenian market price (P_{BSP}), which means that electricity was imported into Slovenia with the utilisation of complete CZCs in the direction Italy-Slovenia (Table 1).

Table 1: *Imports and exports of electricity from/to the Italian exchange market in 2012*

	Total hours	**Number of hours with IM and EX from/to IT**	**Number of hours with one-way IM from IT**	**Number of hours with one-way EX to IT**	**Number of hours with full CZC utilisation from IT**	**Number of hours with full CZC utilisation to IT**
$P_{BSP} > P_{GME\_Nord}$	22	0	22	0	22	0
$P_{BSP} < P_{GME\_Nord}$	6,962	0	0	6,962	0	6,962
$P_{BSP} = P_{GME\_Nord}$	1,800	0	14	1,786	0	0
Total	**8,784**	**0**	**36**	**8,748**	**22**	**6,962**

Sources: GME, n.d.; BSP, n.d.; CAO, n.d.

To sum up, in 2012 Slovenia exported electricity to Italy for 8,748 hours, or 99.5% of the time. Consequently, CZCs for the direction Slovenia-Italy represented additional demand in the Slovenian electricity exchange market. For 36 hours, or 0.4% of the time, Slovenia imported electricity from Italy, which means that CZCs for the direction Italy-Slovenia represented additional supply in the Slovenian electricity exchange market (Table 1).

Due to the small quantities of CZCs between the countries, the cross-zonal demand or offer of the Slovenian electricity exchange market cannot influence the aggregate demand or aggregate supply in the Italian electricity exchange market to such an extent that would cause the price in the Italian electricity exchange market to change. For this reason, we assume that in the Italian electricity exchange market the Slovenian electricity exchange market appears as an additional buyer (buying electricity up to the extent of the maximum CZCs for the direction Italy-Slovenia) when the Italian electricity exchange price is lower than the Slovenian electricity exchange price. In addition, we also assume that in the Italian electricity exchange market the Slovenian electricity exchange market appears as an additional seller (selling electricity up to the extent of the maximum CZCs for the direction Slovenia-Italy) when the Italian electricity exchange price is higher than the Slovenian electricity exchange price.

Similarly as for the Italian electricity exchange market, we analyse the differences in electricity prices between the Slovenian and Austrian electricity exchange markets (Table 2). In 2012, the Austrian electricity exchange price (P_{EXAA}) was higher than Slovenian electricity exchange price (P_{BSP}) for 2,107 hours (within these hours electricity was exported from Slovenia with the utilisation of complete CZCs in the direction Slovenia-Austria in 38 hours), for 127 hours Austrian electricity exchange price (P_{EXAA}) was the same as Slovenian electricity exchange price (P_{BSP}) and for 6,550 hours Austrian electricity exchange price (P_{EXAA}) was lower than the Slovenian electricity exchange price (P_{BSP}) (within these hours electricity was imported from Austria with the utilisation of complete CZCs in the direction Austria-Slovenia in 2,180 hours).

Table 2: *Imports and exports of electricity from/to the Austrian exchange market in 2012*

	Total hours	Number of hours with IM and EX from/to AT	Number of hours with one-way IM from AT	Number of hours with one-way EX to AT	Number of hours with full CZC utilisation from AT	Number of hours with full CZC utilisation to AT
$P_{BSP} > P_{EXAA}$	6,550	3,356	3,140	54	2,180	0
$P_{BSP} < P_{EXAA}$	2,107	1,930	103	74	38	0
$P_{BSP} = P_{EXAA}$	127	110	17	0	0	0
Total	**8,784**	**5,396**	**3,260**	**128**	**2,218**	**0**

Sources: EXAA, n.d.; BSP, n.d.; CAO, n.d.

On the basis of the data shown in Table 2, we can determine the following: in 2012, for 3,214 hours (3,140 hours + 74 hours), or 36.6% of the time, electricity was exchanged in the direction from the lower towards the higher price range; for 157 hours (103 hours + 54 hours), or 1.8% of the time, from the higher towards the lower price range; for 17 hours, or 0.2% of the time, it was exchanged at equal prices between the two price ranges; and for 5,396 hours (3,356 hours + 1,930 hours + 110 hours), or 61.4% of the time, it was exported from the lower to the higher price range, and at the same time imported from the higher to the lower price range.

For the market participants which imported electricity from the higher to the lower price range in the above examples, we can assume that they had wrong expectations regarding in which of the neighbouring electricity markets a higher price would be formed and in which a lower one. This clearly shows the inefficiency of the explicit two-step CZCs allocation method in which market participants first have to participate in explicit auctions for allocating CZCs and then trade in electricity in two neighbouring markets on the basis of predictions made about the price differences between these two markets.

The Austrian electricity exchange market has great depth since this market is indefinitely connected to the German electricity exchange market (the CZCs between the two markets are in excess). Consequently, CZCs on the Slovenian-Austrian border and the cross-zonal demand or offer of the Slovenian electricity exchange market cannot influence the aggregate demand or aggregate supply in the Austrian electricity exchange market to such an extent that would cause the price in the Austrian electricity exchange market to change.

When simulating the market coupling on the Slovenian-Austrian border, we assume that electricity would be exported from Slovenia to Austria (to the extent of the maximum CZCs for the direction Slovenia-Austria) when the Austrian electricity exchange price is higher than the Slovenian electricity exchange price, and that electricity would be imported from Austria to Slovenia (to the extent of the maximum CZCs for the direction Austria-Slovenia) when the Austrian electricity exchange price is lower than the Slovenian electricity exchange price. The CZCs that are assumed to be available for implicit allocation

via the electricity exchange market are calculated as the difference between the net transfer capacity (NTC) [8] and already allocated transfer capacity (AAC).[9]

4.4. Social welfare calculation[10]

4.4.1. The Slovenian electricity exchange market before the use of implicit auctions on the Slovenian-Austrian border

Before using implicit auctions on the Slovenian-Austrian border, the order books of the Slovenian and Austrian electricity exchange markets were not directly linked. On the Slovenian-Austrian border, CZCs are allocated through explicit auctions. The aggregate demand curve ($P_d=f_d(Q_i)$) and aggregate supply curve ($P_s=f_s(Q_i)$) in the Slovenian electricity exchange market are step functions. The two step functions are constructed from the historical buy and sell bids (which are ranked separately for the buy and sell curve accordingly to their type, taking into account their price level and time stamp) entered into the Slovenian electricity exchange market order book in 2012. Based on these data (bids), we calculate the consumer surplus (*CS*) and producer surplus (*PS*) for an individual hour in 2012 as follows:

$$CS = \sum_{i=0}^{j=Q_{BSP}} (f_d(Q_i) - P_{BSP}) \tag{1}$$

$$PS = \sum_{i=0}^{j=Q_{BSP}} (P_{BSP} - f_s(Q_i)) \tag{2}$$

where:
P_{BSP} is the price of electricity in the Slovenian electricity exchange market before implementing implicit auctions;
Q_{BSP} is the quantity in the Slovenian electricity exchange market before implementing implicit auctions.

The congestion rent of the Slovenian TSO[11] on the Slovenian-Austrian border ($CR_{SI\text{-}AT}$) for an individual hour in 2012 before implementing implicit auctions on that border from the direction Slovenia-Austria is calculated as follows:

$$CR_{SI-AT} = (P_{CZC,SI-AT} * Q_{CZC,SI-AT})/2 \tag{3}$$

8 Net transfer capacity is defined as the maximum total exchange program (MW) between two interconnected power systems available for commercial purposes for a certain period and direction of active power flow (ETSO, 2001).

9 Already allocated capacity is the total amount of already allocated transmission rights, i.e. transmission capacity reserved by long-term contracts and the previously held transmission capacity reservation auctions (ETSO, 2001).

10 Social welfare is calculated on the theoretical basis described in section 3.

11 Congestion rent of the Slovenian TSO accounts for half of the congestion rent acquired on the SI-AT and SI-IT border as regulated in agreement between the pertinent TSOs.

where:
$P_{CZC, SI\text{-}AT}$ is the price of the CZCs allocated at an explicit auction in the direction Slovenia-Austria;
$Q_{CZC.SI\text{-}AT}$ is the amount of the CZCs allocated at an explicit auction in the direction Slovenia-Austria.

The congestion rent of the Slovenian TSO on the Slovenian-Austrian border ($CR_{AT\text{-}SI}$) for an individual hour in 2012 before the implementing of implicit auctions on that border in the direction Austria-Slovenia is calculated as follows:

$$CR_{AT-SI} = (P_{CZC,AT-SI} * Q_{CZC,AT-SI})/2 \quad (4)$$

where:
$P_{CZC, AT\text{-}SI}$ is the price of the CZCs allocated at an explicit auction in the direction Austria-Slovenia;
$Q_{CZC, AT\text{-}SI}$ is the amount of the CZCs allocated at an explicit auction in the direction Austria-Slovenia.

The congestion rent of the Slovenian TSO on the Slovenian-Italian border ($CR_{SI,IT}$), where capacities are allocated at implicit auctions, for an individual hour in 2012 before implementing implicit auctions on the Slovenian-Austrian border, is calculated as follows:

$$CR_{SI,IT} = ((|P_{GME\_Nord} - P_{BSP}|) * Q_{CZC,SI\_IT})/2 \quad (5)$$

where:
P_{GME_Nord} is the price of electricity in the northern zone of the Italian electricity exchange market before implementing implicit auctions on the Slovenian-Austrian border;
P_{BSP} is the price of electricity in the Slovenian electricity exchange market before implementing implicit auctions on the Slovenian-Austrian border;
Q_{CZC, SI_IT} is the amount of CZCs allocated at implicit auctions on the Slovenian-Italian border.

4.4.2. Coupled electricity exchange markets on the Slovenian-Austrian border

After simulating the use of implicit auctions on the Slovenian-Austrian border, the Slovenian electricity exchange market is, for those hours when the Slovenian electricity exchange price was lower than the Austrian electricity exchange price, the market that exports electricity to the Austrian electricity exchange market, and otherwise the market that exports electricity from the Austrian electricity exchange market. The latter was considered for the calculation of the consumer surplus (CS^*), producer surplus (PS^*), and the acquired congestion rent on the Slovenian-Italian border ($CR^*_{SI,IT}$) in the simulations scenario.

In addition, the calculation of the congestion rent on the Slovenian-Austrian border () for an individual hour in 2012 after market coupling on the Slovenian-Austrian border

slightly changes and is calculated as follows:

$$CR^{*}_{SI,AT} = ((|P^{*}_{EXAA} - P^{*}_{BSP}|) * Q^{*}_{CZC,SI\_AT})/2 \quad (6)$$

where:
P^{*}_{EXAA} is the price of electricity in the Austrian electricity exchange market after implementing implicit auctions on the Slovenian-Austrian border;
P^{*}_{BSP} is the price of electricity in the Slovenian electricity exchange market after implementing implicit auctions on the Slovenian-Austrian border;
$P^{*}_{CZC,\ SI\_AT}$ is the amount of CZCs allocated at implicit auctions on the Slovenian-Austrian border.

The change in Slovenian social welfare (ΔSW) after implementing implicit auctions on the Slovenian-Austrian border for an individual hour in 2012 is calculated as follows:

$$\Delta SW = \Delta CS + \Delta PS + \Delta CR \quad (7)$$

$$\Delta SW = (CS^{*} - CS) + (PS^{*} - PS) + ((CR^{*}_{SI,AT} + CR^{*}_{SI,IT}) - (CR_{AT-SI} + CR_{SI-AT} + CR_{SI,IT})) \quad (8)$$

5. ANALYSIS OF THE SIMULATION RESULTS FOR MARKET COUPLING ON THE SLOVENIAN-AUSTRIAN BORDER

5.1. Comparison of electricity prices between the Slovenian and Austrian electricity exchange markets before and after simulating implicit auctions on the Slovenian-Austrian border

The results of the price analysis show that the prices in the Slovenian and Austrian electricity exchange markets before implementing implicit auctions on the Slovenian-Austrian border were equal 127 times during 8,784 hours of the year, or 1.45% of the time, considering the results of the reference scenario. After implementing implicit auctions on that border, the prices in the Slovenian and Austrian electricity exchange markets would be equal 6,746 times during 8,784 hours of the year, or 76.81% of the time.

The price equalisation for a greater number of hours is not surprising since the price in the Slovenian electricity exchange market is historically dependant on the price in the Austrian/German electricity exchange market, regardless of which mechanism is applied for allocating CZCs on this border (Orešič, 2012).

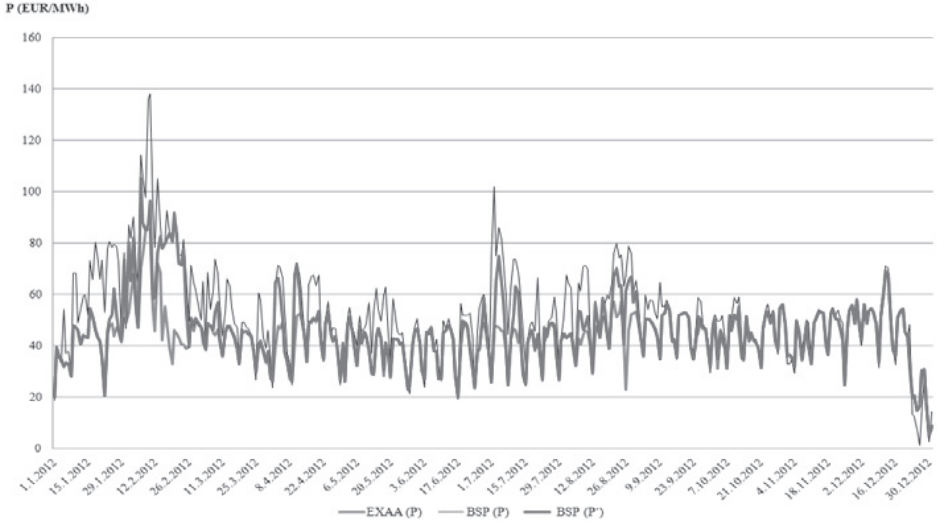
The use of implicit auctions on the Slovenian-Austrian border would reduce the price differences between the Slovenian electricity exchange market (BSP) and the Austrian electricity exchange market (EXAA). Figure 3 shows that before using implicit auctions the differences between the Slovenian electricity exchange price (P_{BSP}) and Austrian electricity exchange price (P_{EXAA}) are bigger in comparison to the difference in the Austrian

electricity exchange price (P_{EXAA}) and the Slovenian electricity exchange price (P^*_{BSP}) after implementing implicit auctions.

Based on the results of the analysis, we may conclude that after introducing implicit auctions on the Slovenian-Austrian border the Austrian and Slovenian electricity exchange prices would be brought closer together or even equalise, thereby confirming our first hypothesis (*H1*).

Further, we may also conclude that, after the implementation of implicit auctions on the Slovenian-Austrian border, the average electricity price in the Slovenian electricity exchange market would decrease by €6.84/MWh (13%) annually, thereby confirming our second hypothesis (*H2*).

Figure 3: *Price comparison between Slovenian and Austrian electricity exchange markets before and after the simulation of implicit auctions on the SI-AT border*



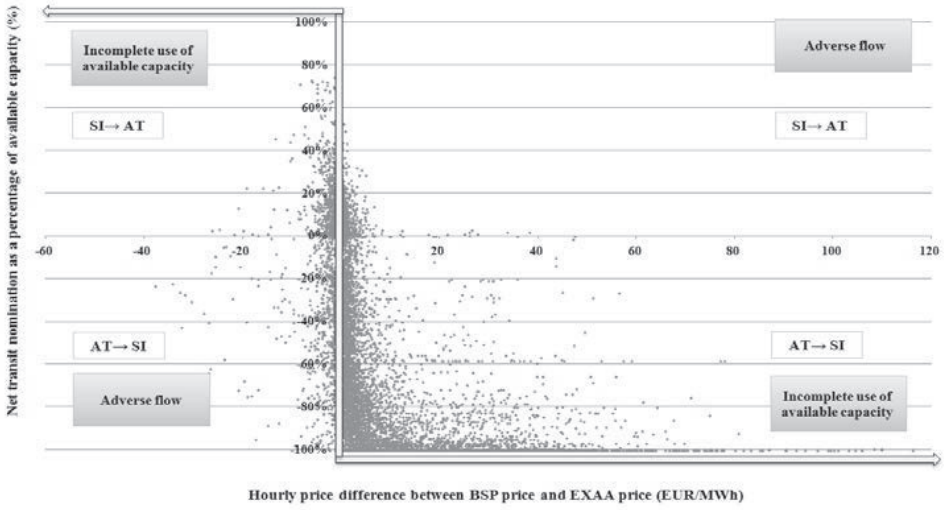
Sources: BSP, n.d.; EXAA, n.d.

5.2. Comparison of the utilisation of allocated day-ahead capacities before and after simulating implicit auctions on the Slovenian-Austrian border

According to the actual explicit auction results of the Central Allocation Office, Slovenia imported from Austria 2,108,228 MWh of 2,930,554 MWh of available CZCs and exported to Austria 684,649 MWh of 12,096,955 MWh of available CZCs in 2012 (CAO, n.d.). CZC utilisation in the direction Austria-Slovenia was 71.94%, and 5.66% in the Slovenia-Austria direction.

CZC utilisation in implicit auctions is one of the measures showing the greater efficiency of implicit auctions in comparison to explicit auctions (Jullien et al., 2012). Namely, from the efficiency viewpoint, it may be useful to utilise CZCs according to the demand that flows from the higher to the lower price market. Otherwise, part of the CZCs remains unutilised even though it would be wise to use it.

Figure 4: *Inefficiency of explicit auctions on the SI-AT border*

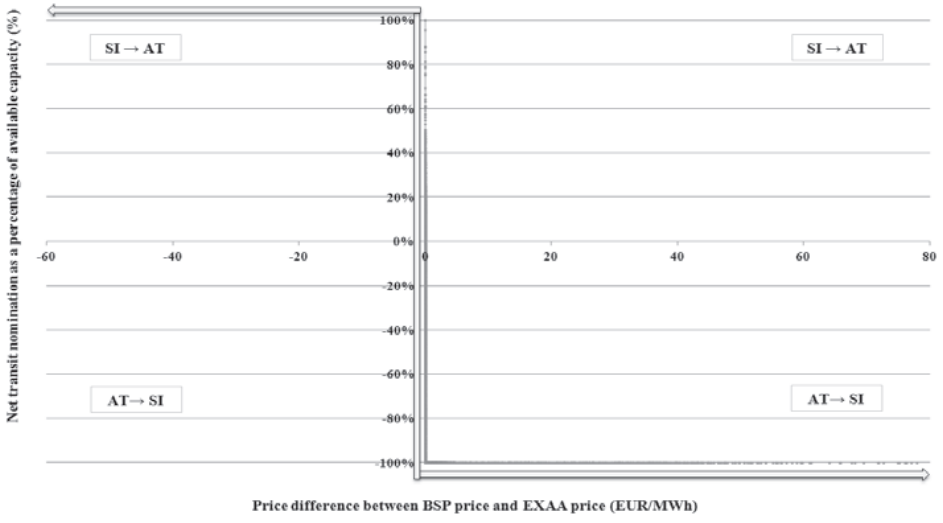


Note: Net transit nominations of CZCs on the Slovenian-Austrian border are calculated as the difference between the used quantities of exported CZCs and the used quantities of imported CZCs.

Figure 4 shows the CZC utilisation between two markets at an explicit auction. Efficiently utilised CZCs are represented by the points on the y-axis and in the marked area on the left and right sides of the y-axis. The area of less efficiently utilised CZCs is represented by the points in the upper-left and lower-right fields. The area of inefficiently utilised CZCs is represented by the points in the upper-right and lower-left fields.

When allocating CZCs at explicit auctions and subsequently trading on two unconnected electricity exchange markets, inefficiencies in CZC utilisation and even adverse flows appear. Adverse flows are a consequence of inaccurate predictions made by market participants as regards the price differences between the domestic and foreign markets. APX et al. (2008) note that, at implicit auctions where CZCs are allocated together with electricity, markets with a lower electricity price always export to markets with a higher electricity price. Consequently, adverse flows cannot emerge. Better CZC utilisation efficiency on the Slovenian-Austrian border after the implementing of implicit auctions is shown in Figure 5. All points representing efficiently used CZCs are on the y-axis and in the marked area on the left and right sides of the y-axis.

Figure 5: *Efficiency of implicit auctions on the SI-AT border*



Following the implementation of implicit auctions on the Slovenian-Austrian border, Slovenia would import from Austria 1,241,481 MWh of 2,930,554 MWh of available CZCs and export to Austria 349,180 MWh of 12,096,955 MWh of available CZCs.[12] CZC utilisation in the direction Austria-Slovenia would be 42.36%, and 2.89% in the direction Slovenia-Austria.

According to the explicit auction results, on the Austrian-Slovenian border CZCs would be allocated more efficiently at implicit auctions, confirming the third hypothesis (*H3*). Namely, the results show that this CZC allocation method relieves their non-optimised utilisation and eliminates adverse flows, which also corresponds to the findings of APX et al. (2008) with regard to the elimination of adverse flows by using implicit auctions.

5.3. Comparison of the trading volume in the Slovenian electricity exchange market before and after the simulation of implicit auctions on the Slovenian-Austrian border

Due to the lowest hydrology level in recent history, Slovenia imported a great amount of energy during the last quarter of 2011 and first quarter of 2012 (Orešič, 2012). In such circumstances, efficient CZC allocation, which in the case of implicit auctions is reflected in a larger amount of exchange market transactions, is of great importance (Jullien et al., 2012). The latter is also confirmed by the simulation scenario results for the first quarter

12 The substantial difference in the quantity of available CZCs in the direction Austria-Slovenia compared to their quantity in the opposite direction is the result of the higher usage of the available quantity of long-term CZCs in the direction Austria-Slovenia than in the direction Slovenia-Austria. Hence there is a smaller leftover of available CZCs in the direction Austria-Slovenia compared to the direction Slovenia-Austria.

of 2012 which reveal that if, during that period, implicit auctions had been used on the Slovenian-Austrian border, a larger number of transactions would have been made in the Slovenian electricity exchange market (up to 30% more) than in the case of the reference scenario. After stabilisation, in all subsequent months a higher number of transactions would still have been made in the Slovenian electricity exchange market than in the reference scenario. However, the difference between both is no longer so noticeable. After implementing implicit auctions on the Slovenian-Austrian border, the volume of trading in the Slovenian electricity exchange market would rise by 715,633 MWh (16%) on the annual level, which confirms our fourth hypothesis (*H4*).

5.4. Comparison of social welfare in Slovenia before and after the simulation of implicit auctions on the Slovenian-Austrian border

The influence of implicit auctions on the Slovenian-Austrian border on social welfare in Slovenia is described in Table 3.

Table 3: *Change in social welfare after simulation of implicit auctions on the SI-AT border*

	Before implicit auctions (€)	**After implicit auctions (€)**
Producer surplus	146,318,029	119,998,678
Consumer surplus	855,105,950	890,547,561
Total producer and consumer surplus	1,001,423,979	1,010,546,239
Net benefits due to increased import from Austria	/	8,326,379
Net benefits due to increased export to Austria	/	795,881
Total net benefits due to exchange with Austria	/	**9,122,260**
Congestion rent on the SI-AT border	10,317,924	2,290,102
Congestion rent on the SI-IT border	34,886,765	50,163,851
Total congestion rent	45,204,689	52,453,953
Change in collected congestion rent	/	**7,249,264**
Change in social welfare in Slovenia	/	**16,371,524**

Note: Congestion rent accounts for half of the congestion rent acquired annually on the SI-AT and SI-IT border – the other half belongs to the Austrian or Italian TSO.

The results of the analysis show that due to the use of implicit auctions on the Slovenian-Austrian border and the increased imports of cheaper electricity from the Austrian electricity exchange market and the resulting drop in the price in the Slovenian electricity exchange market the net benefits for Slovenia amount to €8,326,379. Due to the use of implicit auctions on the Slovenian-Austrian border and the increased exports of electricity to the Austrian electricity exchange market and the consequential rise in the price in the Slovenian electricity exchange market, the net benefits for Slovenia amount to €795,881.

For Slovenia, the total net benefits from trading between the two markets amount to €9,122,260.

The Slovenian TSO income from the congestion rent after implementing implicit auctions decreased to €2,290,102. The smaller amount of congestion rent on that border is expected when considering all inefficiencies of the explicit CZC allocation due to which the amount of congestion rent from the explicit CZC allocation is too high and does not reflect the real economic value of CZCs.

On the other hand, the Slovenian TSO's income from the congestion rent on the Slovenian-Italian border increased to €50,163,851 after implementing implicit auctions on the Slovenian-Austrian border. The increased congestion rent is expected since the price in the Slovenian electricity exchange market decreased, which results in an increase in the price difference in the northern zone of the Italian electricity exchange market and the acquired congestion rent on that border.

Summarising the net benefits of the Slovenian electricity exchange market from the exports to the Austrian electricity exchange market (in hours, when the Slovenian electricity exchange price was lower than the Austrian electricity exchange price), the net benefits of the Slovenian electricity exchange market from the imports to the Austrian electricity exchange market (in hours, when the Slovenian electricity exchange price was higher than the Austrian electricity exchange price) and the additional congestion rent gained by the Slovenian TSO shows that social welfare increased by €16,371,524 in Slovenia. This also confirms our fifth hypothesis (*H5)*, which states that the use of implicit auctions on the Slovenian-Austrian border would increase social welfare in Slovenia. The benefits of the implementation amount to €7.91 per capita. This is in line with a recently published study which estimated that the benefits of allocating CZC at implicit auctions within market couplings, once fully implemented across the EU, would be between €2.5 and €4 billion per year, or about €5 to €8 per capita per year (Booz & Company, Newbery, Strbac, Noël & LeighFisher, 2013).

6. CONCLUSION

Due to the benefits of implicit auctions and the positive influence of this CZC allocation method on social welfare, the European Commission has been trying to legally unify the existing CZC allocation practices throughout Europe. In the last few years we have witnessed considerable progress since implicit auctions within market couplings have already been established on numerous borders of energy systems within the EU. On the Slovenian-Austrian border, CZCs are currently allocated by means of explicit auctions. However, in compliance with the European Target Electricity Model we can expect the implementation of implicit auctions within market couplings in the future.

By simulating trading on the Slovenian electricity exchange market and the allocation of CZCs following the implementation of implicit auctions within market coupling on the

Slovenian-Austrian border for 2012, we demonstrated that in the Slovenian electricity exchange market the electricity price would be brought closer together or even equalise with Austrian electricity exchange market by an average decrease of €6.84/MWh, leading to a 16% increase in the volume of trading in the Slovenian electricity exchange market. The efficiency of CZC utilisation would increase as well. In addition, market coupling on the Slovenian-Austrian border would increase social welfare in Slovenia by €16,371,524.

By implementing implicit auctions within the market coupling on the Slovenian-Austrian border, Slovenia will fulfil its obligations imposed by the pan-European, day-ahead, market-forming process. The Slovenian electricity exchange market will be partly reformed and enable exchange market members to trade in a liquid exchange market that is connected to the Austrian-German and Italian electricity exchange markets.

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IMPACT OF CORPORATE POWER ON CONSUMPTION, DEBT AND INEQUALITY: POLITICAL-ECONOMIC MODEL OF CCC

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ABSTRACT: *The literature is abundant with studies about income inequality, consumption, public and household debt but scarce with studies about the corporations and their corporate power. This paper shows that corporate power influences increased consumption in order to secure its investments and provide sufficient demand. Secondly, rising consumerism influences growing household and public debt with multiple transmission mechanisms that work simultaneously and reinforce each other. Thirdly, growing household and public debt increase inequality, disabling the government to invest in education, health care, infrastructure or social transfers, and preventing the people from investing in their education or increasing their savings and, consequently, their wealth and financial independence. Finally, the inequality causes an increase in corporate power. People who are impoverished and thus unequal in comparison with the production owners and capitalists are also weaker in the bargaining process. They cannot improve their position, so the corporate power rises completing the cumulative and circular causation.*

Keywords: *corporate power, consumerism, debt, cumulative circular causation, inequality*
JEL Classification: B52, E02, P10
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INTRODUCTION

Is growing corporate power leading to consumption driven by conspicuous consumption and consumerism, rising public and household debt, economic inequality and unsustainable growth? There are several empirical facts about the increased income inequality in the past 40 years (OECD, 2015), rising public and household debt (Cecchetti, Mohanty & Zampolli, 2011; OECD, 2015), increased consumption (OECD, 2015) and surging corporate power (UNCTAD, 2007), but only a few studies examine the causations between those variables.

Empirical studies have shown that there is a long period of flat or stagnant wages (Mishel & Shierholz, 2013), which only reinforces economic inequality. Inequality is further increasing due to a decrease in taxes (Fieldhouse, 2013) and there has been a strong

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correlation between the cuts in top tax rates and the increases in top 1 per cent income shares since 1975 in 18 OECD countries, but the top income share increases have not been translated into a higher economic growth (Piketty & Saez, 2011). Another sharp distinction is the wealth and assets owned where the bottom half of the global population owns less than 1 per cent of the total wealth. On the other hand, the richest 10 per cent holds 86 per cent of the world's wealth, and the top 1 per cent alone accounts for 46 per cent of global assets (CSRI, 2013). Piketty and Saez (2003) have also shown that, in the US, the share of total pre-tax income accruing to the top 1 per cent has more than doubled sincethe 1970s. The consequences of high inequality are also slow economic growth (Ostry, Berg & Tsangarides, 2014), political instability (Cummins & Ortiz, 2011), and higher unemployment (Galbraith, 2012).

The literature is abundant with studies about income inequality, consumption, public and household debt, but scarce with studies and analyses about the capital and corporations and their corporate power. This paper examines the corporate power, as well the causes and consequences of other variables and other multifold factors, using a holistic approach. Such multi causal approach starts with the analysis of two authors, Thorstein B. Veblen and John K. Galbraith. In their economic analysis, they worked with evolutionary and institutionalist approach. Veblen (1899) constructed the term conspicuous consumption, which is based on evolutionary principles that are driven by the human instincts, mainly by emulation and predation, where people are trying to impress others, gain advantage and signal their status.

The notion of conspicuous consumption was also used by Galbraith when explaining the dependence effect. His next in-depth insight was the effect called revised sequence, where the consumers are not actually controlling the producers but vice versa (Galbraith, 1967). Galbraith further argues that corporations become so strong that they eventually take control over the competitors, workers and the market. They spread control and influence into politics, government, and public opinion. The worker who is at the same time a consumer becomes indoctrinated by privately owned media and corporate marketing, buying many things that he or she does not really need. The result is a huge production of unnecessary and unproductive private goods, whereas, on the other hand, there is a lack of public goods. Consumerist consumption becomes the foundation of economic growth. However, the problem is that real wages are stagnant and in a sharp contrast with the rising productivity and profits, so the workers, who are at the same time also the consumers, need to borrow money in order to maintain the standard and social status demanded by the society, the media and marketing.

Another important factor is the consequence of stagnation of mature economies, where corporations are forced to seek new markets to invest their surpluses, and where even the new technologies markets are insufficient. As a result, the financial liberalization and globalization have been imposed, and the financial sector has strongly overgrown the real sector, which results in many problems for economy and society. Financial sector also gladly credits the consumerist consumption in order to maintain demand and economic growth. Due to stagnant wages, this consumption is largely driven by borrowing. The debt

is mostly consumptive and therefore not self-liquidating. It is not an investment expecting some future cash inflow and liquidating itself with future revenues. Governments also decrease taxes for top incomes and corporate revenues and consequently worsen their balance of payments. Because of rising inequality and macroeconomic instability, public and household debts also rise in order to maintain the consumption growth. This leads to boom-bust credit cycles and eventually to a chronic weakness of economic demand.

The consequences of rising public debt, which also rises due to socializing private bubble busts, are less effective countercyclical policies. Expansionary fiscal policy by spending more on infrastructure, education, human capital and health care is constrained because of the rising public debt. Expansionary monetary policy with lower interest rate and quantitative easing, on the other hand, even reinforces inequality because of lower returns to the savers, whereas at the same time, lower costs of borrowing increase profits for corporations and stock market investors. Growing income inequality also leads to workers' inability to adapt to technological changes, including skill biased and capital biased changes that result in additional unemployment.

The paper extends the existing literature with an analysis of corporate power and its influence on consumption. Using descriptive analysis together with the causal inference and combining Darwinian evolutionary principles, anthropology, psychology and sociology with an economic analysis, we show that corporations are keen to exploit one of the most powerful human instincts of the reproduction and the display of the social status. Using holistic approach, we build a political-economic model based on logical observation, causes and consequences, as well as empirical data. There is a clear notion of a cumulative and circular causation (hereinafter: CCC) of the main identified variables. Growing corporate power is leading to consumption, driven by conspicuous consumption and consumerism, rising public and household debt, economic inequality and unsustainable growth.

The paper begins with building a political-economic model by constructing its elements of the process of causation. It proceeds with circular causation and the definition of the main system variables, and concludes with the process of cumulative and circular causation. In the end, it discusses the main findings.

POLITICAL-ECONOMIC MODEL OF CCC

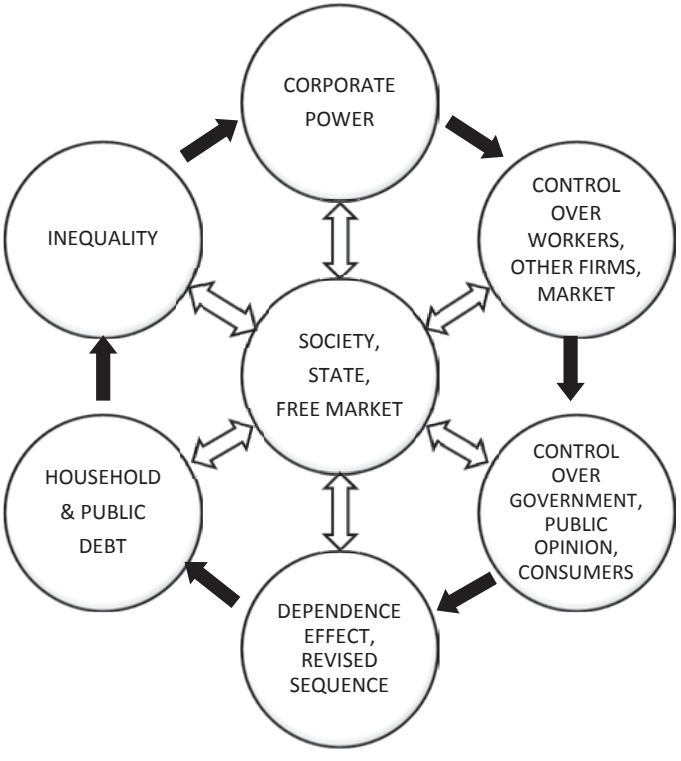
1 ELEMENTS OF THE PROCESS OF CIRCULAR CAUSATION (CC)

Political-economic model of CCC has three stages or processes: first, variables are interrelated in a sequence of causations. Second, the end of the sequence also influences the starting point of the sequence, making thus a circular causation (Figure 1). Third, variables magnify and increase from one circle to another, causing a cumulative and circular causation (Figure 7). This leads to a non-equilibrium process. The consequence is a CCC of variables which form a system that is strengthened over time. Variables rise in

time and economic implications behind this process show that such development cannot be economically and socially sustainable.

The connection of all important factors or variables into a sequence is shown in Figure 1. Variables can be described as building blocks of the sequence, forming a process of the circular causation. Each variable influences the next one. We will elaborate on each of them.

Figure 1: The process of circular causation (CC)



'Society, state and free market' is a nexus of the entire system and is a starting and crossing point which determines all other factors and variables in terms of how they are developing, forming the social and legal frame, and institutions. Each society forms its own original background and starting point through its own history and evolution. The evolution and change take a different path in each of these diverse societies, thus forming different institutions. When reaching the most recent stage of the evolution, the capitalism, there are clearly some different outcomes. There is no single capitalist system in the world, or more precisely, there are many different capitalist systems. What distinguishes them, are the institutions.

The society determines what kind of a state form suits it best in terms of its needs and development stage. Accordingly, the economic system is formed. In some countries, the state is more interlinked with the economy and its market than in others. The variety goes from state capitalism, where the state interference into economy is very strong, to the so-called free market systems, with the minimum state interference into economy. All these characteristics determine how the participants in the economy will evolve. Capitalism with its contradictions and society with its institutions set the market conditions, in which the participants can work and compete between themselves. The interests of all participants are different and sometimes even confronting. However, since the participants are mainly in pursue of their own private interest, the state has to regulate and monitor the entire market and economy in order to provide such legal framework and working economy that the goal of society's well-being is pursued.

1.1 Corporate power

There is a clear process of concentration and centralization of capital and corporate power. Corporations increase their economies of scale and scope, their international mobility, assets owned and the political power. They succeed to lower taxes, lessen the regulations, increase subsidies and grants from governments, and consequently become too big to fail. Thus, imposing on society to bail them out when necessary, corporations set the norm of privatizing the profit and socializing the loss.

Corporations take advantages over the competition because of better organization and management, higher efficiency and productiveness, technological edge, and economies of scale and scope. However, with the rise of the firms and their power, market shift more and more towards imperfect competition. When imperfect competition exists, the marginal productivity theory of distribution fails to hold and labour is exploited by powerful firms (Robinson, 1953). We do not have competitive markets with a large number of firms with sovereign consumers, but rather non-competitive markets with large firms that control the markets (Galbraith, 1952; 1967). Nevertheless, as Pressman (2007) argues, firms cannot take the chance that after undertaking expensive investment there will be no demand for their goods. They are eliminating the uncertainty of market forces by controlling it through vertical integration, developing diverse products, dealing with the consumer taste changes and long-term contracts between producers and suppliers. However, and probably the most important, by spending money on advertising, firms can actually control consumer tastes.

The next indicator of corporate power is its influence on governments through political donations and direct lobbying. As shown by CRP (2014), the US federal lobbying expenses in 2010 were about $3.55 billion, up 46 per cent from five years earlier and up 126 per cent since 2000. With about 13,000 registered lobbyists, this means that there are more than 24 lobbyists for every member of the Congress. Economic and political power of the world's top 200 corporations was examined by Anderson and Cavanagh (2000), who argue that the widespread trade and investment liberalization have contributed to the climate in

which dominant corporations enjoy increasing levels of economic and political clout that are out of balance with the tangible benefits they provide for the society. Such growing private power has enormous economic consequences, but the greatest impact may be political, as corporations transform economic clout into political power.

The world's biggest firms are transnational corporations (hereinafter: TNC). Internalization is the main determinant for the TNCs along with their pursue of optimal allocation of resources. Costs are minimized with their search for the countries with low labour costs, whereas the profits are maximized in countries with low taxes, tax evasions, tax avoidances and subsidies. Governments are actually competing for TNC's investments by changing their laws regarding the minimum wage, subsidies and taxes. Incentives for new employments make governments even more complied with TNCs' demands. Additionally, they influence the international trade agreements according to their interests. All these factors make TNCs very powerful. Nevertheless, the development of big corporations is also positive due to their vast investments and improvements of technologies and other innovations.

TNCs are actually interlinked in a very complex way because of which it is hard to see the whole picture. Consequently, there is a lack of transparency or some informal agreements or illegal cartels. In the reality, TNCs are even more connected due to various business agreements, owning of each other's shares, contracted associations, etc. The study of complex systems conducted by Battiston, Glattfelder and Vitali (2011) has shown a core of 1,318 companies with interlocking ownerships, where each of them has on average 20 connections to other companies. Having 20 per cent of global operating revenues, they own the majority of the world's large blue chip and manufacturing firms through their shares, adding thus further 60 per cent of global revenues. There is also a super-entity of 147 even more tightly knit companies, where all of their ownership is held by other members of the super-entity, which controls 40 per cent of the total wealth in the network. Actually, less than 1 per cent of the companies are able to control 40 per cent of the entire network. This super-core consists mostly of big financial corporations.

Although no common or standard measurement of corporate power exists, there are some available metrics as elaborated by Roach (2007), such as corporate economic statistics, industry concentration ratios, labour union densities and corporate ability to reduce the taxes or acquire government subsidies. The former, elaborated by UNCTAD, seems to be the most viable measurement choice of rising global corporate power.

Corporate power is actually evolving from the properties of capitalism and its contradictions, namely, monopolies or oligopolies. The capitalist system has the tendency to concentration and centralization of capital. This is particularly typical of the 20th century, with the prevalence of the major international corporations in global economy. The consequence is an exclusion of the effective price competition. Monopolies change the prices only in one direction, upward (Baran & Sweezy, 1966; Foster & Magdoff, 2009). Price competition is replaced by informal agreements and price tracking of the specific

industry leader. With such exclusion of the price competition in the economies, one of the fundamental premises of capitalist economies was demolished.

Competition resumes in line with the productivity increase and the production costs decrease. This is also done at the expense of a stall or stagnation of real wages. As a consequence, a large and growing investment surplus emerges and encounters reduced investment markets. Investment markets are reduced partly due to the maturity of the economies and partly because of the increase in the economic inequality, which in turn has a negative impact on consumption.

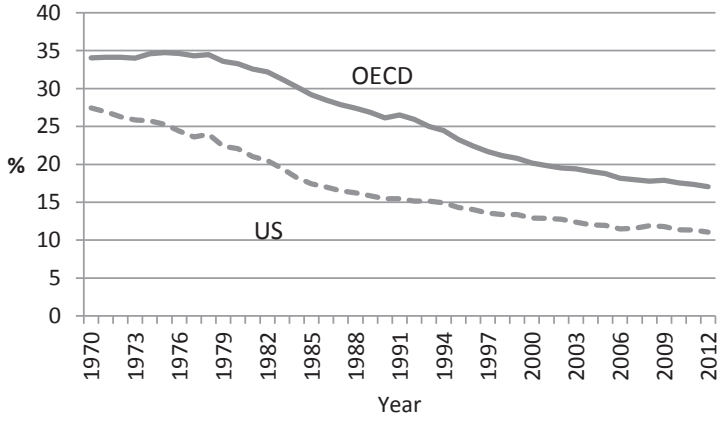
Corporate power, financial and monopoly capital for investment of their surpluses also invent new financial instruments, financialization, liberalization, globalization and other leverages of influence. Indoctrination of the consumer, with very sophisticated marketing techniques is one of the main business activities of corporations. Additional leverage is also the influence on public opinion, exercised by 'opinion leaders' and 'neutral' experts who advocate corporate interests in a very sophisticated way.

The next leverage is on politics, which becomes appropriate in times of financial and economic crises, when private firms and banks call for help and bailouts from the governments, thereby dismissing before propagated firms' mantra '*laissez faire*'. Their actual premise is the privatization of profits and socialization of losses. Therefore, the moral hazard is rewarded. When the capital investments become insufficient, they put pressure on governments for further liberalization or the increase in leverage ratio of the credit economy, allowing workers' and consumers' higher indebtedness. All this is done for further expansion of capital. With such debt leverage drive, the economy can maintain the aggregate demand for a while, but it will inevitably come to a burst of a bubble economy. Such economy is clearly not sustainable.

1.2 Control over workers, other firms and market

Because of their decreased power, workers' position in the bargaining process with the employer regarding the wage is weak. Workers' collective bargaining power is also getting weaker over time, as it can be observed in Figure 2, where the trade unions density decreases in last 40 years. In the US, the trade union density level is lower than in the OECD countries.

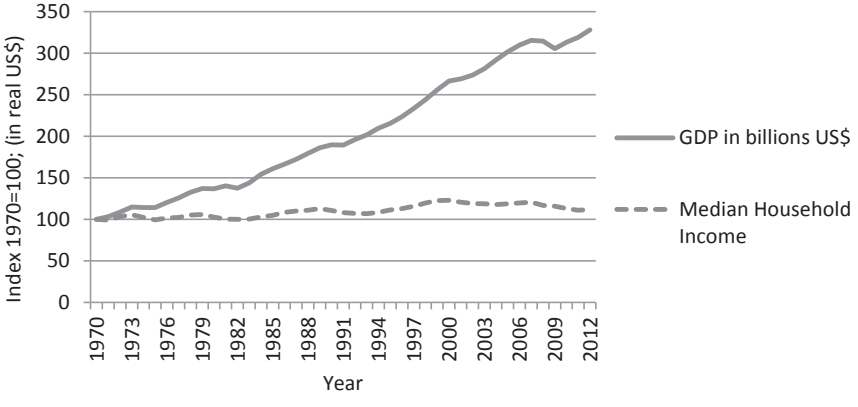
Figure 2: Trade Union density in the US and OECD countries



Source: OECD, *OECD. StatsExtracts*, 2015.

In the long term, a worker has to accept a lower wage or be satisfied with the existing one, without expecting a rise in line with the firm's productivity rise or profit. The growth of the median household income (hereinafter: **mhi**) is actually lower than the growth of GDP (hereinafter: **g**), in the US in last 40 years (Figure 3). The growth of GDP is then in turn lower than the rate of return on capital (hereinafter: **r**), (Piketty, 2014). We can observe a widening gap in the period from 1970 to 2012. Median household income stalled in that period, whereas GDP grew significantly. There are immense implications of the fact that **mhi < g**. It means that people's wealth is stagnating. Their income growth does not match the pace of the GDP growth, which causes the deterioration of their living standard and forces them into borrowing. This fundamental inequality **mhi < g < r** also means that workers' bargaining power towards employers diminishes.

Figure 3: GDP and median household income in the US (1970–2012)



Source: US Bureau of Economic Analysis, 2015b; US Census Bureau, 2015.

Alternatively, the worker can leave the current job, but the job market is volatile. On the one hand, there are fewer firms because of the process of concentration and centralization. On the other hand, the fact that there are many unemployed workers inflicts additional pressure on those still employed. The higher the unemployment rate is, the bigger the pressure on the employed workers is and the lower the amount of remuneration for which they are prepared to work is. Firms are always keen to take advantage of that fact. They always exploit unemployment as leverage in the bargaining process as long as they can compensate lost demand from unemployed consumers with the possibility of incurring debt for the consumption. As a result, they have subordinated and loyal workers who are afraid of losing their jobs.

Large and powerful firms generally control other smaller and weaker competitors (Baran & Sweezy, 1966; Foster & Magdoff, 2009). Because of their market power, these large firms set the market prices of goods and services and become the price leaders in their sector or market. Such price leadership can leave the competition with little choice but to follow the leader and equal the price if they want to keep the market share. Competition may also opt to lower their prices in order to gain some additional market share. Market leaders usually use the uncompromising strategy of lowering their prices in the short term due to their operating efficiency. This forces smaller competitors to lower their prices, too, in order to retain market share. As these smaller competitors usually do not have the same economies of scale and scope as the price leaders, their effort to equal the leader's prices may inevitably account for losses, forcing them to close the business.

The control over workers and other firms also leads to the control of the market. Markets become less competitive with a smaller number of firms and shifting from perfect competition markets towards monopoly or oligopoly markets with only a few bigger firms which usually even collaborate by making mutually beneficiary agreements or forming informal cartels. Since these powerful firms acquire enormous economic power, they broaden their influence into politics and government, directing future policy and law decision in their favour. This also explains why several state regulators do not act or act with a considerable time lapse against such cartels. These large firms or corporations aim to control the market in order to maintain and reinforce their influence and economic power, and broaden their influence even further into politics, government, public opinion and society.

1.3 Control over government, public opinion and consumers

When corporations acquire the control over workers, other firms and market, they expand their influence and control into politics, government, public opinion and consumers. Corporations first try to obtain the control inside the company, then in the nearest environment and after that in the wider environment. The process of control goes from micro to macro environment.

The revenues of TNCs are big and they have vast resources at their disposal. Their influence on all aspects of society is immense. In the US, for example, the link between

the private and the public sector is so strong that the country has almost shifted from parliamentary democracy towards corporate democracy. For example, the latest decision of the US Supreme Court that individuals are free to sponsor politicians only leads to further interdependence between rich individuals or capital and politicians. A democratic system in which the politicians are mostly elected due to the amount of invested or raised capital cannot be truly effective in the sense of common good and social well-being. Such a system favours capital. And capital means corporations and rich individuals who influence and control the legislation, politicians and government according to their vested interests.

The next in the line of controlled is public opinion. Public opinion is created by various factors, with both the private and public media. Private media are already in control and ownership of corporations, whereas public media are normally controlled by some independent bodies that are elected by parliaments or delegated by governments. Members of a parliament or government are politicians who are elected with the help of capital. The circle of private influence is thus closed. Corporations and private capital can influence both, the private and public media through various techniques, from supposedly independent experts explaining their views through the media, to influential opinion makers. This all forms public opinion in favour of vested interest of corporations and private capital.

Such domination by the interests of influential groups over major social and political decisions clearly asks the question regarding the meaning and the power of democracy in today's society (Laperche, Galbraith, & Uzunidis, 2006). Nevertheless, in spite of the evolving conflict between shareholders and managers, on the one side, and globalized technostructures and potentially corrupt corporations, on the other side, corporate behaviour remains very rational. With the use of transparent corporate communication, which also represents an important element of the dynamic competitive process and a powerful tool for the improvement of firms' performance (Lah, Sušjan, & Redek, 2016), corporations succeed in their goal. Control over government, public opinion and consumers.

The control over consumers is the most important and one of the biggest expenses for corporations. In 2005, corporations spent 230 billion dollars on advertising their products in the US media, which is approximately 1,000 dollars per citizen. The US advertising industry accounts for 2.2 per cent of GDP, absorbs approximately 20 per cent of firms' budgets for new investments, and uses 13 per cent of their corporate profits (Molinari & Turino, 2013). For controlling and influencing consumers, corporations use their economic power, the media, government and public opinion. Their internal departments of marketing use complex strategies, including all usable fields of science, from mathematics to sociology and psychology.

As shown in the empirical work by Benhabib and Bisin (2011; 2002), advertising directly affects the consumers' preferences. Corporations exploit their power through advertising in order to create new and unnecessary consumers' needs. Individuals' preferences,

which are in part a social phenomenon, are influenced by advertising. Such advertising has a relevant impact on aggregate consumption and through consumption on other macroeconomic aggregates (Molinari & Turino, 2013). The effectiveness of corporate advertising in enhancing the demand is also supported in a comprehensive empirical survey by Bagwell (2005) and by Vakratsas and Ambler (1999). How influential and persuasive the marketing is and how this can lead towards unsustainable consumption, is also shown by Mont and Power (2009). In addition to the increasing pressure and the sheer volume of the advertising industry, there are constant changes in advertising messages and in the way how they are transmitted to the changing target audience.

The most important fact is that the consequence of increasing corporate power is the shift of power from consumers to producers. Corporations are those who control the consumers' decisions through very complex spectre of influences and indoctrination. They impose the taste, fashion, social wants and other factors of consumer decision making. Corporate machinery has the entire spectre of elements in order to persuade the consumers that their choices are reasonable, ranging from the media, experts and opinion makers. The most important influencing factors include the so-called dependence effect and revised sequence, which is explained in more detail in the next part of the chapter.

1.4 Dependence effect and revised sequence

Contrary to the original sequence, where the economy is composed of competitive markets ruled by the decisions of sovereign consumers, and where the consumers control the producers and the production process with their demand, revised sequence (Galbraith, 1967) actually recognizes that this control is in reality reversed and producers have power over consumers. This power is particularly exercised with the help of marketing and advertising.

Revised sequence would not have such an effect without the presence of another effect, the so-called dependence effect. Galbraith (1958) defines the dependence effect as a concept that includes passive and active aspects. The passive aspect is the process of emulation whereby social norms and localized cultural comparisons induce consumption patterns, i.e. the social pressure to 'keep up with the Joneses'. The active aspect refers to the contriving of specific social wants and, equally important, the creation and reproduction of a consumer culture. According to Galbraith, the American demand for goods and services is not organic; it is not internally created by a consumer. Apart from the basic demand, such as food, clothes, and shelter, a new demand has been created by advertisers and the 'machinery for consumer-demand creation,' which benefits from increased consumer spending. This exuberance in private production and consumption pushes out public spending and investment. Galbraith ties consumers' debt directly to the process of want creation.

Conspicuous consumption is understood as spending money and purchasing goods and services in order to display one's own status. By doing that, people maintain or attain

their social status and, in some cases, even provoke envy. Conspicuous consumption was first introduced by Veblen (1899), who describes the behavioural characteristics of the *nouveau riche*, i. e. the social class that emerged as a result of the accumulation of capital wealth during the Second Industrial Revolution. Human instincts of emulation and predation play an important role. People attempt to impress others and seek to gain advantage through conspicuous consumption and the ability to engage in conspicuous leisure.

Today, conspicuous consumption is more a socio-economic behaviour which is particularly common in poor social classes. They display luxury goods or services in order to psychologically combat the impression of relative poverty. As Charles, Hurst and Roussanov (2007) have shown, conspicuous consumption and the visible luxury does not serve to signal the owner's status as affluent, but to avoid the negative perception that the owner is poor. The truth is that no one wants to be perceived as poor. All psychological mechanics of conspicuous consumption in a consumer society show that conspicuous consumption is a psychological trap, in which a person seeks a superior social status or the possibility to at least maintain the existing one and eliminate the stigma of being poor or the deterioration of one's social status.

Evolutionary psychology also explains another view of conspicuous consumption as a costly signal or a handicap principle (Zahavi, 1997), demonstrating a person's good socio-economic quality and his or her intention to attract economic coalition partners or sexual mates, with the aim to improve one's own status and obtain the chance of reproduction. Iredal and van Vugt (2011) also argue that altruism may have evolved because it signals underlying qualities about the individual that are important to others and may hence increase their fitness through prestige and mating opportunities.

Miller (2009) uses Darwinism to illustrate how marketing has exploited our inherited instincts to display social status for reproductive advantage. In our modern marketing dominated culture, 'coolness' at the conscious level and the consumption choices it drives is actually an aberration of the genetic legacy of two million years of living in small groups, in which social status has been a critical force in reproduction. Miller argues that advertising and marketing persuade people, particularly the young ones, that the most effective way to display their status is through consumption choices, rather than conveying such traits as intelligence and personality through more natural means of communication, such as conversation.

Such status-seeking behaviour can also be risky. Capra and Rubin (2011) argue that an evolutionary approach may also explain the differences between groups, for example, between males and females, with the former being less risk-averse than the latter since males have more variable reproductive success than females. Males may potentially increase their reproductive success much more than females. It is their status-seeking internal drive that pushes them into risky behaviour, such as risky business investments or some purchases. However, the motivation that is driven by the human instincts is not always rational. Status-seeking can be risk-seeking behaviour that does not pay off.

Further analysis leads from instincts towards habits. Veblen imposes the imperative to explain the causality. Using Darwin's notion that people are not as much the 'creatures of reason' as the 'creatures of habit', Veblen sets habits as the central concept in his institutional analysis based on instinct-habit psychology. As elaborated by Hodgson (2012), activity and habit formation precede rational deliberation, instinct is prior to a habit, habit is prior to belief and belief is prior to reason. That is the order in which they have evolved in our human ancestry over millions of years. These lower elements are necessary but not sufficient for higher elements. Habits are the constitutive material of institutions and each building or changing of an institution involves the formation or adjustment of shared habits of thought.

This incorporation of psychology into economics is very important, because individuals are not entirely rational in optimizing their behaviour, thus maximizing their utilities of given preferences. Rather, their rationality is bounded by limitations. It is also procedural, where decision makers follow some procedures and decisions that are subject of their preferences or technology and reverse. Human behaviour, its sociological determination, individual tastes or preferences cannot be explained in an over simplistic way, neither can they be mathematically modelled with some simplistic assumptions without really considering instinct-habit psychology. Analysing human motivations and human desire is crucial. It is more sensible to assume that explanation with biological evolutionary concept is more accurate and closer to reality than homo economicus assumption with rational individuals. Since everything around us is also in constant move and dynamics, it is also rational to assume that there are no static or steady states, but rather some constant dynamic movements. Hence, people and institutions, habits and beliefs are also changing and evolving.

Dependence effect and revised sequence have shown to be the most powerful corporate tools in today's economy. Corporations control workers, competitors, markets, governments, public opinion and consumers. They succeed to reverse the classical view of consumer-production relationship, namely that the consumer is the one who controls the producer. Such a revised sequence cannot be attained without the dependence effect. It is this dependence effect with its passive and active aspects that drive the revised sequence and the success of corporate advertising. The roots of dependence effect are both in conspicuous consumption and handicap principle. The latter actually drives the conspicuous consumption, the dependence effect and the corporate power.

Corporations are keen to exploit one of the most powerful human instincts of the reproduction and display of the social status, thus fostering the consumerism as a marketing dominated culture at its worst. Consumers who are at the same time also workers with stagnant real wages as a result of increasing corporate power and increasing economic inequality are eager to maintain or obtain their social status. In many cases, they do not even strive to improve their social status, but merely maintain the existing standard or hide their impoverishment.

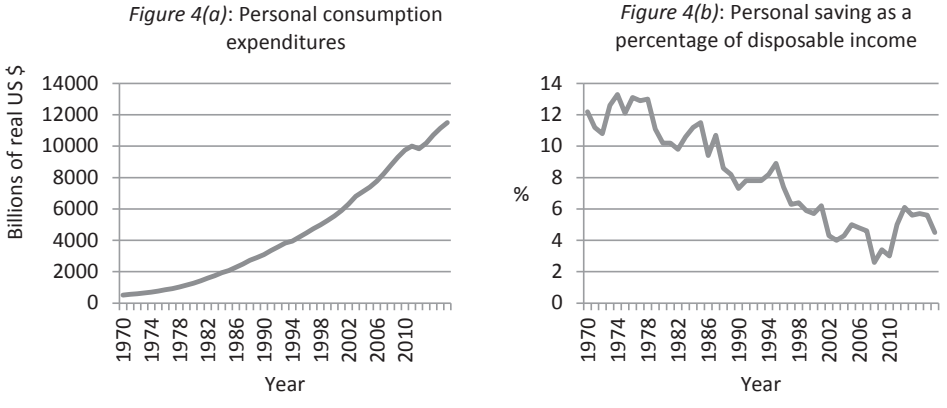
For this and other wants creations, they are even willing to borrow the money. Of course, such a debt is mostly unproductive and irrational. Most often, it does not pay off. Such a

debt is a consumptive debt and therefore non self-liquidating. It is not an investment that may bring some future cash inflow and liquidates itself with future revenues. It is a debt taken due to human instincts and therefore not an example of homo economicus. As the latest research from the field of evolutionary psychology and behavioural economy shows, the humans are still evolving and developing, and it would be sensible from marketers to substitute their paradigm regarding selling products for displaying status with products or services that imply some deeper mental traits, such as kindness, intelligence and creativity.

1.5 Household debt and public debt

Increased consumption can be observed in Figure 4. In the US, personal consumption expenditure grew sharply in the period from 1970 to 2012. In the same period, personal consumption expenditure outpaced personal disposable income, causing a drop in personal saving as a percentage of disposable income (Figure 4). The reasons for the decline in the personal savings rate are: more personal consumption and higher mandatory transfers, such as income taxes and security programs.

Figure 4: Personal consumption expenditures and personal saving as a percentage of disposable income in the US (1970–2012)



Source: US Bureau of Economic Analysis, 2015a.

On the other hand, household income stagnated or stalled. In the period from 1970 to 2012, the household income stagnated for the entire bottom 50 per cent of the household income distribution. Even 70 percentile showed only a modest increase from $64,600 in 1970 to $82.100 in 2012, in the period of 42 years. The top 10 and top 5 per cent, on the other hand, showed a sharp increase in household income (US Census Bureau, 2015)

Increased consumption and stagnated or stalled income lead into borrowing. The household debt shows a steady upward trend in the period from 1980 to 2010, both in

the US and the OECD countries (Cecchetti et al., 2011; OECD, 2015). As a consequence of people's indebtedness, more people need social help. Rising social transfers lead to a further rise in public debt which is already increasing due to the consequences of financial liberalization and the bailouts of private capital.

The transmission mechanism or a process of causation of how increasing corporate power causes rising household and public debt is the following: first, the increasing corporate power leads to increasing financial liberalization and globalization, increasing marketing and growing consumerism and consumption. Second, these increases lead to decreasing or stagnant real wages, lower taxes, lower budget income and bigger social transfers. This causes a deficit in government balance of payment and a fall in aggregate demand. Public debt and household debt rise. Last, the income and wealth inequality rise, too.

To maintain the standard due to stagnant wages people borrow money. At least two aspects need to be considered here. The first is that stagnant wages themselves present a problem because of the problematic distribution of income. This causes the income inequality, with almost entire surplus of economic growth and capital gains going to the upper class. The middle and lower classes get the income that is, considering the inflation, stagnant. The second aspect refers to the standard itself. What is a proper standard is also defined and shaped with the 'help' of the corporations. The corporate power is actually the one that influences the public opinion through the media and popular culture, pushing the ideology of consumerism in the front. With a sophisticated influence on public opinion they shape the environment, where the social norm 'keep up with the Joneses' eventually pushes the ladder higher and higher. Thus, it is the environment formed with the help of corporations and consumerism that define the standard. People are obliged to follow such a consumerist standard, because they do not want to be perceived as outliers or stigmatized as poor. To prevent this, they have to 'keep up with the Joneses'.

This debt-driven consumption is not sustainable and leads to unsustainable private demand and boom-bust credit cycles. Since the aggregate demand, particularly in the US, is driven mainly by the wrong type of debt-driven consumption, meaning non self-liquidating debt, the economy inevitably becomes unsustainable. Indebtedness only increases. The next factor is that overconsumption causes a fall in savings and consequently a fall in investments. Along with an increase in the income of the top and the income inequality gap, the fall in the aggregate demand causes an increase in borrowing of both the government and households.

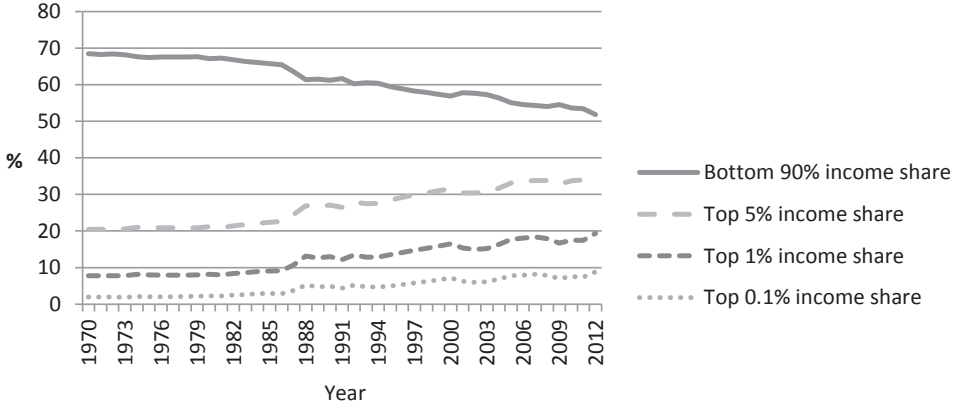
The consequence of a rising public debt—this also rises because of socializing private bubble busts and the bailouts of private banks—are less effective countercyclical policies. On the one hand, the expansionary fiscal policy, with spending more on infrastructure, education, human capital and health care, is limited due to the rising public debt. Expansionary monetary policy, on the other hand, with lower interest rates and quantitative easing increases inequality even more because of lower returns to the savers. At the same time, corporations and market investors profit due to lower costs of borrowing and higher profits on the stock markets.

In the case of tight monetary policy with higher interest rates, the rich benefit again because they can lend their money at higher rates and make profit while protecting their real wealth against inflation. The lower and the middle class are mainly borrowers, so they are faced with an additional cost of borrowing due to higher interest rates. In this situation with strong countercyclical policies, the strongest part always profits, which makes the inequality in the society only bigger.

1.6 Inequality

Decreased union densities and workers' bargaining power, along with indebted households, can be seen in income distribution. For the bottom 90 per cent of income distribution in the US, income share decreased by 16.6 per cent in the period from 1970 to 2012, whereas for the top 5 per cent, top 1 per cent and top 0.1 per cent, income share grew by 16.6, 15.4 and 11.54, respectively (Figure 5). Such an average income and income share distribution clearly show that income inequality is increasing. Gini coefficient, from OECD (2015), shows that income inequality has increased in the US and the OECD countries in the last 40 years.

Figure 5: Income share in the US (1970–2012)



Source: *The World Top Incomes Database*, 2015.

A study, conducted by Azzimonti, de Francesco and Quadrini (2012) shows that rising public debt, financial liberalization and increased income inequality are highly correlated. Trade liberalization and economic globalization increase economic inequality (Bergh & Nilsson, 2010). The index of financial liberalization, constructed by Abiad, Detragiache and Therry (2008), further shows that the world's financial markets have become less regulated starting in the early 1980s. This can be regarded as the first bigger step of corporations towards the increase in their power. Such financial liberalization and innovation have also facilitated the borrowers' access to credit that was previously denied as well as relaxed

financing constraints on the first-time homebuyers. According to OECD (2006) report, the household debt rose to historical levels in a number of countries. It has been driven by a combination of favourable financial conditions and buoyant housing markets. There have also been a number of supply-side innovations in credit markets that have eased the access to credit for lower-income borrowers and reduced financial constraints for the first time homebuyers. As OECD (2013) reports, households remain highly indebted in a large number of OECD economies.

Inequality actually increases due to a decrease in taxes (Fieldhouse, 2013) and there has been a strong correlation between cuts in top tax rates and increases in top 1 per cent income shares (Piketty & Saez, 2011). In this aspect, it is interesting how democracy is related to redistribution and inequality. The usual model of democracy presumes that median voters employ their voting rights in a democratic system to reallocate funds from the wealthier towards themselves. If the difference between the wealthier and the median voters become bigger, the redistribution should be bigger, or more precisely, when the median voters will be poorer, they will be keener to reallocate from the wealthier towards themselves. However, Acemoglu, Naidu, Restrepo and Robinson (2013) have shown that there is a limited effect of democracy on inequality, thus not confirming this standard model. Inequality tends to increase after the democratization. The reason for that can be that democracy may be captured or constrained. Although democracy changes, the distribution of 'de jure' power in society, policy outcomes and inequality also depend on the 'de facto' distribution of power. Powerful elites who see their de jure power eroded by democratization may increase their investments in de facto power, implemented in controlling the local or state law enforcement, lobbying, or influencing the party system and politicians.

With the economic growth, some sections of the population enjoy a more than proportionate rise in income, as shown by Datta (2014). This leads to an increased allocation of resources towards the production of luxury goods, which often requires more resources than the production of necessary goods. That may not only reduce the production of necessary goods but also the total production. Consumption of luxury products could be the 'bandwagon' type of luxury consumption, mediated by the level of a consumer's status-seeking predispositions, susceptibility to normative influence and the need for uniqueness (Kastanakis & Balabanis, 2012). In addition, teen attitudes towards luxury fashion brands from a social identity perspective and their need for uniqueness and susceptibility to influence (Gentina, Shrum, & Lowrey, 2016), and older consumers who relate luxury goods purchasing mainly to status reasons tend to feel younger than those who consider luxury goods purchasing primarily as a means to express their individual style (Amatulli, Guido & Nataraajan, 2015). Furthermore, there is a downward extension that fuel the continuous growth of the luxury sector and a continuum from the 'happy few' to the many less privileged (Kapferer & Laurent, 2016). Such problem of balancing consumption between the rich and the poor is, nevertheless, translating into increasing consumption of luxury goods, which could indirectly confirm rising inequality.

Excessive consumerism is also the cause of overprovided private goods and underprovided public goods, which reinforces inequality and impoverishment. As stated by Galbraith

(1958), the effect of increasing production of private goods and decreasing public goods is actually a state of private wealth and public impoverishment. Dunn and Pressman (2005) further elaborate that Galbraith follows Veblen and Myrdal, who view poverty as a cumulative and a self-driving circular causation. The poor are living in a deprived community without proper education, health care and other public services. They are deprived to get proper managerial skills and jobs or some positions in the government structure. Consequently, they cannot improve their economic and political positions or their social mobility, thus they stay trapped in this vicious circle of poverty for generations.

Impoverishment and the vicious circle of poverty, along with increased income inequality, also lead to workers' inability to adapt to technological changes, including skill biased and capital biased changes that results in additional unemployment. This further leads towards social inequality and the accompanying deterioration of their health and mental condition, not to mention the stress and bad quality of life. The study of Wilkinson and Pickett (2009) has shown that there are pernicious effects of inequality on societies: eroding trust, increasing anxiety and illness, and excessive consumption. The societies which do best for their citizens are those with the smallest income inequality, whereas the most unequal societies, such as the US, the UK and Portugal, do worst. Thus, the status and income differences have social and health consequences.

Rising corporate power thus accounts for rising income and wealth inequality. Because of the influence of corporate power on workers, markets, politics, government and society, and their increasing bargaining power towards the workers, the corporations have effectively achieved such distribution and redistribution of income that favours them and rich individuals.

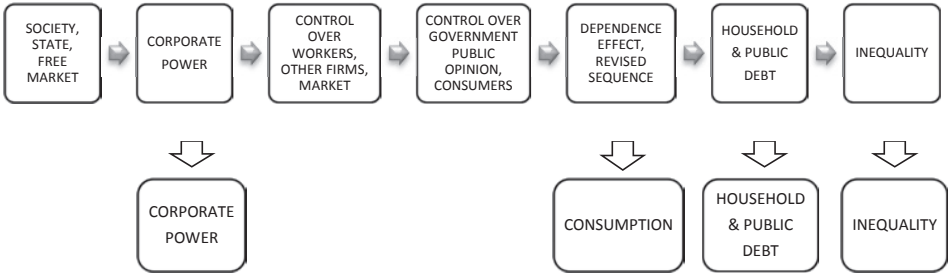
Next, the increased corporate power causes financial liberalization and reduced taxes, which brings about increased capital gains and thus an increased income gap. Additional consequences are reduced taxes that cause some budget deficits as well as reduced social transfers, fewer investments in education and human capital, less social mobility and, consequently, a vicious circle of poverty entrapment. The rising corporate power leads to increased consumerism and consumption, which, in turn, results in increased consumptive debt and increased household debt due to the stagnant real wages and increased debt of the consumers.

These increasing inequalities have an immense impact on individuals, people and society. People's life becomes worse, their indebtedness is on the rise, the possibilities of better education are fewer, and their social mobility declines. Unemployment is rising or stalling, but never really disappearing. The environmental problems and its degradation worsen the quality of life, natural resources are destroyed and have become even scarcer. Such a path is clearly not sustainable and it cannot bring about the prosperity.

2 THE PROCESS OF CUMULATIVE AND CIRCULAR CAUSATION (CCC)

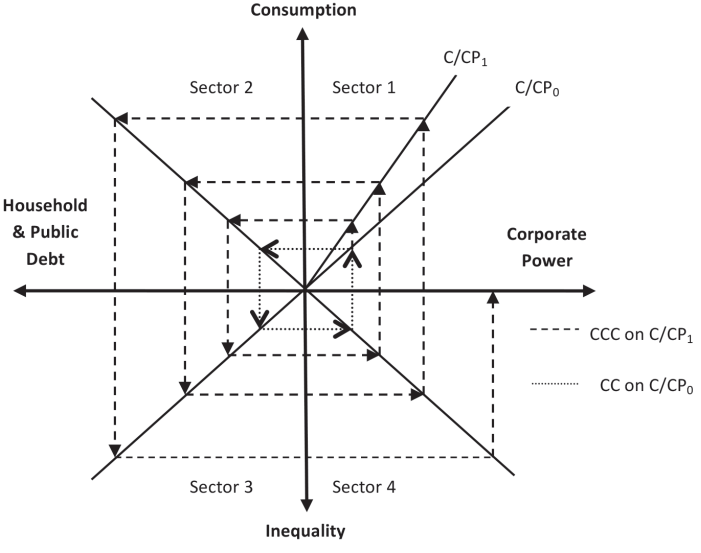
After the process of causation (C), proceeded with the process of circular causation (CC), the final stage or process of political-economic model is the cumulative and circular causation (CCC). The whole sequence of variables can be actually translated into four main variables which are quantitative. Therefore, we can observe more viable data that this model is producing. They can be measured and observed in a real life. As shown in Figure 6, these four variables are: corporate power, consumption, household and public debt, and inequality.

Figure 6: Four main variables of the process



In the final stage, four main variables are used in a four-dimension graph (Figure 7) in a Cartesian approach similar to O'Hara (2008). The construction of the graph is consistent with the defined sequence, moving from the right to the left. The movement shows a steady increase in all four parameters. At the beginning, with a static corporate power as $C/CP_{0,}$ the movement is steady and in circular causation. With the increase in the corporate power as $C/CP_{1,}$ the curve in sector 1 shifts upward and therefore generates an increase in all four parameters. The movement is cumulative in time with upward trend in all four variables.

Figure 7: The process of cumulative and circular causation (CCC)



In the first sector, the corporate power influences the consumption (Figure 7). Corporations use marketing, dependence effect, consumer indoctrination, public opinion, private and public media, influence on politics and government in order to lessen the regulations and to stimulate the consumption. They provide finance in order to incur consumer debt and revised sequence. All these combined and complex approaches ensure corporations to secure their investment and provide sufficient demand for their products and services. Such a sufficient demand for corporate products and services is attained through consumption.

In the second sector, consumption influences household debt and public debt. There are multiple transmission mechanisms working here. The first is that due to corporate power and its bargaining power towards worker on the one hand and influencing the government to dismantle the unions and worker's bargaining power on the other hand, leads to a decline in real wages. This is particularly noticeable when compared to a rise in productivity and profits. Stagnant wages and growing consumerism and consumption increase the gap between expenditures and incomes, forcing consumers into borrowing, which all leads to higher household private debt.

The second transmission mechanism is that, due to corporate bargaining power towards workers and influence on government, such distribution of income and taxation of wealth and incomes have been imposed that are in favour of the rich and impoverishes workers. Because of a rising consumption, and as a result of stagnant real wages, the workers' indebtedness grows. The consequence is that more people need social help. Rising social transfers lead to further rise in public debt. On the other hand, there is an inflow in the budget due to taxes on consumption, but this is only a fraction (around 20 per cent) of the final price that consumers pay and it is expenditure for them.

There is also an additional transmission mechanism which works due to the imposition of financial liberalization and supply-side economics by corporate power. One of the consequences is a decrease in income taxes, wealth taxes and corporate taxes. This leads to a drop in budgets' incomes, and to a further rise in public debt.

The third sector is represented by household and public debt, and it influences the inequality. Higher public debt disables the government to invest in education, health and other infrastructure, or at least to maintain the satisfactory level. Such austerities mostly affect the lower income population because they cannot afford to buy better education or health services as the rich can. The social transfers also decrease. Higher household debt causes that people cannot invest in their education or increase their savings and consequently their wealth and financial independence. Both effects are accountable for a drop in social mobility and a decrease in human capital, they worsen people's standard of living and increase the gap between the rich and the poor.

An additional transmission mechanism also works here. After financial liberalization and supply-side economics imposed by corporate power, income, wealth and corporate taxes decrease, which leads to an increase in top incomes and a decrease in stagnant incomes at the bottom of the societal ladder. Hence, the income and wealth inequality increase.

In the fourth sector, inequality influences corporate power. People who are impoverished and less equal compared to the production owners and rich capitalists represent a weaker part in economic bargaining process. Their collective bargaining power is dismantled, so they cannot improve their position. They enter into a bargaining process with their employers as individuals, with a weak union or without it. Under such circumstances, economic inequality causes a rise in corporate power.

CONCLUSION

In short, this paper extends the existing literature with an analysis of corporate power and its influence on consumption. We find that corporate power causes increased consumption by using combined and complex approaches of advertising techniques in order to secure the companies' investment and provide sufficient demand for their products and services. The advertising exploits some powerful human instincts, thus fostering the consumerism and a marketing dominated culture. Next, rising consumerist consumption influences increasing household and public debt with multiple transmission mechanisms that work simultaneously and reinforce each other.

Growing household debt and public debt further increase the inequality by disabling the government to invest in education, health care and other infrastructure, and by decreasing social transfers. A higher household debt also causes that people cannot invest in their education or increase their savings and, consequently, their wealth and financial independence. Finally, the inequality poses an increase in the corporate power. People who are impoverished and unequal in comparison to the production owners and rich capitalist are also weaker in the bargaining process. They cannot improve their position, so the corporate power only rises. With rising corporate power, a new circle of causation begins.

The main system variables are accumulating in time, which causes a slower economic growth, political instability and higher unemployment. It also causes social and health problems, fewer education opportunities, lower human capital and lower social mobility. Economic implications behind this process show that such development cannot be economically and socially sustainable.

To conclude, the theoretical work in this paper provides some ideas regarding corporate power and its influence on consumption, household and public debt, and inequality, but clearly more work has to be done. In future research, this theoretical work could be empirically tested, especially in terms of measuring the corporate power and empirical testing of the relationships between those variables of the CCC model.

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DOES A FIRM'S OPEN INNOVATION MODE MATTER?

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ABSTRACT: *Open innovation enabled smaller firms to become competitive rivals to multinationals, as it leverages the knowledge and initiatives of external sources and searches outside of firm's boundaries for commercialization opportunities. The aim of this research is to approach open innovation as a multifaceted phenomenon and to address some of the fundamental questions that arise in the literature on open innovation. Such questions include: Do different open innovation modes exist? Does it matter which open innovation mode a firm chooses? Should any specific open innovation dimension receive additional attention? We define the mode of open innovation to be a specific combination of different open innovation dimensions. In seeking answers to these questions, we used quantitative and qualitative research methods and identified four different open innovation modes: open innovators, systems engineering companies, R&D outsourcers, customer-oriented companies. Understanding the contributions of individual open innovation mode and dimension is important for implementing effective decision-making processes. The findings have important implications for CEOs when allocating (scarce) resources to the development of open innovation-related activities.*

Keywords: *Open innovation, Innovation performance, Cluster analysis, Employee* **involvement,**
JEL Classification: O31, JEL O32, JEL 033
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1. INTRODUCTION

The concept of open innovation underscores the importance of a firm searching outside of its boundaries for commercialization opportunities and using external knowledge flows to increase internal innovation activities in order to sustain its competitive advantage (Chesbrough, 2003b). As such, this concept has recently attracted substantial attention among practitioners and academics (Huizingh, 2011). Companies are now searching for new ways to enhance their business strategies and competitive advantage based on the concept of open innovation, i.e., by harnessing external ideas and leveraging in-house research and development (R&D) beyond their current operations (Chesbrough, 2003a).

Open innovation is not a dichotomous phenomenon (Chesbrough, 2003b; Dahlander & Gann, 2010). In fact, it has several distinct dimensions, including collaboration with various partners, customer involvement, venturing, intellectual property (IP) in-licensing,

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and IP out-licensing (Chesbrough, 2003b; van de Vrande, de Jong, Vanhaverbeke, & de Rochemont, 2009). A stream of research (e.g. Schroll & Mild, 2011; van de Vrande et al., 2009) has examined the intensity with which companies implement open innovation and based on this identified different open innovation modes. These studies have taken the multidimensional nature of open innovation into consideration and found that there is a trend toward the implementation of open innovation dimensions. We understand the mode of open innovation to be a specific combination of different open innovation dimensions. Lazzarotti, Manzini, and Pellegrini (2010) established a link between open innovation dimensions and a firm's innovation performance, taking into consideration partner variety (the number and type of partners with whom the company collaborates) and phase variety (the number and type of phases of the innovation process open to external collaborations) and identified four different open innovation modes. Moreover, an interesting examination has been carried out by Bianchi, Cavaliere, Chiaroni, Frattini, and Chiesa (2011) investigating the use of different open innovation modes (by mode they define the use of specific open innovation dimension) and their connectedness to different phases of innovation process by bio-pharmaceutical firms.

Although some studies that investigate different open innovation mode already exist, most of them focus on quantitative analysis, without examining deeper meanings behind the identified modes. Our research complements the existing studies by connecting quantitative and qualitative research methods and searching the answers to the questions, such as: Does it matter which open innovation mode a firm chooses (related to firm size and industry)? Why do different firms choose different modes? Should any specific open innovation dimension receive additional attention?

Thus, we aim to contribute to the existing knowledge on open innovation in the following ways. By means of a cluster analysis, we identify different modes of open innovation that are more characteristic of certain firm sizes and industries. Being able to identify these different modes of open innovation may be of great help to innovation leaders who need to prioritize among various open innovation activities when initiating open innovation programs in their firms. By providing an illustrative example of a firm from each open innovation mode, we facilitate managerial decision making in the development of overall innovation strategies and business model innovations. Drawing from an in-depth review of the open innovation literature, we assess the roles and contributions of individual dimensions of open innovation. Based on the semi-structured interviews with the CEOs we identify employee involvement as one of the most important open innovation practices, and provide additional discussion on this topic. Our finding has important implications for CEOs when allocating (scarce) resources to the development of open innovation-related activities.

2. LITERATURE REVIEW AND RESEARCH QUESTIONS

In this section, we summarize existing open innovation literature related to different open innovation dimensions and their corresponding activities, which are the basis for the empirical part of the study. Open innovation involves two important facets: inbound and outbound innovation processes (Chesbrough, 2003b). Inbound open innovation involves dimensions such as external participation, inward IP licensing, external networking, outsourcing R&D, and customer involvement. By contrast, outbound open innovation consists of outward IP licensing, employee involvement, and venturing dimensions (van de Vrande et al., 2009). Each of these dimensions may be implemented through different activities. Table 1 summarizes open innovation dimensions and associated organizational activities becoming an integral part of a firm's innovation strategy. Based on the dimensions and activities presented in the table we propose the following research questions:

Research question 1: Are various open innovation dimensions used in any specific combinations?

Research question 2: How are different modes of open innovation connected to a firm's size, industry and innovation performance?

Research question 3: Should any specific open innovation dimension receive additional attention?

In the forthcoming sections, by conducting different statistical analyses, we aim to provide the grounds for addressing these research questions. In this way, emphasizing the importance of human resources, we can help managers to recognize the rich and abundant opportunities of open innovation and to understand how different dimensions of open innovation may be implemented.

Table 1: Description of open innovation activities, their benefits, and organizational activities

Inbound open innovation activities	Benefits	Example
External participation: Equity investments in new or established enterprises in order to gain access to their knowledge or to obtain other synergies (van de Vrande et al. (2009), p. 428).		
• Joint ventures or other similar types of non-equity alliances (Maula, Keil, & Salmenkaita, 2006).	• Provides specific interdisciplinary knowledge and capabilities (Santamaría, Nieto, & Barge-Gil, 2009) and information about potential new technologies. • Facilitates the development of complementary innovations (Maula et al., 2006). • Can help companies to deal with technological uncertainty (van de Vrande, Lemmens, & Vanhaverbeke, 2006). • Joint ventures positively impact patent results, since the high level of formalization delivers extremely thorough contracts that are difficult to obtain through more informal relationships (Santamaría et al., 2009).	Bio-pharmaceutical firms ally with another company (a biotech firm or, more frequently, a large pharmaceutical company) to gain access to complementary resources (e.g., production capacity or distribution channels) needed to commercially exploit a new drug (Bianchi et al., 2011).
Inward IP licensing: Buying or using intellectual property of other organizations, such as patents, copyrights, or trademarks, to benefit from external knowledge (van de Vrande et al. (2009), p. 428).		
• Buying or licensing external IP (Chesbrough, 2003b). • Defining formal, systematic ways of searching for external technology (Chesbrough & Crowther, 2006).	• Helps gain already verified technologies that can facilitate the development of more complex products (Tao & Magnotta, 2006). • Often faster and cheaper to look outside for the supplementary technology than to develop it in-house (Chesbrough & Crowther, 2006).	Nokia has generally outsourced products outside of its core business – for example they bought network elements from SCI, Flextronics Finland, and Elcoteq Networks Oyj because there were no economies of scale for Nokia to produce it by itself, and other firms produced them much more efficiently (Dittrich & Duysters, 2007).

Inbound open innovation activities	Benefits	Example
External networking: Drawing on or collaborating with external network partners to support innovation processes, for example for external knowledge or human capital (van de Vrande et al. (2009), p. 428).		
• Collaboration with individual inventors, high-tech start-ups, academic institutions, spin-offs of large firms (Chesbrough, 2006), consultancies (Tether & Tajar, 2008), or potential competitors (Bergman, Jantunen, & Saksa, 2009; Maula et al., 2006).	• Openness to external sources enables firms to reach ideas, knowledge, and technology from the outside and exploit new innovative opportunities that positively influence a firm's innovation performance (Laursen & Salter, 2006). • By integrating different partners in innovation processes, the organization gains new creativity and know-how (Schroll & Mild, 2011).	P&G pursues several ways of collaborating with different partners. The company organizes events to showcase its most promising technologies and to provide a forum for its partners, researchers, and suppliers to meet; various Internet-based systems facilitate communications and connections, and share data and information among thousands of innovators, researchers, and users across the globe (Dodgson, Gann, & Salter, 2006). Moreover, P&G collaborates with different innovation intermediaries, such as InnoCentive, Yet2.com, and NineSigma (Dodgson, Gann, & Salter, 2005).
Outsourcing R&D: Buying R&D services from other organizations, such as universities, public research organizations, commercial engineers, or suppliers (van de Vrande et al. (2009), p. 428).		
• Collaboration, informal interaction, and discussions between researchers (Fabrizio, 2006) and first-rate individual scientists from other labs worldwide (Chesbrough, 2003b). • Financial support, mentorship, and interaction with PhD students (Chesbrough, 2006; Rohrbeck, Holzle, & Gemunden, 2009).	• Cooperation with research organizations plays an important role in fostering the innovation process (Perkmann & Walsh, 2007). It enables organizations to access new technological and scientific capabilities through the specialized and expert knowledge of scientists (Bishop, D`Este, & Neely, 2011).	Deutsche Telekom collaborates with a university through T-Labs, a University–Industry Research Centre where more than 80 post-doctoral researchers and over 100 Deutsche Telekom employees work on technology and customer-driven innovation. Informal networks of researchers enable Deutsche Telekom to access the worldwide R&D community and the latest technological trends (Rohrbeck et al., 2009).
Customer involvement: Directly involving customers in your innovation processes, for example, through active market research to check their needs, or by developing products based on customers' specifications or modifications (van de Vrande et al. (2009), p. 428).		
• Creation of user innovation community in which users can post, discuss, and review each other's business ideas (Di Gangi & Wasko, 2009). • Developing products based on customers' specifications (van de Vrande et al., 2009). • Providing users with toolkits for the development and testing of prototypes (von Hippel & Katz, 2002).	• Customer involvement can be of a great help when searching for innovative ideas about new or improved products and services, since customers seek products or services that can better address their needs (Chesbrough, 2003b).	Dell has created an online community named Dell IdeaStorm through which users can collaborate with Dell to create or modify new products and services and to share their innovative ideas, which are later reviewed, discussed, and voted upon by the user community (Di Gangi & Wasko, 2009). Lego established a platform by which users can co-create, co-design, and, in the end, also buy their unique models and designs (Piller & Ihl, 2009).

Outbound open innovation activities	Benefits	Example
Employee involvement: Leveraging the knowledge and initiatives of employees who are not involved in R&D by taking their suggestions, enabling them to implement ideas, or creating autonomous teams to realize innovations (van de Vrande et al. (2009), p. 428).		
• Establishing R&D structures that support effective communications among unrelated groups in the company (Dodgson et al., 2006). • Giving rotational assignments to employees (O'Connor, 2005). • Educating the researchers about the business side of innovation and rewarding them for identifying patentable ideas within and outside the firm (Chesbrough, 2003b).	• Employee involvement facilitates creation of innovative ideas about new or improved products/services (van de Vrande et al., 2009) and can bring in useful technology from outside the firm (Chesbrough, 2003b). • Giving rotational assignments require interaction with external partners and collaboration across divisions within the organization, which enable the sharing and borrowing of ideas (O'Connor, 2005).	According to Whelan, Parise, De Valk, and Aalbers (2011), each open innovator should have (as Google has) idea scouts who have broad external networks and the ability to identify potential ideas outside of the company, as well as idea connectors who have strong internal connections and the ability to understand and translate external information to fit internal needs and capabilities.
Outward IP licensing: Selling or offering licenses or royalty agreements to other organizations to better profit from organizational IP, such as patents, copyrights, or trademarks (van de Vrande et al. (2009), p. 428).		
• Outbound licensing of IP, patent pooling, and even giving away technology that stimulates demand for other firms' products (West & Gallagher, 2006).	• Companies can gain additional effects by exploiting their internally generated technologies outside the firm (Gassmann, 2006); this approach maximizes the returns of internal innovation (West & Gallagher, 2006).	In the past Qualcomm manufactured cellular phones and software products, but today it focuses on licensing out its code division multiple access (CDMA) technology and associated chipsets to other cell-phone manufacturers, including Motorola and Nokia (Chesbrough, 2003a).
Venturing: Starting up new organizations, drawing on internal knowledge and possibly also finance, human capital, and other support services from your enterprise (van de Vrande et al. (2009), p. 428).		
• Creation of spin-off companies (Gassmann & Enkel, 2004). • Pursuing new businesses in new industries related to a company's current business or entering new businesses by offering new lines and products (Zahra, 1993).	• Venturing helps organizations to enter new markets and industries (Block & MacMillan, 1995), reach information about future technologies and market opportunities (Chesbrough, 2003b), and provide potential opportunity for innovation breakthrough.	Deutsche Telekom created two spin-out firms Qiro and Zimory (financed by external seed capital as well as by corporate venture capital from Deutsche Telekom) that are developing technology close to its existing business but do not fit well in its innovation strategy (Rohrbeck et al., 2009).

3. METHODOLOGY AND DATA ANALYSIS

In seeking answers to research questions, we used quantitative and qualitative research methods. First, we grouped companies into distinct clusters based on the pattern of open innovation activities they were involved in. We then conducted a statistical analysis, which indicated the relationship between open innovation mode and innovation performance. In order to gain a better insight into our empirical results, we performed a series of semi-structured interviews with CEOs from illustrative firms in each cluster, which were selected based on the results of their distances to cluster centres. The combination of qualitative and quantitative research methods has enabled us to understand the research topic in more detail and, in this way, provide more valuable conclusions for managers.

3.1. Sampling and data collection

The data for the empirical study were gathered via online surveys administered to the CEOs of Italian, Slovenian, and Belgian companies. A random sample of 1,250 Italian companies was compiled from the Amadeus database in October 2012; a random sample of 2,000 Slovenian manufacturing and service firms was compiled in May 2013 from the Business Directory of the Republic of Slovenia (PIRS); and 1,500 Belgian companies were randomly selected from the BELFirst database in June 2013. We received 99 valid responses for Italy (7.9% response rate), 421 valid responses for Slovenia (21.1% response rate), and 173 valid responses for Belgium (11.5% response rate). The total sample was thus comprised of 693 companies from three countries. The sample (presented in Table 2) included a wide range of firm sizes and industries, although the majority operated in the manufacturing, information and communication, and service industries.

Table 2: Sample composition

	Slovenian sample (n = 421)	Belgian sample (n = 173)	Italian sample (n = 99)
FIRM SIZE			
Micro (0-9 employees)	33.3%	11.5%	23.3%
Small (10-49 employees)	46.60%	38.20%	27.30%
Medium (50-249 employees)	11.90%	27.20%	16.20%
Large (250 employees or more)	8.30%	23.10%	33.30%
FIRM INDUSTRY			
Agriculture and mining	2.40%	4.00%	3.00%
Manufacturing sector	34.00%	34.10%	35.40%
Service sector	41.60%	42.20%	41.40%
Construction	9.50%	10.40%	9.10%
Public sector	12.60%	9.20%	11.10%

3.2. Data analyses

We performed a cluster analysis using IBM SPSS Statistics 20. We initially used a hierarchical technique (using Ward's method and squared Euclidean distances) to determine initial solutions for the number of clusters and starting points (i.e., cluster seeds for the non-hierarchical cluster analysis). The basis for the cluster analysis were the open innovation dimensions (inward IP licensing and external participation, outsourcing R&D and external networking, customer involvement, employee involvement, and venturing) measured with a proclivity for open innovation scale developed and validated by Rangus, Drnovšek, and Di Minin (2013). All responses were evaluated on a 7-point Likert scale (i.e., 1 = *strongly disagree*; 7 = *strongly agree*). We reduced the data and built the final dimensions constituting the components for the cluster analysis using summated scales. Innovation performance was measured with Jiménez-Jiménez and Sanz-Valle (2011) measure. The measure asks respondents to evaluate various aspects of a firm's innovation performance over the past 3 years against the major competitors in the industry on a 7-point Likert scale ranging from *much worse than competitors* to *much better than competitors*. Firm size was measured according to the number of employees in the company. We distinguished among five industry sectors (agriculture and mining, manufacturing, service, construction, and public sector). The percentage share of total sales allocated to R&D investments in 2012 was measured on a 6-point scale: 0%; between 0% and 2%; between 2% and 5%; between 5% and 10%; between 10% and 20%; more than 20%.

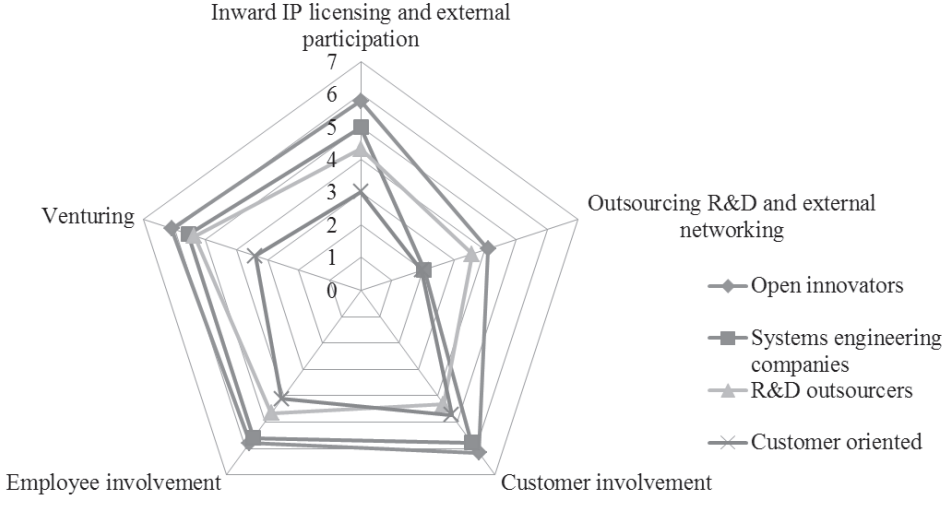
We performed k-means for a range of initial suggestions from the hierarchical technique, taking into account a four-, five-, and six-cluster solution. The final decision for the four-cluster solution was made following the suggestions provided by Hair, Black, Babin, Anderson, and Tatham (2010). We performed an ANOVA test, which supported the significant differences between the variables across the clusters (see Table 3). In addition, significant differences across the clusters were found in terms of firm size (Kruskal–Wallis test = 31.59; $p < 0.001$); on the other hand, the differences related to firm industry were non-significant (Chi-Square = 18.63; $p = 0.116$).

Table 3: Final cluster centres (Mean values) and ANOVA test

	Open innovators ($n = 242$)	Solution implementers ($n = 212$)	R&D outsourcers ($n = 139$)	Customer-oriented companies ($n = 100$)	F ($p < 0.001$)
Inward IP licensing and external participation	5.79	4.99	4.32	3.01	225.43
Outsourcing R&D and external networking	4.10	2.04	3.58	1.96	313.56
Customer involvement	6.15	5.77	4.32	4.73	136.54
Employee involvement	5.79	5.60	4.66	4.12	94.63
Venturing	6.08	5.55	5.35	3.39	220.40

With the cluster analysis, we recognized different modes of open innovation, i.e., a specific combination of various dimensions of open innovation. The results of the cluster analysis presented in the spider web diagrams (Figure 1) suggest that a large majority of the 693 companies included in the analysis were involved with at least one dimension of open innovation. This finding denotes a more general strategic orientation among practitioners to open their innovation processes. With the aim of finding out why firms choose different combinations of open innovation activities, and how effective they are in implementing those open innovation dimensions, we collected additional qualitative data from the CEOs of selected companies. Based on the final cluster centres we identified the top 10 most representative companies from each open innovation mode (i.e. the ones that were the nearest to the centre) and carried out semi-structured interviews with CEOs of two companies per cluster. The goal of the interviews was to obtain deeper understanding of why companies opt to use a specific open innovation dimension, how they perform it, and which benefits and potential barriers are related to these activities.

Fig. 2: Graphical demonstration of the clusters and their performance in terms of the individual dimensions



4. RESULTS

Below we provide results of the findings from semi-structured interviews, further analysis related to open innovation modes and innovation performance and additional discussion on the importance of the employee involvement dimension which was identified as the most vital among selected open innovation dimensions.

4.1. Results of the cluster analysis

Mode 1: Open innovators. The first mode comprised the largest group at 242 firms with the highest percentage of large organizations intensely involved in all aspects of open innovation, such as inward IP licensing and external participation. They build long-term relationships with customers and partners, and heavily involve their employees in the innovation process. Their projects are customer-oriented and customized to meet the customers' requirements. A good example of this mode is the firm with which we conducted an interview. They develop measures and test solutions to improve the quality of products and processes for the manufacturing and service industry. Their approach to open innovation can be illustrated with the following statement: "Openness nourishes the ongoing search for depth, new knowledge, will to change, innovation." They see openness as a way for enhancing the creation of new businesses and the development of new technologies, thereby facilitating relations and the creation of international excellence networks; in turn, such networks design future markets and technology applications.

Mode 2: Systems engineering companies. The second mode involved 212 firms practicing most open innovation activities with the exception of outsourcing R&D and external networking. This may be because firms in this mode implement solutions that are developed for large customers in B2B markets. These firms tend to be smaller compared to the firms in the first and third modes. An illustrative example of this mode is a small firm developing off-the-shelf, custom-designed digital television solutions. This company actively searches for and teams up with potential partners, and then they jointly develop their product – software. They see open innovation "as a kind of initiative that gathers companies around some innovation topics to communicate openly about what they are doing from an innovation standpoint and potentially develop some joint projects. The main benefits are related to boosting creativity and innovation in the company, gaining new and fresh ideas, achieving faster time to market, and sharing the development costs."

Mode 3: R&D outsourcers. The dominant characteristic of the 139 firms in the third mode, which were predominantly medium-sized companies, was their inclination towards outsourcing R&D and external networking dimension. The mission of the illustrative firm in this mode has always been to create a link between academia and industry. Such firms typically have very well developed R&D activities and are also active in design, quality control, testing and analysis, and consulting. As the interviewee said: "we collaborate with different partners, from researchers to companies and consultancies, with an aim to access the knowledge we miss internally but is essential to the process of solution development."

Mode 4: Customer-oriented companies. The smallest mode was made up of 100 firms that were mostly micro- to small-sized firms characterized by the weakest orientation toward open innovation activities, although they seem to cooperate with their customers to a certain extent. An illustrative example of this mode is a micro-sized company specializing in the development and production of consumer goods. As the firm's CEO stated: "There are several benefits of collaboration with customers, such as direct feedback on the product, customer loyalty, and brand building. Customers who like one brand are willing to help this brand (even for free); to reveal their ideas of improved or new products/services; to spread good words and (unconsciously) promote the brand." The customer-driven strategy may be associated with their size and line of business. Since they focus on the development and production of consumer goods, the experiences, wishes, and needs of the customer matter the most when developing new products. On the other hand, customer involvement is the least risky and cheapest strategy of open innovation, and so smaller companies can afford it.

4.2. The relationship between open innovation mode and innovation performance

In order to evaluate whether meaningful differences exist among a firm's innovation performance and a firm's open innovation mode, we analysed innovation performance. Significant differences across the open innovation modes were found in terms of both innovation performance (Kruskal–Wallis test = 91.51; $p < 0.001$) and the percentage share of R&D investments of total sales (Chi-Square = 57.23; $p < 0.001$). The values of the means and medians for innovation performance and cross-tabs comparisons for R&D investments indicated that the first mode, labelled as "open innovators," tended to have superior innovation performance (median = 5.33), investing more in R&D. "Open innovators" were followed by "systems engineering" mode firms (median = 5.00), "R&D outsourcers" (median = 4.50), and "customer-oriented companies" (median = 4.00). Our findings support the existing notion in the literature that for a firm to excel in innovation performance, it needs to open up in all aspects of the innovation process.

Additionally, when conducting semi-structured interviews with the CEOs an interesting observation was found. They all agreed on the importance of collaboration and external sources for the innovation success, however the strongest emphasis was made on the open innovation dimension related to internal part, i.e. employee involvement. Therefore, we discuss the dimension of employee involvement in more detail below.

4.3. Why is employee involvement important in the process of open innovation?

Although open innovation emphasizes the collaboration and networking with the external partners, the insights from the interviews revealed that employees remain the key component in innovation process. This suggests that business practitioners should include a focus on the development and personal growth of employees in their innovation strategies.

One of the firm's capabilities, which is related to open innovation and important for exploitation of internal and exploration of external resources is absorptive capacity. It facilitates firms to learn from partners, reach information from the outside and transform and integrate it internally (Wang & Ahmed, 2007). Absorptive capacity is defined as a dynamic capability through which a firm identifies, assimilates, transforms and commercially apply the knowledge acquired from the outside (Zahra & George, 2002). In so doing, firms gain firs-mover advantage in exploiting new technologies and thus sustain a competitive advantage (Cohen & Levinthal, 1989).

The absorptive capacity of the employees to identify, integrate, and combine externally acquired knowledge and technology facilitates innovation outcomes, and this absorptive capacity strengthens with increased professional competencies (Knudsen, 2007). Professional competencies of employees can be improved by forming rotational assignments. Different internal and external interactions foster the sharing and borrowing of ideas (O'Connor, 2005). Employee involvement may also be enhanced by establishing and stimulating R&D structures that support effective communication among unrelated groups in the company (Dodgson et al., 2006). Employees can be motivated by establishing reward systems for the identification of patentable ideas within, as well as outside of, the firm's boundaries (Chesbrough, 2003b).

A company has to stimulate all of its employees, not only those involved in R&D, to elicit their ideas for new or improved products/services, and to enable them to implement those ideas (van de Vrande et al., 2009). By according its employees a certain amount of responsibility, decision-making capacity, and freedom, a company may create a more relaxed atmosphere that may in turn lead to fresh, creative ideas and innovations. Giving employees more decision-making capacity motivate them to provide the best possible performance in their job, reflecting in their pride and loyalty towards the organization (Irawanto, 2015).

5. DISCUSSION

The aim of our research was to contribute to a deeper understanding of how aspects of open innovation are implemented in companies and ascertain their role in specific open innovation mode. We began with a systematic overview of the possible dimensions of open innovation, the specific benefits of those dimensions, and illustrative presentation of their implementation. In so doing we have aimed to help managers to recognise the rich and abundant opportunities of open innovation. We continue with cluster analysis on a large cross-cultural and cross-industry sample of companies based on their involvement with specific dimensions of open innovation. In so doing we presented diverse modes of open innovation that may be implemented by firms related to their industry focus and size. Although previous studies already introduced different modes of open innovation, our study complement existing research by providing deeper inferences related to identified modes. Being able to identify these different modes of open innovation may help innovation leaders when initiating open innovation programs in their firms.

The results of the cluster analysis indicated that there are different modes of open innovation that may be implemented by firms related to their industry focus and size. Significant differences among the modes of open innovation were found only in terms of firm size, which is in line with the existing literature (e.g. van de Vrande et al., 2009).

Overall the results emphasize a general trend among companies to open up their innovation processes and provide further evidence for existing findings in the literature (e.g. Schroll & Mild, 2011; van de Vrande et al., 2009). In particular, our results suggest that the larger the size of the company, the higher the probability that such a company is involved in several aspects of open innovation. Our results, therefore, support and refine the findings of van de Vrande et al. (2009) who suggested that companies more inclined toward closed innovation are more likely to be small and to involve customers in their innovation process to a certain extent. The results also indicate that the firms in the first open innovation mode, i.e. open innovators (which open up in all aspects of the innovation process), exhibit higher innovation performance. Therefore, managers should strive to stimulate as many open innovation activities as possible. As one interviewee in this study said: "It doesn't make any sense to develop technology internally, if external partners do this better and cheaper." However, researchers and managers still have a hard time finding the right balance between open and closed behaviour (Van der Meer, 2007).

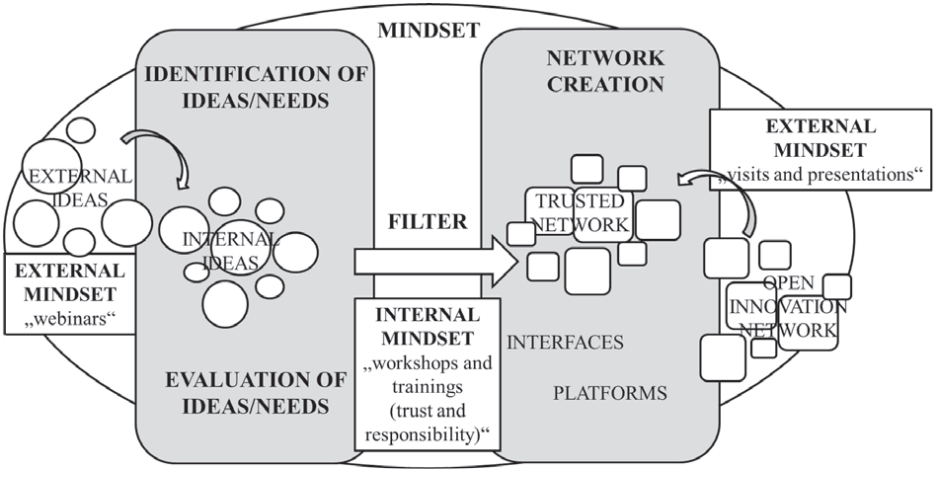
Nevertheless, this does not imply that small companies are by nature closed. The evidence on the implementation of open innovation among small and medium sized enterprises revealed that more formalised open innovation practices such as IP licensing, venturing, and external participation are employed only by a minority because they require financial investments, formalised contracts and a structured innovation portfolio approach to manage the risks (van de Vrande et al., 2009). Based on our interviews with the CEOs, we have been able to provide guidelines for the successful implementation of open innovation. An important aspect emphasized by the interviewees is establishing the right proportion of ideas initiated externally. One CEO noted that "each customer has its own wish (and idea of improved product/service) and when striving to satisfy all of them you can find yourself in a circle of constant improvements, which can be costly and time consuming. Instead of focusing on promotion, marketing and development you spend precious time for improvements which may in turn often satisfy only a minority of potential customers." Therefore, business practitioners should find a balance between accepted and rejected ideas. We suggest companies develop a system for idea assessment that will show which ideas may bring the anticipated outcome and which do not offer sufficient benefit (e.g., because of high assimilation and developmental costs, etc.). As showed by Salter, Ter Wal, Criscuolo, and Alexy (2014) there may be negative effects of too much openness caused by the integration and approval costs managing collaboration with a large number and type of external sources.

5.1 Implications for practitioners: Strategies for the effective implementation of open innovation dimensions

In order to better understand the pathways toward the successful implementation of open innovation and the challenges confronted by an innovating company during the implementation process, we build on the observations made during the semi-structured interviews. For example, Ms. Lucia Chierchia, Open Innovation Manager at Electrolux Group indicated that the first step to successful open innovation implementation is the definition of the strategic areas of the company for which they want to scout solutions. This is followed by the process of idea filtering and evaluation. In her view, "the key challenge of open innovation is the creation of synergies between people inside and outside the company." So, the implementation of open innovation should start with the identification of an open innovation network – that is, the network of partners outside of the trusted network of the company (i.e., the network of long-standing partnerships with known and trusted associates). However, the foundation for the successful implementation of open innovation is the establishment of the open mindsets of internal and external participants. The human centeredness posture of the open innovation process is key to successful open innovation implementation; still, there is a law of inertia connected with open innovation processes, precisely, the Not Invented Here (NIH) syndrome (favouring internally-developed solutions over externally-developed, although the latter one may be better) and the IP paradigm. (People specifically in R&D are convinced that innovation should be related to patenting.) Therefore, companies need to invest in activities that nurture open mindsets. For example, firms can stimulate the open innovation mindset of employees by offering workshops and training, establishing trust and reliability among employees, giving employees space to explore the open innovation and make decisions on their own, refraining from pushing employees into bounded and constrained thinking processes, presenting successful stories, and, in this way, showing that innovation is not necessarily invention; innovation does not require control of IP, but rather is the creation of new value for customers and consequently new value for the company. On the other side, open innovation mindsets should also be promoted externally, for example through free webinars and presentations of good practice for external partners.

Based on our quantitative and qualitative analysis the first thing firms have to establish for open innovation to flourish is a culture which stimulate employee involvement in innovation processes. After that we suggest several steps to be followed when implementing open innovation: (a) identify potential internal and external ideas for new or improved products/services; (b) evaluate these ideas based on three criteria (consumer opportunity, business opportunity, alliance viability); (c) create a network of partners (not only a trusted network, but also an open innovation network of new, unknown partners that has to be enlarged continuously); and most important (d) facilitate human centeredness by stimulating open mindsets internally and externally. The main steps for the successful implementation of open innovation are presented in Figure 2. Since the model base on the additional interviews carried out in the second part of the research we present it as a recommendation and needs further testing before we can generalize it.

Fig. 2. Steps for successful implementation of open innovation.



Adapted from Lucia Chierchia, Open Innovation Manager at Electrolux Group

5.2. Limitations and future research

Although our study has provided an extensive overview of open innovation and broad evidence for the separate aspects of this phenomenon, it has several limitations. The research was based on the use of cross-sectional data, which limits the understanding of the development and implementation of open innovation over longer periods of time. Longitudinal data may provide evidence as to how this phenomenon evolves over time. The study included three European countries; however, due to smaller sample sizes in Italy and Belgium, the study joined the three samples into one, not taking into account the specificities of each nation. Future research may incorporate larger samples to test the proposed research questions, as the samples of Italy and Belgium in this study were marginal. Encompassing greater international context and distinguishing among countries may provide some additional insight into the evolution of open innovation. Moreover, as stated in the previous section, the model presented in Figure 2 is only a potential model for successful implementation of open innovation and needs further testing and development. The inclination of smaller companies towards closed innovation presents an interesting avenue for future research which may search answers to the questions on how to overcome the barriers related to the lack of financial and human resources of smaller companies to execute more open innovation activities. Our research indicated the importance of the human centeredness for open innovation processes; nevertheless, more evidence is needed on this aspect. Therefore, an intriguing opportunity for future research could be an examination of the competencies that business practitioners need in order to effectively implement and lead the open innovation process, as well as the abilities employees need in order to understand the process and its complexities. More evidence is needed on the

training of employees (i.e., how to train and motivate employees to overcome the NIH syndrome and to establish trust) and understanding the importance of open innovation.

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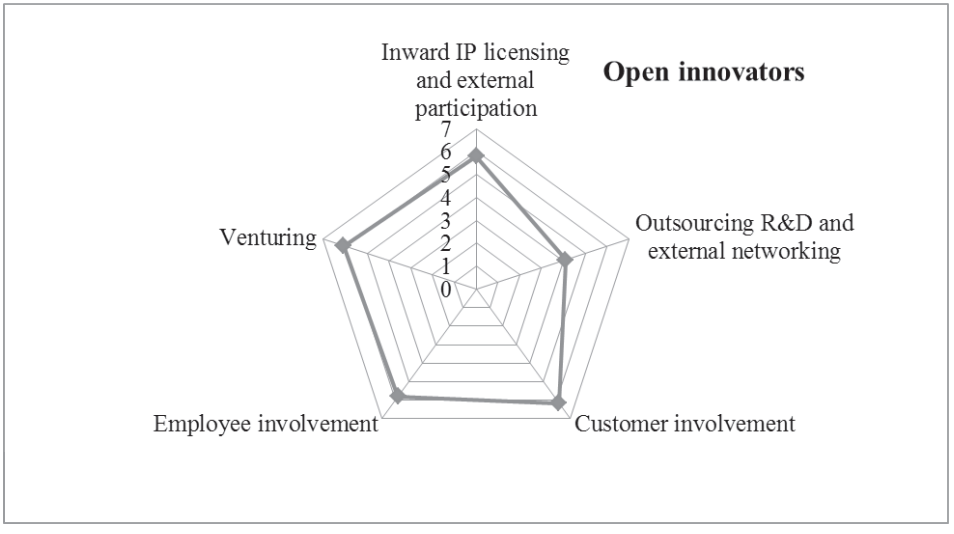
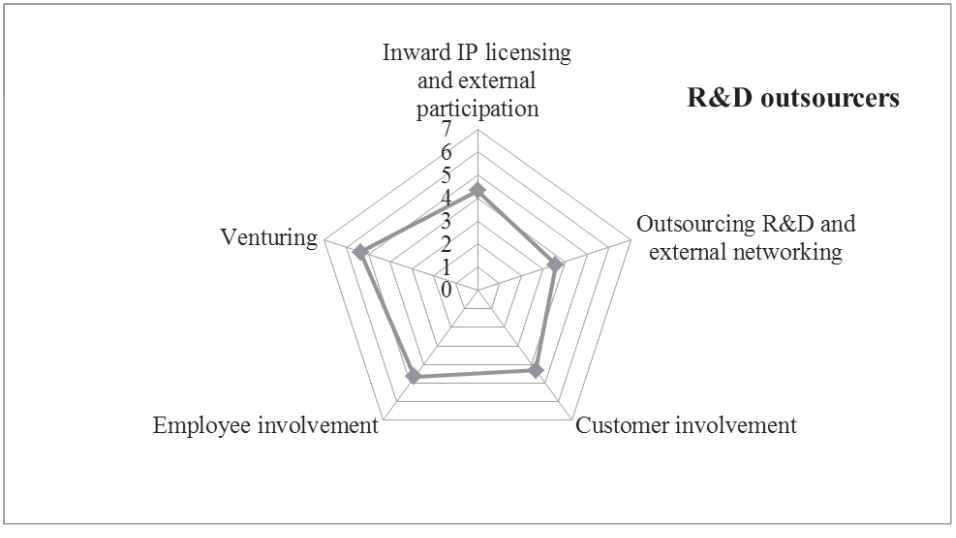
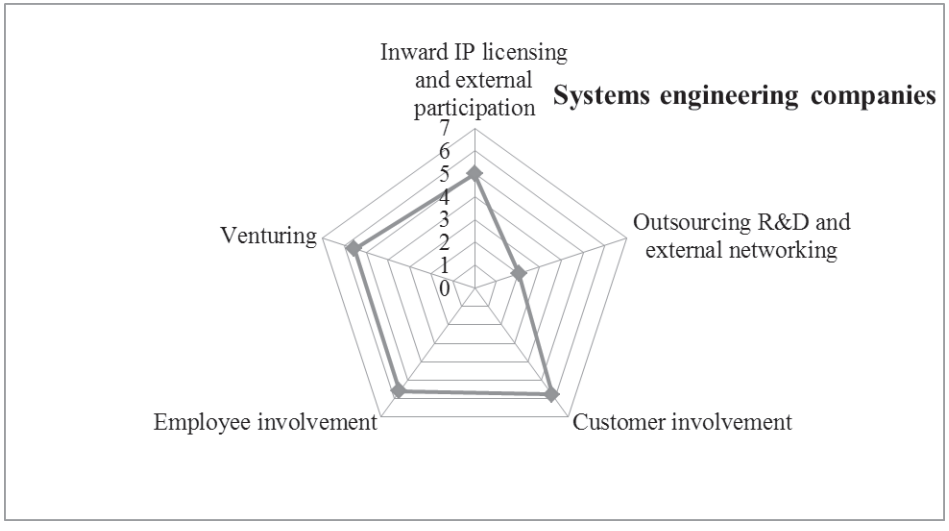
APPENDIX: Graphical demonstration of each cluster and its performance in terms of the individual dimensions






Systems engineering companies
Inward IP licensing and external participation
Outsourcing R&D and external networking
Customer involvement
Employee involvement
Venturing
0
1
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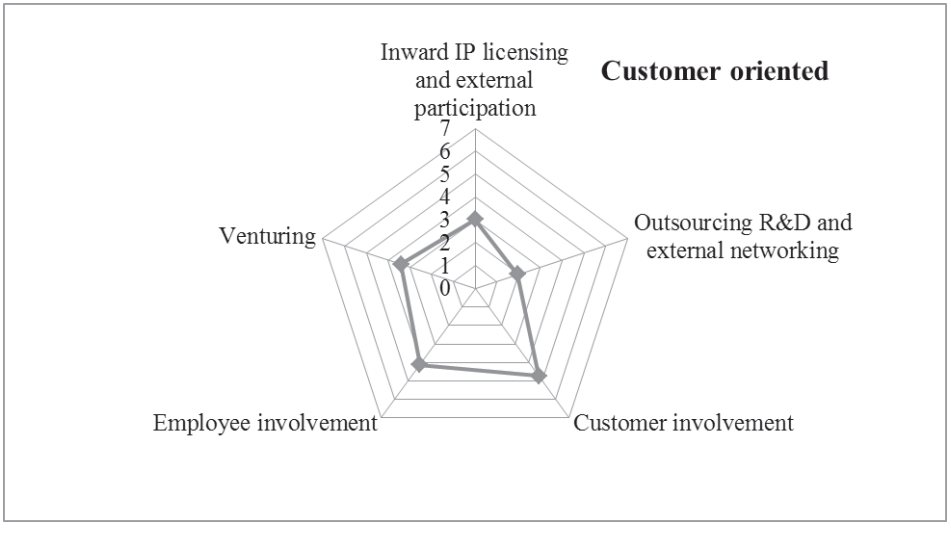
Customer oriented
Inward IP licensing and external participation
Outsourcing R&D and external networking
Customer involvement
Employee involvement
Venturing
0
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DETERMINANTS OF OUTSOURCING SATISFACTION: THE CASE OF SLOVENIAN SMEs

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ABSTRACT: *In contrast to large firms, small and medium-sized firms (SMEs) face different kind of challenges in outsourcing. The existing research on SMEs' outsourcing is sparse and inconclusive. Therefore, the purpose of our paper is to find out whether managers of SMEs are in fact satisfied with outsourcing, and what affects their satisfaction. We conducted an empirical analysis on a sample of 249 Slovenian SMEs. Our study extends the existing knowledge about outsourcing in SMEs, especially in the field of determinants that have an impact on satisfaction with outsourcing. Our first contribution is the improved definition of outsourcing that can be used in all companies regardless of their size. This definition is better suited for the research of SMEs than existing definitions that take into account larger companies. Our second contribution refers to our findings that SMEs mainly perform strategic outsourcing that is based on ad hoc collaboration, which is the opposite of the existing theoretical and empirical findings. This means that companies are exposed to bigger risks and lower satisfaction with outsourcing. We identified and discussed four determinants that affect satisfaction with outsourcing: reasons for outsourcing, credibility criteria (referring to external contractors), risk factors, and outsourcing difficulties (problems). The reasons for outsourcing affect the satisfaction with regard to strategic outsourcing, the credibility criteria have an effect on satisfaction with traditional outsourcing, and outsourcing difficulties affect both.*

Keywords: *outsourcing, satisfaction, risk, SMEs, traditional outsourcing, strategic outsourcing*
JEL Classification: M10, L20, L26
DOI: 10.15458/85451.48

1 INTRODUCTION

Outsourcing is management tool with many advantages. It has become a strategic imperative as organisations seek to reduce costs and specialise in a number of core areas (Gerbl, McIvor, Loane, & Humphreys, 2015). In the past, outsourcing was a tool for larger companies to achieve goals, whereas smaller companies often provided services that were outsourced. Nowadays, small and medium-sized companies also outsource certain business activities and thus lower costs, increase revenues, and affect owners' and managers' satisfaction by reaching set goals.

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Commons (1931), Coase (1937) and Williamson (1975) explain that firms decide to outsource when the costs of internal activities are higher than purchasing products and services on the market. When external contractors mainly perform the same activities, yet they perform them better, faster, and for a lower price, we speak of traditional outsourcing (Kavčič, Snoj, Tavčar, & Jezovnik, 2009; Mazzawi, 2002; Rebernik & Bradac, 2006). When firms stop focusing only on transferring extra activities and take into account that they could increase their revenue, we speak of strategic outsourcing. The latter is directly connected to performing firm's main activity, therefore, it is essential how we define the collaboration with an external contractor (an occasional or long-term contract). Barthelemy (2001), Laciti and Hirschheim (1994), and Quelin and Duhamel (2003) think that long-term collaboration is one of the keys for successful outsourcing.

When we speak of successfulness in SMEs, we can identify it with the satisfaction expressed by owners or managers. When examining satisfaction with outsourcing in SMEs, we took into account the advantages of outsourcing, which were identified in Greaver's (1999) study. To firms, these advantages represent reasons for outsourcing. As every tool, outsourcing also has its disadvantages that have to be considered. Quinn and Hilmer (1994) state the disadvantages that represent risk factors for firms. When making decisions regarding outsourcing, firms also comply with criteria that help with assessment of an external contractor's credibility. After the introduction of outsourcing, it is necessary to check whether any problems keep occurring due to risk factors.

In contrast to large firms, small and medium-sized firms (SMEs) face different kind of challenges in outsourcing management (Hätönen & Eriksson, 2009). The existing research on SMEs' outsourcing is sparse and inconclusive. Therefore, the purpose of our study is to determine whether managers of SMEs are in fact satisfied with outsourcing, and what affects their satisfaction. To answer these questions, we first have to define the difference between buying and outsourcing. We conducted qualitative research of directors of SMEs and quantitative research in Slovenian SMEs (n = 249). We used several statistical methods for data analysis. With the chi-square test we studied the ways of collaboration between buyers and external contractors in the case of traditional outsourcing and strategic outsourcing. We used the independent *t*-test, where we checked the average values of an individual satisfaction element according to the type of collaboration. For analysis of determinants on satisfaction with outsourcing, we used factor analysis and multiple linear regression analysis. We determined what kind of outsourcing is used by SMEs and how they use it, which are the determinants of satisfaction with outsourcing, and how they affect the final outsourcing success.

One of the surprising findings is that in most cases SMEs use a strategic type of outsourcing based on *ad hoc* collaboration, which negatively influences satisfaction with outsourcing and brings additional risks into the business. We discovered the reasons (e.g. quality and access to new knowledge) that affect satisfaction with strategic outsourcing, whereas the criteria for choosing an external contractor (e.g. a firm's reputation on the market, experience) affect the satisfaction with traditional outsourcing. Problems (e.g. loss of control over external contractor) affect the satisfaction with traditional, as well as strategic outsourcing.

Our findings about the determinants of outsourcing satisfaction contribute to the existing entrepreneurship and management literature. Moreover, our findings have implications for the owners and managers of SMEs that are already using outsourcing or intend to do so. Another important contribution of this paper is the introduction of an improved definition of outsourcing suitable for companies of all sizes, which is not the case in present definitions focusing only on large companies.

The remainder of the paper is organized as follows. In the next section, we discuss the existing literature and develop the hypotheses. Section 3 describes the research method. Sections 4 and 5 present the findings and discuss the implications of the results for theory and practice. The final section summarizes the main findings, contributions, limitations, and suggestions for future research.

2 LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1 Definition of outsourcing

Researchers define outsourcing differently. Yang et al. (2007) define outsourcing as an abbreviation for the expression 'outside resource using.' Consequently, numerous authors define outsourcing as every activity performed for a company by an external contractor. Stupica (1999) specifies outsourcing as a legal transfer of any activity of the company into an external environment. As the emphasis is on any activity and the external environment, the options for outsourcing are numerous. A broad definition of the discussed area raises a question about the difference between outsourcing and buying (purchasing).

Schaaf (2004; in Kavčič, 2007, 2009) defines outsourcing as a term representing the legal transfer (long-term or permanent) of activity, which used to be performed in-house, but is now outsourced. Šink (1999) has a similar belief about outsourcing that a company lets external specialists provide certain activities that were previously performed in-house. Kubr (2002), Greaver (1999), and Dolgui and Proth (2013) define outsourcing as contractual exclusion of activities that will not be carried out by the company any more. Therefore, the company decides that another company will provide the outsourced activities. Zhu, Hsu, and Lillie (2001) argue that the word 'outsourcing' is a transfer of the responsibility for a specific business function from a group of employees to a group of people not employed in a company. Outsourcing is defined in more detail by Bergant (2004), who claims that not every company supplier is necessarily an external contractor, as well. The definition of outsourcing only includes providers of services, which the company has or could have carried out itself.

On the contrary, outsourcing should be considered even when a company purchases products or services from an external contractor, despite not producing or providing them itself in the past (Gilley & Rasheed, 2000). Only in this case can innovations be one of the consequences of outsourcing as argued by Oshri, Kotlarsky, and Gerbasi (2015). To outsource is a business decision that a company will not carry out a certain activity.

Linder (2004) gives a completely different definition of outsourcing. He perceives outsourcing as purchasing services, which the company once carried out itself, or the majority of similar companies usually carry out themselves, from an external provider. For example, if the company uses an external contractor for the purposes of production, most managers will think the company outsources production. When a company never produced a product itself, they will have the same opinion.

To summarize, we think the definitions mentioned above do not thoroughly differentiate between buying and outsourcing. For example, let us focus on the metal products industry. The company Inoks produces inox floor siphons. For each siphon they need grating, but the company does not produce gratings itself. When siphon dimensions are standardized, the company purchases the grating from a store with technical products. In the case of unstandardized siphon dimensions, the company develops a plan to manufacture the grating and forwards it to another company (Grating). In both cases, another company produced the grating for Inoks, and we could say that both cases were an example of outsourcing, according to Yang et al. (2007). According to Kubr (2002), Greaver (1999), and Dolgui and Proth (2013), neither case represents outsourcing, because the company Inoks never manufactured gratings in-house and does not have the capability of doing so. Linder (2004) considers both cases as outsourcing, as it is usual that the company, which manufactures inox products, also manufactures gratings for its products.

We found out that existing definitions of outsourcing are not suitable to define outsourcing in SMEs. The difference between buying products or services and outsourcing is not clear or logical. We came to a conclusion that 'outsourcing' could be defined in a way that slightly differs from the definitions of other authors. We propose the following definition: "*We speak of outsourcing when a company gains products and/or services that are exclusively adapted to that company's business procedures and similar companies might perform them in-house*." Let us examine the example from a previous paragraph. The company Inox manufactures siphons. For its siphons the company needs gratings that it does not manufacture itself but instead buys on the market. If the company Inox orders the production of non-standardized gratings with an external contractor, we speak of outsourcing, because the external contractor adapted its product exclusively for Inox. Yet, if the company Inox buys a standardized grating from a hardware store, we do not speak of outsourcing, but rather of buying.

2.2 Outsourcing types in SMEs

Outsourcing is a widely accepted business tool for achieving business objectives (Rebernik & Bradac, 2006). Commons (1931), Coase (1973), and Williamson (1975) explain that companies decide to outsource when the costs of internal activities are higher than the costs of purchasing products and services on the market. Nevertheless, the costs are hard to determine, as it is necessary to include manufacturing costs, the handling of an external contractor, as well as to take into account information asymmetry, limited rationality, and opportunistic behaviour (Hewitt-Dundas, 2001).

Reducing costs is one of the basic and most common reasons for outsourcing. When external contractors mainly perform the same activities, yet they do it better, faster, and for a lower price, we speak of traditional (operational) outsourcing (Rebernik & Bradac, 2006). In their research, Kavčič and others (2009) also think Slovenian companies are, according to outsourcing, in their first phase of development, therefore, in the phase of reducing costs. They mainly hand over simple activities to outsourcing, where risks, failure consequences, and the possible end of collaboration are essentially smaller as transferring services that are tightly linked to the company's main activities. For example: the company Bakery bakes bread and wants to reduce its costs. Among other employees, there is a person employed that is responsible for accounting. The company decides it will not manage its own accounting anymore, but will instead hand over the service to an accounting firm (an external contractor). The company wanted to reduce its costs by hiring an external contractor, yet it had no connection with baking bread – its main activity. Traditional outsourcing focuses on outsourcing non-core activities with the purpose to lower the costs due to the external contractor's economy of scale (Mazzawi, 2002).

However, when companies not only think about transferring side activities to an external contractor, but also to increase their sales with the help of outsourcing, we speak of strategic outsourcing. For example: the company Bakery wants to improve their products and expand the capacity of baking bread due to additional orders. It decides not to modernize the line for preparing dough, in order to buy the dough from a company called Dough (an external contractor) instead. Dough (not the company) is a very important bread ingredient, but the "Bakery" believes it can bake more bread and also the most quality bread on the market in collaboration with the external contractor. The company wanted to increase their sales in an area that is directly connected with baking bread (the main activity). In this case, the company focuses on the service that it does best, like baking bread in the example before, yet it simultaneously orders services and products from an external contractor that can make them better and can significantly benefit the final product and service. Šink (2002) argues we can benefit most from outsourcing advantages if we do not consider it as a short-term saving measure, but as a strategic potential to develop and maintain sustainable competitive advantages.

Kavčič (2007) believes that businesses usually hand over services to external contractors from the area of cleaning, security, information technology, and warm meal preparation. Even though most cases represent traditional outsourcing, we have to be careful, as these activities can have strategic importance for certain companies. Let us look at the case of cleaning. A service business that is an online retailer hires an external contractor to clean their work space. In this case, the cleaning service does not directly affect the quality of services provided by the online retailer; therefore, we speak of traditional outsourcing. But if the laboratory from a biochemical institute finds an external contractor to clean the laboratory, the cleaning service is of key importance in order to achieve the final research results of quality and strategically affects the organizational performance. In this case we speak of strategic outsourcing. The consequences of badly managed strategic outsourcing are far worse than that of traditional outsourcing.

In both cases of outsourcing, traditional and strategic, we speak of the partnership between two companies. A partnership can only be successful if expectations between partners are consistent, realistic, and clearly defined. Kavčič et al. (2009) say that formally, the most sustainable source of power is ownership or another, similar type of ownership connection. A less sustainable source is a contract between two or more participants, and the least sustainable are the interests of alliance participants. These are three ways of collaboration that, in theory, have differently sustainable sources of power and consequently, an impact on the successfulness or satisfaction with the partnership. Although some authors (Barthelemy, 2001; Lacity & Hirschheim, 1994; Quélin & Duhamel, 2003) think that long-term collaboration is one of the keys for successful outsourcing, not all authors agree. Brown (1997) argues that in order to successfully cooperate, it is necessary to form short-term contracts with an external contractor so he/she is constantly under pressure thinking the collaboration could end any time. He/she works better under that pressure than he/she would if a long-term contract had been signed. In both cases, the basis of collaboration is a contract that clearly defines the expectations of both partners - which are the foundation of a successful business relationship. According to this, we state the following hypothesis:

H1: The most common way of collaboration between two companies, in strategic and traditional outsourcing, is in the form of a contract.

2.3 Satisfaction with outsourcing in SMEs

We speak of satisfaction with outsourcing when outsourcing is successful, so first, let us define the concept 'successful.' According to the Oxford Dictionary (Oxford, 2016), 'successfulness' means the accomplishment of an aim or purpose, which usually differs between small businesses and large businesses. In most cases, the primary goal of large companies is to make profit for company owners. Certainly this goal is also common in SMEs, however, the owners and managers of these companies often pursue other goals that are not directly linked to profit (Cooper & Artz, 1995). Owners, who are in many cases also the managers of their companies, often identify themselves with their businesses in social life. Therefore, their criteria of success can be different. Among those criteria are: company size, which can reflect the businessman's success in society; high quality services, which position him ahead of competition; the range and quality of fixed assets, which can fundamentally exceed a company's needs; free time that a businessman can give to his friends and family; social connections, which enable him a different social status, and so on. These criteria are not always linked to good accounting statements, so a certain company's successfulness or business activities within the company cannot be judged based on financial performance.

Because successfulness is defined as the accomplishment of an aim or purpose (Oxford, 2016), and achieving that aim or purpose triggers the feeling of satisfaction, we can compare the successfulness of SMEs to the level of contentment of owners and managers of those enterprises (Cooper & Artz, 1995). With this assumption we equate the level of satisfaction with outsourcing with the successfulness of outsourcing in SMEs.

Technically speaking, the relationship between a firm that outsources activities and a provider of these activities is similar to the relationship between a buyer and a seller. In certain literature the terms used are 'outsourcing buyer' (a firm that seeks a provider to perform activities it wants to eliminate), and 'outsourcing seller' (a firm that offers to perform eliminated activities). Kothari and Lackner (2006) state the elements that have value from a buyer's point of view: product or service (quality, technical characteristics), accessibility (reliable delivery, available information), experience (solving complaints), and costs (price, other expenses). Based on this information, we can define the elements that have to be taken into account when we speak of satisfaction with outsourcing: price, the quality of products and services, solving problems or complaints, the flow of information between companies, expertise, and knowledge of the external contractor.

Satisfaction with certain elements (price, quality of products and services, solving problems or complaints, the flow of information between companies, expertise, and knowledge of the external contractor) is affected by many dimensions (determinants), and is almost impossible to include entirely in one study. Therefore, we only focused on certain determinants (explained in the following paragraphs) while studying the satisfaction with outsourcing.

The first dimension includes the type of collaboration between firms when it comes to outsourcing. The two most common types of collaboration are *ad hoc* collaboration and contractual collaboration. We explained more about collaboration in the introduction and Section 2.2, where we outlined the opinions of authors (Barthelemy, 2001; Lacity & Hirschheim, 1994; Quélin & Duhamel, 2003) stating that a key to successful outsourcing lies in long-term contractual collaboration. Based on this assumption, we can set the following hypothesis:

H2: The type of collaboration between two companies affects the satisfaction with outsourcing.

The second dimension incorporates the benefits of outsourcing, which Greaver (1999) identified in his research. These benefits represent the reasons for outsourcing. Many authors discuss why it is better to outsource certain business activities. For the purpose of our study, we use Greaver's (1999) classification, listing the following reasons for outsourcing (Bradač, 2009):

- *Organizational reasons:* their effects can be the improvement of efficiency (a company focuses on activities it does best), improvement of flexibility, and responsiveness to changed terms and conditions and product demand, and organizational transformation. Lu and Goh (2014) add that many companies have resorted to outsourcing their supply chain management functions partly or entirely. *Developmental reasons:* their effects can be the improvement of a company's performance, access to new knowledge and technology, improved management and control, gaining innovative ideas, and improving the company's credibility. Kahouei et al. (2016) claimed that training courses and seminars are an effective way of transfering knowledge and skills from outsourcing providers to staff working in an organisation.

- *Financial reasons:* their effects can be the decrease of needed investments into a company's assets, using resources for other purposes, and obtaining financial means when transferring assets to an external contractor.
- *Revenue reasons:* their effects can be accessing the market and business opportunities through an external contractor's connections, and increasing the sales and production capacities.
- *Cost reasons:* their effects can be reducing the costs due to an external contractor's effectiveness, and the change of fixed costs into variable costs. Kahouei et al. (2016) also agree with this reason.
- *Staff reasons:* their effects can be to enable the employees' career development and to increase the commitment of employees that work in supporting areas of the company's business.

We assume that reasons that encourage the outsourcing decision influence the satisfaction with outsourcing. Based on this, we form the following hypothesis:

H3: The reasons for outsourcing affect the satisfaction with outsourcing.

The third determinant affecting satisfaction with outsourcing in SMEs corresponds to risk factors. As every tool, outsourcing has drawbacks that represent a risk for failure or less satisfaction for a company that decides to outsource. Outsourcing drawbacks Quinn and Hilmer (1994) state that handing over certain business activities or processes to an external contractor can have the following consequences (Šink, 1999):

- *Loss of core capabilities:* In the past, many companies decided to outsource activities or production of certain product parts that seemed unimportant at the time, while they simultaneously taught external contractors how to produce certain products and carry out activities on a high quality level. After several years of collaboration, when they discovered that suppliers cannot supply the demanded quantity anymore, or they do not want to do so, they came to a disappointing conclusion that they have lost the core competences (skills and knowledge) to produce the parts themselves once again. Moreover, they could not have prevented external contractors from collaborating with their rivals or from acting independently on the market. Frishammer (2015) also stated, that even if the transfer of non-core knowledge benefits a competitor, the competitive standing of the firm could be decreased.
- *Decreased possibility of cross-functional collaboration:* Connecting the experience and knowledge of individual experts from a company's different business-functional areas offers many new solutions. A common thought in companies is that there will be less similar collaboration and corresponding results due to outsourcing. For this reason, companies should demand that in R&D projects employees cooperate with outsourcing providers, especially in the case of collaboration that can offer numerous new innovations.
- *Loss of control over external contractor:* Problems in outsourcing can occur when the external contractor's priority areas do not match the buyer's. Most successful outsourcing cases show that it is very important or rather essential that both enterprises engage in a

close relationship and mutually exchange reports all the time on an operating level as well as on the highest managerial level, and that they trust each other. In the case of conflict between a company-buyer and an external contractor, the buyer can put pressure on external contractor's managers and key personnel. Nevertheless, serious delays can still occur if a buyer does not have the effective market power over an external contractor. Therefore, some buyers resort to extreme solutions and claim ownership over the key equipment parts needed for producing parts they buy. When priority areas of a buyer and an external contractor differ greatly, the buyer can simply take away his equipment and stop the whole production of the external contractor.

- *Hiding information:* It is important to mention the problems that occur due to hiding of information, which can be an important outsourcing drawback. Some external contractors can hide information essential for normal business. Therefore, the external contractor can have problems with the work force, material supply, and similar items, yet it does not tell the buyer. After the problems occur, it is too late for the buyer to find another external contractor. A similar problem can occur in companies where external contractors have information that would be hard for a company to obtain from other external contractors. For example, companies have this information if they conduct marketing research, develop computer applications, and law experts have it as well; this is basically all information that a buyer or any supplier would reproduce in the same manner. These external contractors can impose a price, which, in fact, mirrors the monopoly; however, the price is still lower than the price of information collected by the company itself. Frishammer (2015) also stated that, an external party with knowledge of internal business ratios could use this information to gain power in negotiations with the focal firm.

Risk factors, which are represented as a drawback of outsourcing, influence the satisfaction with it. Based on this, we form the following hypothesis:

H4: Risk factors affect the satisfaction with outsourcing.

The fourth satisfaction determinant refers to credibility criteria. Among the criteria for choosing an external contractor, we include prior collaboration with the company, good financial records of the company, a company's reputation on the market and experiences, price, and trust. Based on these criteria, companies evaluate the credibility of external contractors. The right choice of an outsourcing provider has a positive impact on the productivity and performance of the client company (Chang, Yen, Ng, & Chang, 2012). Therefore, such criteria are also frequently used in other buying decisions. Based on these, we form the following hypothesis:

H5: Credibility criteria affect the satisfaction with outsourcing.

The fifth determinant reflects outsourcing difficulties (problems). We can already expect having difficulties in cases of outsourcing drawbacks, which represent risk factors for companies. Problems can occur in traditional, as well as strategic outsourcing, when core competences are lost, possibility of cross-functional collaboration is decreased, control

over an external contractor is lost, or the contractor hides information. These elements were already described in more detail in the section about risk factors. Even though these elements are the same, the difference between risk factors and difficulties is that companies are more or less aware of risk factors before they start the process of outsourcing, whereas difficulties occur when a certain activity has already been performed by an external contractor.

H6: Outsourcing difficulties affect the satisfaction with outsourcing.

3 RESEARCH METHODS

We tested hypotheses using an empirical study based on a structured survey questionnaire (see Appendix 1). The population included micro, small, medium-sized, and large enterprises registered in the Republic of Slovenia (see Table 1). In our survey, we only included companies where we had access to information regarding company owners or managers. The survey was conducted on a sample of 509 companies. The sample was structured and based on the percentage of micro, small, medium-sized, and large companies in Slovenia (see Table 1).

Table 1: Structure of companies in population and in the sample by size

Company classification	Micro	Small	Medium sized	Large
Number of employees	0-9	10-49	50-249	250+
Number of companies	177,235	6,897	1,971	330
% of companies	95.1%	3.7%	1.1%	0.2%
No. of companies in the sample	244	3	2	3
% of companies in the sample	96.8%	1.2%	0.8%	1.2%

Source: Statistical office of the Republic of Slovenia, 2015.

In the sample, 252 Slovenian companies out of 509 answered the questionnaire (almost a 50% response rate). The value of Cronbach's alfa is 0.899, which indicates great questionnaire reliability. Data collecting took place between December 11 and December 26, 2015. The average time to answer the questionnaire was seven minutes. The percentage of respondents was 61% female participants and 39% of male participants. Most of the participants (96.8%) work in micro businesses (0 to 9 employees). 1.2% of the participants work in small companies (10 to 49 employees), the same percentage goes for large companies (more than 250 employees), and only 0.8% of participants work in medium-sized companies (50 to 249 employees). The majority of participants work in micro, small or medium-sized businesses, which was the focus of our study. Hereafter micro and small businesses are considered as the same category of small businesses, and the answers from large companies were excluded from further analyses, as they are not the focus of this study.

In the study, we were also interested in the region of the companies' headquarters, because the country's regions vary in stages of development, have different impacts on the economy, and consequently on inter-organizational collaboration. Most of the respondents are from Central Slovenia (36.1%), which is also the most developed region, followed by Drava region (11.9%), the Sava region (11.9%), and Upper Carniola (6.7%). Six percent of participants are from the Mura region, 4.8% are from Carinthia, and the same percentage from Southeast Slovenia. These areas are followed by North Primorska (3.6%), South Primorska (2.8%), Lower Sava (2.4%), and Inner Carniola (2%). The least amount of participants come from the central Sava region (0.4%), while 1.6% have headquarters abroad, and 0.8% did not want to answer that question.

We asked companies to select the industry of their core business. Most participants come from the information and communication industry (8%), trade (7%), and construction industry (6%). The fewest companies come from public administration (0.4%), and gas, electricity, and water supply (0.8%). The results show that 11% of the participants were not able to classify the company in any of the offered industries, 9% selected administrative and support service activities, and 23% classified their company among other services.

For a statistical analysis of the obtained primary data, we used the software package SPSS 22.0 (SPSS Inc., Chicago, Illinois, USA). When testing the hypotheses we considered the values statistically significant, when the p value was lower than 0.05. Numerical data are described with adequate median values and measures of variability, and written data with frequencies and presented with figures. We used bivariate (model with two variables) and multivariate (model with more than two variables) statistical methods. We used factor analysis to test whether all the items measure the same underlying dimension (satisfaction, reasons, risk factors, credibility criteria, difficulties). We tested the first hypothesis (H1) with the chi-square test, where we studied the ways of collaboration between buyers and external contractors in the case of traditional outsourcing and strategic outsourcing. To test the second hypothesis (H2), we used the independent t-test (two independent samples), where we checked the average values of an individual satisfaction element according to the type of collaboration (*ad hoc* collaboration, contractual collaboration). To test all other hypotheses (H3 – H6), we used multiple linear regression analysis. As follows, we present our findings.

4 RESULTS

The study showed that 64% of the respondents already outsourced at least one activity. Among those, 44% decided on traditional outsourcing, 12% decided on strategic outsourcing, and 44% of the respondents already experienced traditional, as well as strategic outsourcing. To test the hypothesis H1 (The most common way of collaboration between two companies, in strategic and traditional outsourcing, is in the form of a contract.) we used a chi-square test and received the following data. In the case of traditional (operational) outsourcing, business is usually conducted in the form of a contract (see Figure 1). Seventy-six percent of respondents, who already outsourced at

least one of the company's activities in order to reduce costs, made a deal in the form of a contract, 23% in the form of *ad hoc* collaboration, and 1% in the form of ownership collaboration. Thirty-four percent of respondents that strategically collaborated with external contractors for the purpose of increasing revenues made a contract deal, 60% conducted *ad hoc* collaboration, and 5.7% conducted ownership collaboration. The differences between a group of companies that outsourced traditionally and those who outsourced strategically are statistically significant (chi2 = 34.9, P = 0.00).

With our study we wanted to discover how SMEs are satisfied with outsourcing, and which determinants affect the level of satisfaction the most. To find out the level of general satisfaction, we asked respondents the following: "On a scale from 1 to 7 evaluate general satisfaction with outsourcing, where 1 represents very dissatisfied and 7 represents very satisfied." We found out that 38.6% of the respondents were satisfied (value 6) with outsourcing, and 34.6% were very satisfied (value 7) (see Figure 2). Moreover, 5.3% of the respondents (values 1-3) were not satisfied with outsourcing in general, while 6.1% of respondents were neither satisfied nor unsatisfied with outsourcing (value 4). The average value of general satisfaction on a scale from 1–7 was 5.9.

Figure 1: Comparison of types of collaboration (contractual, ad hoc *or ownership collaboration) and types of outsourcing (traditional, strategic)*

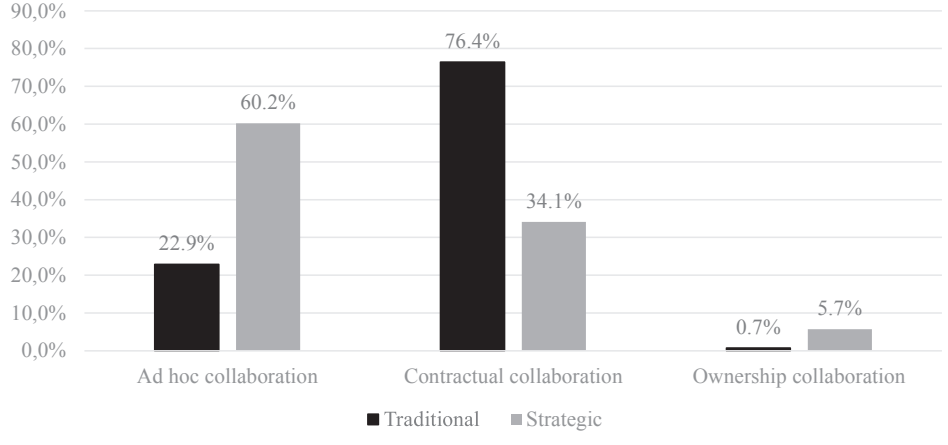
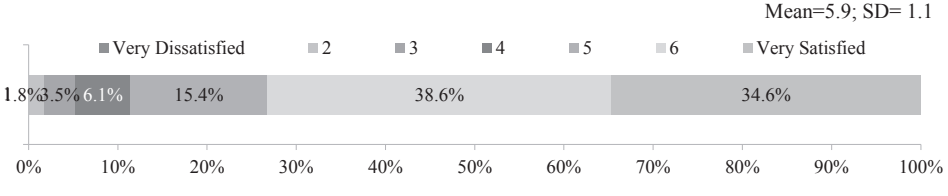


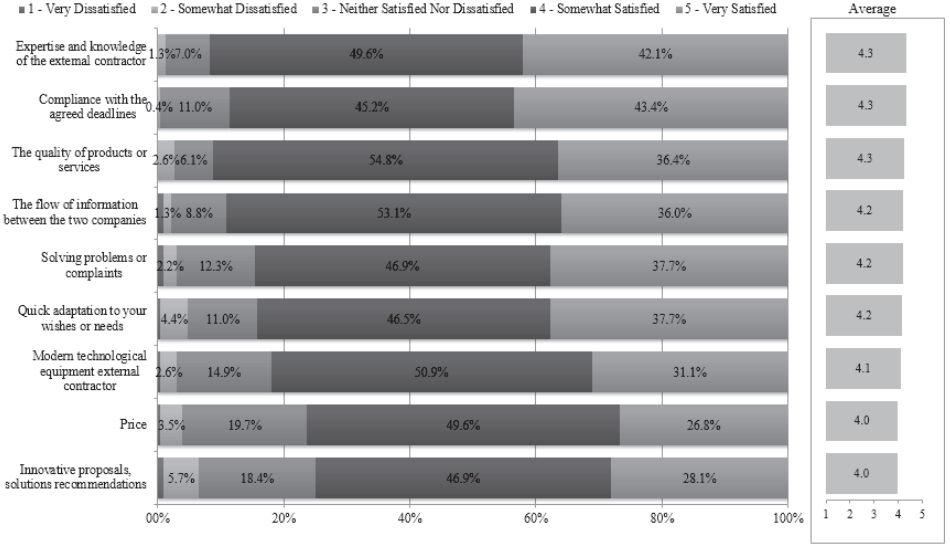
*Figure 2: General satisfaction with outsourcing**



**Data for very dissatisfied (value 1) is not shown as the value was equal to 0.*

We were also interested in the outsourcing satisfaction by individual elements: price; quality of products and services; solving problems or complaints; the flow of information between the two companies; expertise and knowledge of the external contractor; modern technological equipment of the external contractor; innovative proposals, solutions, and recommendations; and quick adaptation of wishes and needs of the company that outsources. Respondents evaluated their satisfaction with a particular element on a scale from 1 to 5, where 1 meant they were very dissatisfied with the criterion, and 5 meant they were very satisfied with it. The results are presented in Figure 3.

*Figure 3: Satisfaction with outsourcing by individual elements**



**Data regarding the value '1' is not shown due to extremely low value.*

Further analyses were carried out with pre-structured data, which means we analysed associations and not companies. The sample consisted of 252 companies that answered the questionnaire. Three large companies were excluded from further analyses. 91 companies had no experience with outsourcing. The rest of 158 companies answered as follows: 70 experienced only traditional outsourcing, 18 experienced only strategic outsourcing, and 70 experienced both. This means we received 228 answers – associations, which are analysed further on. For example: Company A only answered the questions in relation to traditional outsourcing, Company B answered the questions in relation to strategic outsourcing, and Company C answered the questions that applied to traditional, as well as strategic outsourcing. In our case, three companies answered, and we got four answers – associations (traditional 2x - A, C; strategic 2x - B, C).

Hypothesis H2 (the type of collaboration between companies affects the satisfaction with outsourcing) was tested with a *t*-test, where we compared the average value of individual elements of satisfaction based on the type of collaboration between companies. With

further data analysis we wanted to examine if certain type of collaboration (*ad hoc* or contractual collaboration) affects satisfaction with outsourcing (see Tables 2 and 3). Table 2 shows there are differences between types of collaboration. With every element the average satisfaction is higher in the case of contractual collaboration. To find out if differences are statistically significant, we used a *t*-test for two independent samples (see Table 3). We found statistically significant differences in the case of three satisfaction elements: solving problems and complaints, expertise and knowledge of the external contractor, and modern technological equipment of the external contractor.

Table 2: Comparison of average values of satisfaction elements according to types of collaboration

	Type of collaboration	N	Mean	Std. Deviation
Price	*Ad hoc* collaboration	85	3.91	.796
	Contractual collaboration	137	4.03	.804
The quality of products or services	*Ad hoc* collaboration	85	4.19	.779
	Contractual collaboration	137	4.29	.620
Compliance with the agreed deadlines	*Ad hoc* collaboration	85	4.21	.709
	Contractual collaboration	137	4.39	.656
Solving problems or complaints	*Ad hoc* collaboration	85	4.04	.932
	Contractual collaboration	137	4.28	.694
The flow of information between the two companies	*Ad hoc* collaboration	85	4.13	.856
	Contractual collaboration	137	4.28	.627
Expertise and knowledge of the external contractor	*Ad hoc* collaboration	85	4.20	.720
	Contractual collaboration	137	4.40	.612
Modern technological equipment external contractor	*Ad hoc* collaboration	85	3.96	.865
	Contractual collaboration	137	4.18	.706
Innovative proposals, solutions, recommendations	*Ad hoc* collaboration	85	3.91	.908
	Contractual collaboration	137	3.99	.857
Quick adaptation to your wishes or needs	*Ad hoc* collaboration	85	4.05	.925
	Contractual collaboration	137	4.24	.733

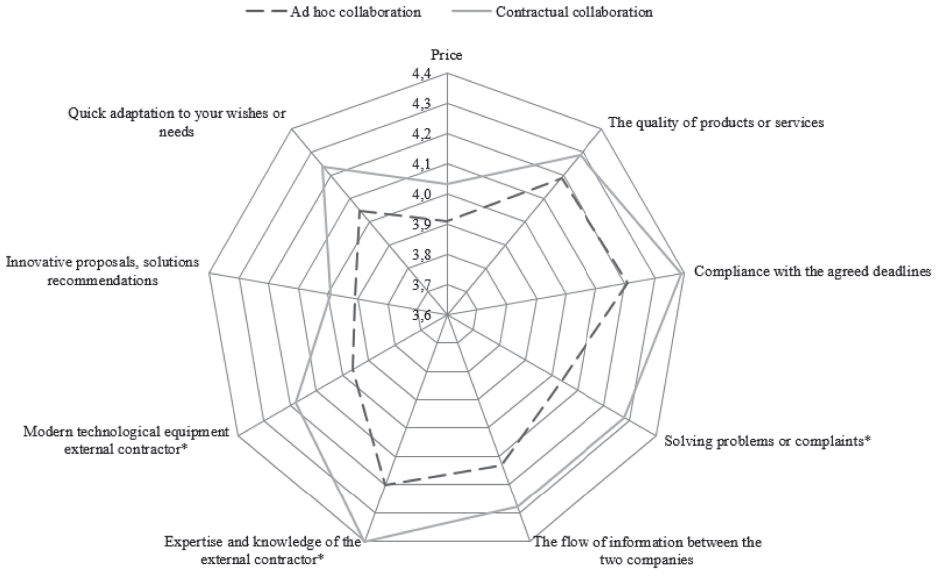
Note: 1 = very dissatisfied, 5 = very satisfied

Table 3: T-statistics of satisfaction elements according to type of collaboration

		Levene's Test for Equality of Variances		*t*-test for Equality of Means		
		F	Sig.	T	df	Sig. (2-tailed)
Price	Equal variances assumed	.002	.961	-1.115	220	.266
	Equal variances not assumed			-1.118	179.507	.265
The quality of products or services	Equal variances assumed	.650	.421	-1.096	220	.274
	Equal variances not assumed			-1.040	148.837	.300
Compliance with the agreed deadlines	Equal variances assumed	.065	.800	-1.875	220	.062
	Equal variances not assumed			-1.841	167.732	.067
Solving problems or complaints	Equal variances assumed	1.269	.261	-2.211	220	.028
	Equal variances not assumed			-2.067	141.417	.041
The flow of information between the two companies	Equal variances assumed	1.090	.298	-1.482	220	.140
	Equal variances not assumed			-1.380	139.644	.170
Expertise and knowledge of the external contractor	Equal variances assumed	.090	.764	-2.226	220	.027
	Equal variances not assumed			-2.143	156.635	.034
Modern technological equipment external contractor	Equal variances assumed	.336	.563	-1.978	220	.049
	Equal variances not assumed			-1.887	151.738	.061
Innovative proposals, solutions, recommendations	Equal variances assumed	.034	.854	-.657	220	.512
	Equal variances not assumed			-.648	170.434	.518
Quick adaptation to your wishes or needs	Equal variances assumed	2.794	.096	-1.730	220	.085
	Equal variances not assumed			-1.639	148.333	.103

Figure 4 shows that average satisfaction is higher when collaboration is contractual. In both cases of collaboration there are differences among particular satisfaction elements. When the collaboration is contractual, the satisfaction is the highest with expertise and knowledge of the external contractor and compliance with the agreed deadlines, and lowest in the case of prices. In *ad hoc* collaboration, satisfaction is the highest in the case of agreed deadlines, quality of products or services, and expertise and knowledge of the external contractor.

Figure 4: Radar chart of average satisfaction with individual satisfaction elements according to the type of collaboration



**There are statistically significant differences in average values.*

As follows, we present the analysis of average general satisfaction with outsourcing considering different types of collaboration (see Table 4).

Table 4: Average general satisfaction according to types of collaboration

	Type of collaboration	N	Mean	Std. Deviation
General satisfaction	*Ad hoc* collaboration	85	5.56	1.375
	Contractual collaboration	137	6.12	.924

Note: 1 = very dissatisfied, 7 = very satisfied

Even with the general satisfaction there are statistically significant differences between the two types of collaboration (see Table 5). Satisfaction is higher when the collaboration is contractual (t = -3.271, p = 0.001).

Table 5: T-statistics of average satisfaction according to collaboration types

		Levene's Test for Equality of Variances		*t*-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
General satisfaction	Equal variances assumed	18.331	.000	-3.576	220	.000
	Equal variances not assumed			-3.271	131.282	.001

The third hypothesis (i.e. reasons for outsourcing affect the satisfaction with outsourcing) was examined with multiple regression analysis. The results show that in the case of traditional outsourcing, the model is not statistically significant [F(6.63) = 1.739; p = .126] and can only explain a 6% variance of satisfaction with outsourcing. None of the reasons for outsourcing has a statistically significant effect on satisfaction with traditional outsourcing (Table 6).

Table 6: *Regression coefficients for predicting satisfaction with outsourcing caused by reasons for outsourcing – traditional*

	B	SE	b	t	p
(Constant)	3.571	.768		4.648	.000
Cost reduction	-.055	.211	-.051	-.262	.795
Market expansion	-.002	.219	-.001	-.007	.994
Decrease of needed investments into company's assets	.071	.176	.068	.405	.687
Improved quality, gaining new knowledge	.331	.242	.246	1.366	.177
Career development and increased commitment of employees	.122	.210	.103	.583	.562
Organizational reasons	.105	.159	.094	.661	.511

In the case of strategic outsourcing, the regression model is statistically significant [F(6.81) = 3.893; p = .002] and with it we can explain 16% variance of satisfaction with outsourcing. Table 7 shows that developmental reasons (e.g. improved quality and gaining new knowledge) have a statistically significant effect on satisfaction with strategic outsourcing.

Table 7: *Regression coefficient for predicting satisfaction with outsourcing caused by reasons for outsourcing - strategic*

	B	SE	b	t	p
(Constant)	3.602	.766		4.702	.000
Cost reduction	-.055	.173	-.047	-.321	.749
Market expansion	-.235	.191	-.147	-1.228	.223
Decrease of needed investments into company's assets	.042	.157	.035	.267	.790
Improved quality, gaining new knowledge	.688	.181	.495	3.798	.000
Career development and increased commitment of employees	.082	.184	.060	.446	.657
Organizational reasons	.030	.163	.022	.186	.853

The fourth hypothesis (i.e. risk factors affect the satisfaction with outsourcing) was tested with multiple regression analysis. The results show that in case of traditional outsourcing, the model is not statistically significant [F(4.65) = .644; p = .633], and can only explain 2% variance of satisfaction with outsourcing. None of the risk factor has a statistically significant effect on satisfaction with traditional outsourcing (Table 8).

Table 8: *Regression coefficient for predicting satisfaction with outsourcing caused by risk factors – traditional*

	B	SE	b	t	p
(Constant)	5.419	.593		9.138	.000
Loss of core capabilities	-.194	.208	-.176	-.933	.354
Decreased possibility of cross-functional collaboration	.210	.248	.191	.848	.400
Loss of control over external contractor	-.252	.435	-.213	-.579	.564
Hiding information	.359	.401	.301	.894	.375

The regression model is also statistically non-significant in the case of strategic outsourcing [$F(4.83) = .529$; $p = .715$], and only explains 3% variance of satisfaction with outsourcing. It is evident from Table 9 that none of the risk factors has a statistically significant effect on satisfaction with strategic outsourcing.

Table 9: *Regression coefficient for predicting satisfaction with outsourcing caused by risk factors – strategic*

	B	SE	b	t	p
(Constant)	6.012	.634		9.476	.000
Loss of core capabilities	.049	.215	.037	.227	.821
Decreased possibility of cross-funtional collaboration	.239	.241	.185	.995	.322
Loss of control over external contractor	-.184	.393	-.130	-.468	.641
Hiding information	-.168	.335	-.121	-.501	.618

The fifth hypothesis (i.e. credibility criteria affect the satisfaction with outsourcing) was tested with multiple regression analysis. The results show that in case of traditional outsourcing, the model is statistically significant [$F(5.134) = 5.501$; $p = .000$] and can explain 14% variance of satisfaction with outsourcing. It is evident from Table 10 that two criteria have statistically significant impact on satisfaction with traditional outsourcing; these criteria are 'A company's reputation on the market and experiences' and 'Trust.' The statistical significance of the criterion 'Trust' is just low enough that we were able to confirm its effect on satisfaction with outsourcing.

Table 10: *Regression coefficient for predicting satisfaction with outsourcing caused by credibility criteria – traditional*

	B	SE	b	t	p
(Constant)	2.793	.738		3.783	.000
Prior collaboration with the company	-.058	.106	-.046	-.551	.582
Good financial records of the company	.179	.126	.127	1.420	.158
Company's reputation on the market and experiences	.287	.129	.216	2.219	.028
Price	.004	.138	.002	.026	.980
Trust	.338	.173	.191	1.954	.053

The results of regression analysis show that in the case of strategic outsourcing, the model is statistically significant [F(5.82) = 2.499; p = .037] and can explain 8% variance of satisfaction with outsourcing. However, none of the individual criterion has a statistical significant impact on satisfaction with strategic outsourcing (Table 11).

Table 11: *Regression coefficient for predicting satisfaction with outsourcing caused by credibility criteria – strategic*

	B	SE	b	t	p
(Constant)	2.333	1.123		2.078	.041
Prior collaboration with the company	.298	.229	.172	1.301	.197
Good financial records of the company	.227	.206	.145	1.098	.275
Company's reputation on the market and experiences	-.133	.237	-.075	-.559	.578
Price	.044	.228	.024	.194	.846
Trust	.376	.303	.170	1.241	.218

The sixth hypothesis (i.e. outsourcing difficulties have an effect on satisfaction with outsourcing) was tested with multiple regression analysis. The results show that in the case of traditional outsourcing, the model is statistically significant [F(4.135) = 13.896; p = .633] and can explain 27% variance of satisfaction with outsourcing. It is evident from Table 12 that outsourcing difficulties have a statistically significant effect on satisfaction with traditional outsourcing.

Table 12: *Regression coefficient for predicting satisfaction with outsourcing caused by outsourcing difficulties - traditional*

	B	SE	b	T	p
(Constant)	7.096	.222		31.995	.000
Loss of core capabilities	.021	.061	.027	.349	.727
Decreased possibility of cross-funtional collaboration	-.013	.084	-.014	-.155	.877
Loss of control over external contractor	-.431	.132	-.382	-3.275	.001
Hiding information	-.240	.150	-.188	-1.597	.113

The regression model for strategic outsourcing is also statistically significant [F(4.83) = 4.310; p = .003] and can explain 13% variance of satisfaction with outsourcing. In the case of strategic and traditional outsourcing, only one difficulty has a statistically significant impact on satisfaction with outsourcing, and that difficulty is loss of control over external contractor (Table 13).

Table 13: *Regression coefficient for predicting satisfaction with outsourcing caused by outsourcing difficulties - strategic*

	B	SE	b	t	p
(Constant)	6.572	.356		18.462	.000
Loss of core capabilities	.171	.122	.165	1.407	.163
Decreased possibility of cross-funtional collaboration	-.225	.146	-.209	-1.540	.127
Loss of control over external contractor	-.432	.217	-.369	-1.993	.050
Hiding information	.128	.207	.108	.618	.538

DISCUSSION

Zhu et al. (2001) argue that a successful outsourcing process begins with a good contract. According to Bob Chafin, Director of Contractual Collaboration and Finances for General Motors' Information System and Services Division in Detroit, a good contract is signed when you are certain of what you want to achieve through a contract. That gives additional significance to formalization when conducting business with business partners. According to the literature (Brown, 1997; Quélin & Duhamel, 2003; Zhu et al., 2001), we can assume that most outsourcing happens through contractual collaboration, yet it surprised us that contractual collaboration is common for traditional outsourcing, but not for strategic

outsourcing, where there are only 34% of contractual collaborations. Sixty percent of small and medium sized companies decide for strategic outsourcing in form of *ad hoc* collaboration. That indicates a great risk for those companies. With this finding, the first hypothesis, which presumed that the most common type of collaboration between two companies, in traditional and strategic outsourcing, is contractual, is partially supported. Hypothesis H1 is confirmed in the case of traditional outsourcing; however, it is not confirmed in the case of strategic outsourcing.

Findings in relation to hypothesis H1 seem surprising at first. However, if we take into account that research includes mainly micro firms that have up to nine employees, we can explain them logically. Offers of such firms identifies with the personal skills of their employees. For example, an auto mechanic offers car maintenance; an accountant offers accounting services; a builder offers concrete products, etc. In most cases, thinking of businessmen that are also owners and managers is directed towards providing products and services and not towards the development of their firms. Therefore, in the case of traditional outsourcing, collaboration with external contractors is often and mainly in the form of contracts. This aspect is different in strategic outsourcing. Seldom are firms prepared or capable of strategic collaboration in relation to their main activity in order to provide higher income. Most often they collaborate strategically when the market forces them. For example, manufacturers of concrete products do not usually provide installation of their products, even though it would represent a great example of strategic outsourcing where complementary knowledge and capabilities provide better and less expensive service on the market. Manufacturers of concrete products will provide a contractor only if the buyer requests such service. Therefore, these firms do not plan strategic outsourcing in advance and for a longer period of time. Consequently, they do not carry out these services in the form of a contract, but rather in the form of occasional orders.

As follows, we discuss the results considering the satisfaction with outsourcing. The study's results indicate that general satisfaction with outsourcing is relatively high among surveyed companies, which is confirmed by their average evaluation of satisfaction, which was 5.9 on a scale from 1 – 7. Later on, we tested their satisfaction according to individual elements (price; quality of products and services; solving problems or complaints; the flow of information between the two companies; expertise and knowledge of the external contractor; modern technological equipment of the external contractor; innovative proposals, solutions, and recommendations; and quick adaptation of wishes and needs of the company that outsources) and found out that average satisfaction with an individual element is between 4.0 and 4.3 (on a scale from 1 to 5), which is also considered high. Price and innovative proposals, solutions, and recommendations have the lowest score regarding satisfaction. According to numerous outsourcing definitions, price is one of the main and most common reasons to begin outsourcing. Brandes et al. (1997) cite price efficiency as one of the three reasons for outsourcing, because external contractors can supply components cost-efficiently due to increased productivity. According to that, we expected that satisfaction with price would be rated higher. Low satisfaction with price is also surprising because the price is usually set by a contract before outsourcing even begins, and it is difficult to talk about dissatisfaction with an element, which was already

discussed between customers. However, we can explain the dissatisfaction with price in our study with a finding that in strategic outsourcing more than 60% of partnerships based on *ad hoc* collaboration, where the price is usually not set beforehand, causes dissatisfaction.

When comparing satisfaction according to the type of collaboration (H2), we found out that satisfaction is higher in contractual collaboration regarding all elements, which is understandable and expected. With three satisfaction elements (solving problems and complaints, expertise, and knowledge of the external contractor, modern technological equipment of the external contractor) the differences between contractual and *ad hoc* collaboration are statistically significant. The results confirm the findings from previous studies (Brown, 1997; Quélin & Duhamel, 2003; Zhu et al., 2001), emphasizing the importance of realistic and well-planned outsourcing outcomes that are the basis of well-prepared contracts between two companies.

Therefore, we confirm the second hypothesis, which states that type of collaboration between two companies affects satisfaction with outsourcing. We also want to emphasize that everyone who already outsources, or is planning to outsource, has to arrange the collaboration with business partners using contracts. This increases the probability of being satisfied with outsourcing. As is evident from the literature (Bradač, 2009; Šink, 1999), strategic outsourcing can bring bigger and long-term positive effects, while the study simultaneously showed that more than 60% of the respondents use strategic outsourcing in form of *ad hoc* collaboration. These companies are at risk of being dissatisfied with solving problems and complaints, expertise, and knowledge of the external contractor, and the modern technological equipment of the external contractor.

As regards determinants of outsourcing satisfaction, we would like to emphasise that according to Greaver (1999), firms decide for outsourcing due to organizational reasons, developmental reasons (improved level of quality, gaining new knowledge), financial reasons (decrease of needed investments into company's assets), ravenue reasons (market expansion), expense reasons (cost reduction), and staff reasons (development of employees and increased employee commitment to work). The research results indicate that reasons for outsourcing do not have an impact on satisfaction with outsourcing when it comes to traditional outsourcing. However, in case of strategic outsourcing, developmental reasons (improved level of quality, gaining knowledge) have a statistically significant impact. This means that if developmental reasons are more important to firms that decide for strategic outsourcing, the bigger chance there is they will be satisfied with outsourcing.

Developmental reasons are linked to strategic development of a firm. Šink (2002) argues we can benefit most from outsourcing advantages if we consider it as a strategic potential for development. Therefore, it is expected that the importance of developmental reasons affects satisfaction with outsourcing. We would expect a similar effect from reasons such as market expansion, improved quality, and organizational reasons, but our research did not confirm our expectations. Another surprising conclusion is that expense reasons (reduction of business costs) do not affect satisfaction with traditional outsourcing, even though its main goal is lowering the costs. We can explain it in relation to firm size. Large

companies pass on activities to outsourcing in a large extent in order to reduce costs. However, SMEs never performed certain activities due to their size, yet they need them to stay in business, so they outsource them to an external contractor. Because SMEs have no choice but to outsource certain activities, regardless of the price, it is expected that expense reasons are not as important and consequently, do not have a significant effect on satisfaction with outsourcing.

We can partially confirm hypothesis H3. Developmental reasons affect satisfaction with strategic outsourcing. Other reasons do not have a statistically significant effect on satisfaction with outsourcing. When firms decide whether to outsource certain activities, they more or less take into account the risk factors that Quinn and Hilmer (1994) described in literature as disadvantages of outsourcing (loss of core capabilities, decreased possibility of cross-functional collaboration, loss of control over external contractor, or hiding information). Regardless to what extent the firms were aware of risk factors, it did not affect satisfaction with outsourcing. It is the same for traditional, as well as the strategic type of outsourcing.

These findings can also prove that small and medium-sized firms do not systematically decide to outsource based on analyses in which we would include risk factors. In most cases, decisions are made impulsively, and in relation to individual information and are not based on strategic planning. Therefore, risk factors have no significant impact on satisfaction with outsourcing. Thus, we cannot confirm hypothesis H4.

When choosing an external contractor, a firm often considers the following criteria: prior collaboration with the company, good financial records of the company, a company's reputation on the market and experiences, price, and trust. Chang et al. (2012) stated that the right decision for an outsourcing provider has a positive impact on productivity and performance of a client company. With our research, we discovered that certain credibility criteria affect satisfaction with traditional outsourcing, whereas they do not have an effect when it comes to strategic outsourcing.

A firm's reputation on the market and experience, and trust in the firm are the two criteria that affect satisfaction with traditional outsourcing when deciding upon an external contractor. These criteria again indicate a finding from Section 4 that SMEs decide for an external contractor based on inertia, as trust and experiences with that external contractor affect satisfaction. Price benefit has no impact on satisfaction, although we would expect it affects traditional outsourcing, as its main focus is cost reduction.

We can partly confirm the hypothesis H5 due to a finding that criteria such as company's reputation on the market and trust affect satisfaction with traditional outsourcing, whereas credibility criteria do not have an impact on satisfaction with strategic outsourcing.

Difficulties with outsourcing (loss of core capabilities, decreased possibility of cross-functional collaboration, loss of control over external contractor, hiding information) occur as consequences of risk factors that were defined in literature by Quinn and Hilmer (1994).

As we expected, we found that difficulties with outsourcing have an important impact on satisfaction with outsourcing. This applies to traditional and strategic outsourcing. Once again, we would like to mention the findings from Section 4, where we came to a conclusion that risk factors do not have an effect on satisfaction with outsourcing, yet the difficulties, which are direct consequences of noncompliance with risk factors, have a significant effect on satisfaction. Again, these findings indicate that there is no strategic approach to outsourcing in small and medium-sized firms, which would allow us to study the risk factors and build in a suitable mechanism that would negate the risks.

Loss of control over external contractor (for example: external contractor does not abide by agreements regarding the price, deadlines, collaboration, protection of business secrets, and does not conduct business as expected) is the problem that has the most impact on satisfaction with traditional and strategic outsourcing. This is an important finding for everyone who outsources or has the intention to do so. The loss of control over an external contractor can be regulated by applying appropriate measures e.g. for that purpose, some firms withhold ownership of key parts of the equipment. In our study, we can confirm the hypothesis H5 arguing that difficulties affect satisfaction with outsourcing.

CONCLUSION

In the paper, our goal was to find out whether managers of small and medium-sized companies are in fact satisfied with outsourcing, and what affects their satisfaction. Business in small and medium-sized companies differs from business in large companies to the extent where outsourcing cannot be copied. Therefore, we improved the existing definitions and formed a more accurate difference between outsourcing and buying.

We speak of outsourcing when a company gains products and/or services that are exclusively adapted for that company's business procedures and similar companies perform them in-house. Based on this definition we found out that 64% of small and medium-sized businesses from our survey outsourced at least one of their activities from their company, and that in most cases outsourcing was traditional, and focused on cost reduction. An unexpected finding is that strategic outsourcing is mostly carried out through *ad hoc* collaboration, which means that companies are exposed to bigger risks and lower satisfaction with outsourcing. We identified five determinants that affect satisfaction with outsourcing: type of collaboration, reasons for outsourcing, credibility criteria (referring to external contractors), risk factors, and outsourcing difficulties (problems). We came to the conclusion that the following determinants have an impact on traditional outsourcing: criteria for choosing an external contractor (a firm's reputation on the market, experience, and trust), type of collaboration (contractual collaboration has a positive impact on satisfaction), and difficulties (loss of control over an external contractor). In relation to strategic outsourcing, the effective determinants are: reasons for outsourcing (improved quality level, gaining knowledge), type of collaboration (contractual collaboration has positive impact on satisfaction), and difficulties loss of control over external contractor).

Our study extends the existing knowledge about outsourcing in small and medium-sized businesses, especially in the field of satisfaction with outsourcing, and determinants that affect satisfaction with outsourcing. Our first contribution is the improved definition of outsourcing that can be used in all companies regardless of their size. This definition is better-suited for the research of SMEs than the existing definition that takes larger companies into account. Our second contribution refers to our finding that SMEs mainly perform strategic outsourcing that is based on *ad hoc* collaboration, which is the opposite of the existing theoretical and empirical findings. Companies that conduct business based on *ad hoc* collaboration are less satisfied with outsourcing. Difficulties that occur due to ignorance of known outsourcing drawbacks have a negative impact on satisfaction, which sends a clear message to all, who teach, advise, use, or plan to use this manager tool.

Our findings should be interpreted within the limitations of the study. First, the usual limitations of cross-section research design apply – our data were collected at a single point in time and they provide therefore a snapshot of the population characteristics at this given point in time. Second, we explained that satisfaction with outsourcing can be compared to the successfulness that a company achieved with the help of outsourcing. We also wrote that the concept of successfulness can be broader in small and medium-sized businesses than in larger companies, because the owner, who is usually also the manager, identifies himself with his company. From this originates one of the limitations of studying satisfaction, as the owners or managers are not completely ready to speak sincerely about problems and dissatisfaction with certain business decisions, because they would consequently admit their own mistakes. Human nature makes it difficult to talk about our own mistakes, let alone admit them.

The findings from this paper enable further research in the field of outsourcing in small and medium-sized businesses. Especially interesting would be studies of groups of companies that are more or less aware of outsourcing pros and cons and whether they are satisfied with outsourcing. Also, we think that further research is required to examine more fully companies that ended collaboration with external contractors, and what were the consequences of termination.

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Appendix 1: Questionnaire

Greetings!

In front of you is a survey questionnaire. Its purpose is to check user habits and expectations concerning transferring certain activities to external contractors. The survey is anonymous. We kindly ask the person responsible for business activities in your company to take some time and answer the following questions. We are thankful for your cooperation. The survey is solely exploratory and will take up to 15 minutes of your time.

Thank you for your cooperation!

1. Your employment status:
   (choose one answer only)

   a. employed (by employer)
   b. company owner – employer
   c. craftsman
   d. private entrepreneur
   e. self-employee experts (attorney, doctor, architect)
   f. liberal profession (artist, freelance journalist, freelance actor)
   g. contract work, contract for a copyrighted work
   h. unemployed
   i. pensioner
   j. primary school pupil
   k. high school student
   l. student
   m. apprentice
   n. farmer – works, helps on a farm
   o. housekeeper, maid, caregiver in a home
   p. helping household member (workshop, bar)
   q. unable to work (invalid)
   r. other
   s. rather not say

2. Your workplace position:
   (choose one answer only)

   a. manager of company, organization, institution
   b. manager of labour unit, work, sector, department
   c. employee which directly manages or supervises work of other employees (master, foreman)

d. employee which does not have subordinates (executive employee)
e. rather not say

3. The main activity of the company where you are employed:
(choose one answer only)

a. production or farming
b. services
c. employed in public administration, institute, non-governmental organization
d. rather not say

4. What is the size of a company in which you work?

a. micro (up to 10 employees)
b. small (up to 50 employees)
c. medium (up to 250 employees)
d. large (more than 250 employees)

As follows we are interested in your experience with external contractors performing certain activities of your business process.

Two examples are shown for better understanding:

Example 1: The company **»Bakery«** bakes bread and wants to **reduce its costs**. The company decided it will not handle **accounting** itself anymore, instead they will hand over the service to an accounting service (external contractor). The company wanted to **reduce its costs** by hiring an external contractor, yet it had **NO direct association with baking bread (the main activity).**

Example 2: The company **"Bakery"** wants **to improve their products** and **expand the capacity** of baking bread due to additional orders. Instead of modernizing the line for preparing dough, it decides to rather buy the dough from a company called "Dough" (external contractor). Dough is a very important bread ingredient, but the bakery believes it can bake more bread and also the most quality bread on the market in collaboration with the external contractor. The company wanted to **increase their sales** in an area that is **directly associated with baking bread (the main activity).**

5. Have you ever outsourced one of your company's activities to another company (external contractor)?
a. yes
b. no → continue with question 29

6. Have you ever outsourced an activity to an external contractor that:
(question 5 = yes)

	yes	no
has NO direct connection to the main activity – <u>cost reduction</u> (cleaning, accounting, nourishment, security, logistics,…)?	1	2
is directly connected to the main activity – <u>revenue increase</u> (collaboration with external experts, ordering a non-standardized specialized product, feed stock or service)?	1	2

<u>The following questions apply to outsourcing activities which have NO direct connection to the main activity – cost reduction.</u>
(question 5 = a and question 6a = 1)

7. Write down the activity that your company outsourced. If you outsourced more than one activity, write down the one that is most important to you and has NO association with the company's main activity.
(question 5 = a and question 6a = 1)

_____Answer 7_____

8. Assess the importance of reasons for outsourcing activities. Asses in regard to your answer for question 7.
(question 5 = a and question 6a = 1)

		Not important	Slightly important	Neither	Important	Extremely important
a.	Cost reduction	1	2	3	4	5
b.	Expansion of the market	1	2	3	4	5
c.	Decrease in the investment of necessary equipment or personnel	1	2	3	4	5
d.	Improving quality levels, gaining new skills	1	2	3	4	5
e.	The development of employees and increased employee commitment to work	1	2	3	4	5
f.	Organizational reasons (focus on the activities in which you are the best, the need for additional staff, equipment, services, capacities ...)	1	2	3	4	5

9. Assess the importance of criteria for choosing an external contractor. Asses in regard to your answer for question 7.
(question 5 = a and question 6a = 1)

		Not important	Slightly important	Moderately important	Important	Very important
a.	Pre partnership with the company	1	2	3	4	5
b.	Good financial situation of the company	1	2	3	4	5
c.	Reputation of the enterprise on the market, experience	1	2	3	4	5
d.	Affordability	1	2	3	4	5
e.	Trust	1	2	3	4	5

10. Where is the external contractor's company, which you collaborate with, located? Answer in regard to your answer for question 7.
(question 5 = a and question 6a = 1)

a. Slovenia
b. Europe
c. Other part of the world

11. What is the main type of collaboration conducted with external contractors? Answer in regard to your answer for question 7.
(question 5 = a and question 6a = 1)

a. Ad-hoc collaboration
b. Contractual collaboration
c. Ownership collaboration (franchise, license, agency)
d. Other: _____

12. How long has the collaboration with the external contractor lasted? Answer in regard to your answer for question 7.
(question 5 = a and question 6a = 1)

a. up to 1 year
b. 1 to 3 years
c. 3 to 5 years
d. 5 years or more

The following questions are linked to satisfaction and difficulties with outsourcing activities.
(question 5 = a and question 6a = 1)

13. On a scale from 1 to 5 assess your satisfaction with outsourcing, where 1 represents very dissatisfied and 5 represents very satisfied. Asses in regard to your answer for question 7.
(question 5 = a and question 6a = 1)

		Very dissatisfied	Dissatisfied	Neither	Satisfied	Very satisfied
a.	Price	1	2	3	4	5
b.	Quality of products and services	1	2	3	4	5
c.	Compliance with the agreed deadlines	1	2	3	4	5
d.	Solving problems or complaints	1	2	3	4	5
e.	Flow of information between the two companies	1	2	3	4	5
f.	Expertise and knowledge of the external contractor	1	2	3	4	5
g.	Modern technological equipment of the external contractor	1	2	3	4	5
h.	Innovative proposals, solutions and recommendations	1	2	3	4	5
i.	Quick adaptation of wishes and needs of the company that outsources	1	2	3	4	5

14. On a scale from 1 to 5 assess which risk factors were taken into account before deciding to outsource the activity. 1 represents you have not even considered the risk and 5 represents you have thoroughly considered it. Asses in regard to your answer for question 7.
(question 5 = a and question 6a = 1)

		Did not even consider	Have not studied it	Neither	Studied it	Thoroughly considered it
a.	The activity may not be executed within the company once again (employees do not have the knowledge, or the equipment is not suitable any more)	1	2	3	4	5
b.	There will be more no close collaboration, because the external contractor is not always present	1	2	3	4	5
c.	The external contractor will not comply with the agreement (price, deadlines, supply, collaboration, hiding business secrets) or will not completely committed to work	1	2	3	4	5
d.	External contractor can hide or adjust information important for business success	1	2	3	4	5

15. Have you noticed any of the following difficulties after outsourcing? On a scale from 1 to 5 assess the statements, where 1 represents completely untrue and 5 represents completely true. Asses in regard to your answer for question 7.
(question 5 = a and question 6a = 1)

		Completely untrue	Mostly untrue	Neither	Mostly true	Completely true
a.	The activity may not be carried out within the company once again (employees do not have the knowledge, or the equipment is not suitable any more)	1	2	3	4	5
b.	Collaboration with the external contractor is harder than performing the activity alone (more instructions and adjustments are necessary)	1	2	3	4	5
c.	The external contractor will not comply with the agreement (price, deadlines, supply, collaboration, hiding business secrets) or will not be completely committed to work	1	2	3	4	5
d.	External contractor can hide or adjust information important for business success (for example: external contractor's equipment is out of order. He does not tell you and risks that the business will not be done)	1	2	3	4	5

The following questions apply to outsourcing activities that are directly connected to the company's main activity – revenue increase.
(question 5 = a and question 6b = 1)

16. Write down an activity your company outsourced. If you outsourced more than one activity, write down the one that is most important to you and is closely associated to the company's main activity.
(question 5 = a in question 6b = 1)

_____Answer 16_____

17. Assess the importance of reasons for outsourcing activities. Asses in regard to your answer for question 16.
(question 5 = a in question 6b = 1)

		Not important	Slightly important	Neither	Important	Extremely important
a.	Cost reduction	1	2	3	4	5
b.	Expansion of the market	1	2	3	4	5
c.	Decrease in the investment of necessary equipment or personnel	1	2	3	4	5
d.	Improving quality levels, gaining new skills	1	2	3	4	5
e.	The development of employees and increased employee commitment to work	1	2	3	4	5
f.	Organizational reasons (focus on the activities in which you are the best, the need for additional staff, equipment, services, capacities ...)	1	2	3	4	5

18. Assess the importance of criteria for choosing an external contractor. Asses in regard to your answer for question 16.
(question 5 = a and question 6b = 1)

		Not important	Slightly important	Moderately important	Important	Very important
a.	Pre partnership with the company	1	2	3	4	5
b.	Good financial situation of the company	1	2	3	4	5
c.	Reputation of the enterprise on the market, experience	1	2	3	4	5
d.	Affordability	1	2	3	4	5
e.	Trust	1	2	3	4	5

19. Where is the external contractor's company, which you collaborate with, located? Answer in regard to your answer for question 16.
(question 5 = a and question 6b = 1)

a. Slovenia
b. Europe
c. Other part of the world

20. What is the main type of collaboration conducted with external contractors? Answer in regard to your answer for question 16.
(question 5 = a and question 6b = 1)

a. Ad-hoc collaboration
b. Contractual collaboration
c. Ownership collaboration (franchise, license, agency)
d. Other: _____

21. How long has the collaboration with the external contractor lasted? Answer in regard to your answer for question 16.
(question 5 = a and question 6b = 1)

a. up to 1 year
b. 1 to 3 years
c. 3 to 5 years
d. 5 years or more

The following questions are linked to satisfaction and difficulties with outsourcing activities.
(question 5 = a and question 6b = 1)

22. On a scale from 1 to 5 assess your satisfaction with outsourcing, where 1 represents very dissatisfied and 5 represents very satisfied. Asses in regard to your answer for question 16.
(question 5 = a and question 6b = 1)

		Very dissatisfied	Dissatisfied	Neither	Satisfied	Very satisfied
a.	Price	1	2	3	4	5
b.	Quality of products and services	1	2	3	4	5
c.	Compliance with the agreed deadlines	1	2	3	4	5
d.	Solving problems or complaints	1	2	3	4	5
e.	Flow of information between the two companies	1	2	3	4	5
f.	Expertise and knowledge of the external contractor	1	2	3	4	5
g.	Modern technological equipment of the external contractor	1	2	3	4	5
h.	Innovative proposals, solutions and recommendations	1	2	3	4	5
i.	Quick adaptation of wishes and needs of the company that outsources	1	2	3	4	5

23. On a scale from 1 to 5 assess which risk factors were taken into account before deciding to outsource the activity. 1 represents you have not even considered the risk and 5 represents you have thoroughly considered it. Asses in regard to your answer for question 16.
(question 5 = a and question 6b = 1)

		Did not even consider	Have not studied it	Neither	Studied it	Thoroughly considered it
a.	The activity may not be executed within the company once again (employees do not have the knowledge, or the equipment is not suitable any more)	1	2	3	4	5
b.	There will be more no close collaboration, because the external contractor is not always present	1	2	3	4	5
c.	The external contractor will not comply with the agreement (price, deadlines, supply, collaboration, hiding business secrets) or will not completely committed to work	1	2	3	4	5
d.	External contractor can hide or adjust information important for business success	1	2	3	4	5

24. Have you noticed any of the following difficulties after outsourcing? On a scale from 1 to 5 assess the statements, where 1 represents completely untrue and 5 represents completely true. Asses in regard to your answer for question 16.
(question 5 = a and question 6b = 1)

		Completely untrue	Mostly untrue	Neither	Mostly true	Completely true
a.	The activity may not be carried out within the company once again (employees do not have the knowledge, or the equipment is not suitable any more)	1	2	3	4	5
b.	Collaboration with the external contractor is harder than performing the activity alone (more instructions and adjustments are necessary)	1	2	3	4	5
c.	The external contractor will not comply with the agreement (price, deadlines, supply, collaboration, hiding business secrets) or will not be completely committed to work	1	2	3	4	5
d.	External contractor can hide or adjust information important for business success (for example: external contractor's equipment is out of order. He does not tell you and risks that the business will not be done)	1	2	3	4	5

25. completely dissatisfied and 7 represents completely satisfied.
(question 5 =a)

	Completely dissatisfied	…	…	…	…	…	Completely satisfied
Outsourcing activities that have NO direct association with the company's main activity	1	2	3	4	5	6	7
Outsourcing activities that are directly associated with the company's main activity.	1	2	3	4	5	6	7

The following questions are associated with your general experience with outsourcing and are not related to previously chosen activities.

26. Have you ever terminated a contract (temporary or permanent) or collaboration with external contractor due to negative experience?
(question 5=a)

a. Yes
b. No à continue with question 29

27. How bad were the consequences for your company due to end of collaboration with external contractors?
(question 5 = a and question 26 = a)

a. The company's existence was in danger
b. The existence of a business unit/part of the company was in danger
c. Customer/buyer loss
d. Less demand and less orders from sub-buyers
e. More work was needed in-house business realization (overtime, exceptional transport, additional costs)
f. Other: _____

28. What happened after terminating outsourcing?
(question 5 = a and question 26 = a)

a. Transferring activities back to the company
b. Transferring activities to another external contractor
c. Outsourcing continues under changed conditions
d. Abandoning the activity
e. Other: _____

29. What is the main strategic guideline of your company?

    a. Cost efficiency (focus is on lowering the costs in regard to competitors and consequently lowering the disposal price)
    b. Differentiation (focus is on what is perceived originally different from competitors in a sense of superior product/service quality, customer relations, brand name image, design, technology etc.)
    c. Other: _____

We are approaching the end of the survey. The following questions are short and are needed for further statistical processing.

30. What is your company position?
    (choose one answer only)

    a. Manager position in company, organization, institution
    b. Manager position in labour unit, work, sector, department
    c. Employee which directly manages or supervises work of other employees
    d. Employee which does not have subordinates
    e. Other:_____
    f. Rather not say

31. How would you best describe the business your company does?
    (choose one answer only)

    a. Work at home
    b. Work in bar/shop
    c. Clerical work
    d. Fieldwork
    e. None of the above

32. In which region is your company located?
    (choose one answer only)

    a. Central Slovenia region
    b. Central Sava region
    c. Drava region
    d. Carinthia region
    e. Savinja region
    f. Upper Carniola region
    g. Northern Coastal region
    h. Southern Coastal region

i. Inner Carniola region
j. Southeast region
k. Lower Sava region
l. Mura region
m. Foreign country
n. Rather not say

33. What is your company's activity/industry? *Click on the question mark for help.*

a. Farming and hunting, forestry, fishing
b. Mining industry
c. Processing activity
d. Energy, gas, steam supply
e. Water supply, waste and sewage management; rehabilitation of the environment
f. Construction
g. Commerce; maintenance and repair of motor vehicles
h. Catering
i. Traffic and stocking
j. Information and communication activity
k. Financial and insurance market
l. Real property business
m. Professional, scientific and technical activities
n. Other diverse business activities
o. Public service and defence activity, statutory social security business
p. Education
q. Health and social security
r. Cultural, entertainment and recreation activities
s. Other service activities
t. Household activities with employed staff; production for personal use
u. Extra-territoriality organization activities
v. Do not know

NEW INSIGHTS INTO THE PRICE DYNAMICS OF PRESCRIPTION PHARMACEUTICALS IN SLOVENIA OVER THE PERIOD 2001–2014

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ABSTRACT: *The article investigates changes in the prices of Slovenian prescription pharmaceuticals in the period 2001–2014. A special emphasis is put on the pricing of innovative pharmaceuticals. The price structure of pharmaceuticals, annual price changes and alterations in the structure of consumption according to price are analysed and the Fisher price indices are also observed. The article shows that prices of pharmaceuticals started to decline notably after the onset of the economic crisis in 2008, with an average annual drop of 6.9 percent in the 2008–2014 period. Annual price changes and the altered structure of consumption explain why Slovenia was able to maintain a positive trend of pharmaceutical consumption, while cutting the total expenditures for prescription pharmaceuticals since 2010.*

Keywords: *prescription pharmaceuticals, price index, innovative pharmaceuticals*
JEL Classification: I13; H51
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INTRODUCTION

Ever since the 2008 economic crisis, health spending has slowed across Europe after years of continuous growth (OECD, 2014). This slowdown has affected all health spending categories but to varying degrees. Average spending growth has decreased significantly for both inpatient and outpatient care. Many countries have reduced or postponed their spending on prevention, public health services and administration, with a slight recovery in spending observed after 2011. The only spending category that has continued to shrink following the crisis is pharmaceutical spending (OECD, 2014). Health spending across the OECD edged up slightly in 2013 and data for 2014 indicate a continuation of this trend. However, many European countries continued to see growth below the OECD predictions (OECD, 2015a).

In Slovenia, the growth of current expenditures for health care has also slowed down following the 2008 crisis. The annual growth rates of current expenditures in current prices

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dropped from 7 percent in 2007 and 13 percent in 2008 to 4 percent in 2009 and below 1 percent in 2010 and 2011. Current expenditures for health care declined slightly in 2012 to €3.1 billion and remained stable in 2013 and 2014. Current health care expenditures for 2014 are estimated at €3.2 billion, which is 7.3 percent above the 2008 level (SURS, 2015a; OECD, 2015b). The same conclusions apply to the dynamics of current expenditures for health care in constant prices. Nearly 70 percent of current expenditures are funded through the compulsory health insurance provided by the Health Insurance Institute of Slovenia (hereafter HIIS) (SURS, 2015b). In 2012 and 2013, expenditures exceeded the revenues of the HIIS, yet its revenues continued to rise despite the crisis and began to fall later than expenditures. In 2014, both the revenues and expenditures increased and the HIIS enjoyed a surplus of €15.7 million (Ministry of Finance of Slovenia, 2015).

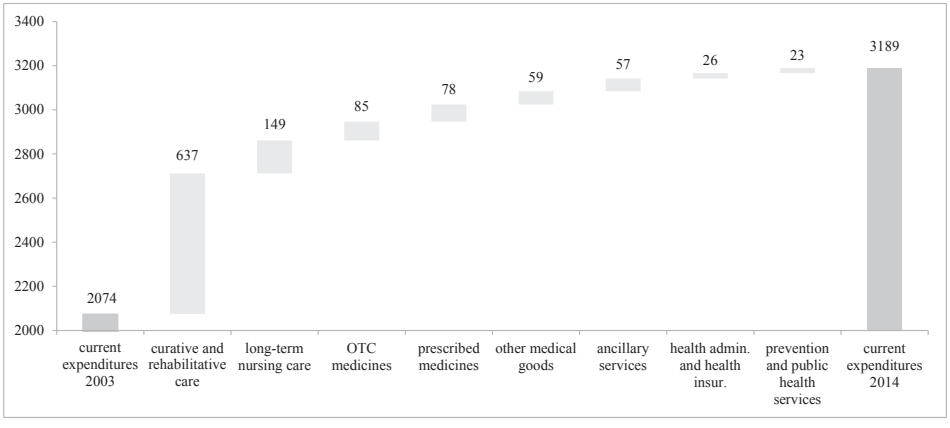
In Slovenia, pharmaceutical expenditures in current prices continued to grow following the 2008 crisis and they declined slightly only in 2014. It is, however, important to note that this rise was due to increasing expenditures for over-the-counter pharmaceuticals. Expenditures for prescription pharmaceuticals in both current and constant prices, on the other hand, were declining in the 2008–2014 period (OECD, 2015b). This paper provides new insights into pharmaceutical price dynamics in Slovenia, helping us to explain why Slovenia was able to maintain a positive trend of pharmaceutical consumption, while cutting total expenditures for prescription pharmaceuticals since 2010. Changes in the prices of prescription pharmaceuticals are observed over the 2001–2014 period. Both the price structure of prescription pharmaceuticals and the yearly price dynamics are studied. In addition, Fisher price indices are calculated and compared between different sub-periods. Second, given the Slovenian health care system's specific feature whereby compulsory health insurance is complemented with voluntary health insurance for full co-payment coverage (Albreht, et al., 2009), this paper separately observes changes in the full price of prescription pharmaceuticals and the price which is reimbursed by the HIIS. Further, the dynamics of prices of innovative prescription pharmaceuticals is investigated to explore whether the pressures to limit the growth of health expenditures influenced the rate and the time lag in which the prices of such pharmaceuticals decrease.

1 CURRENT HEALTH CARE AND PHARMACEUTICAL EXPENDITURES IN SLOVENIA

Figure 1 shows the increase in current health expenditures that exclude investment expenditures in the 2003–2014 period. Even though this paper investigates expenditures for prescription pharmaceuticals that are an important component of current health expenditures in the 2001–2014 period, *Figure* 1 refers to a shorter period because the Statistical Office of the Republic of Slovenia has been reporting detailed data on health care expenditures according to the internationally comparable System of Health Accounts since 2003. As shown in *Figure 1*, 2014 current health expenditures in current prices exceeded the 2003 level by 53.8 percent. The largest increase can be attributed to curative, rehabilitative and long-term nursing care, while expenditures for prescription pharmaceuticals contributed 7 percent (SURS, 2015b). As discussed by Mladovsky et al.

(2012), a range of measures such as the level of contributions for publicly financed care, the volume, quality and cost of publicly financed care etc. can be used to alter health expenditure levels. This paper investigates how cost-containment measures influenced the prices of prescription pharmaceuticals in Slovenia, given that the rise in pharmaceutical expenditures in Slovenia was influenced more by the expenditures for OTC medicines (without a prescription) than the expenditures for prescription medicines (see *Figure 1*).

Figure 1: *Contribution of expenditure categories (in million €) to the increase in current healthcare expenditures in current prices in Slovenia during the period 2003–2014*



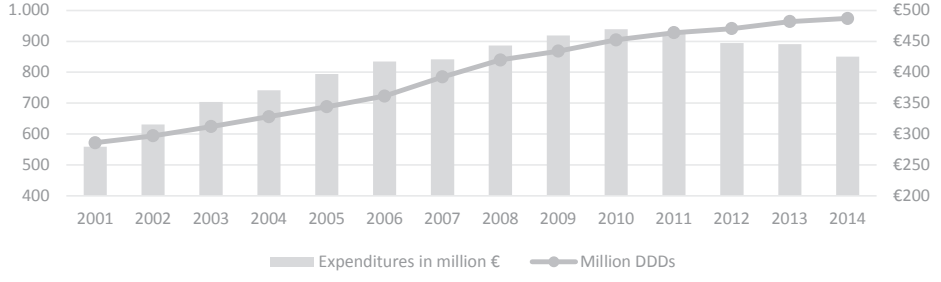
Source: Data on health expenditures by functions (SURS, Health and Health care, 2016b)

Between 2003 and 2008, current health expenditure in Slovenia comprised between 7.5 and 8.1 percent of GDP. Health expenditure as a share of GDP increased since the crisis, but expenditure levels in nominal terms have remained almost unchanged since 2009. In 2014, current health expenditure in Slovenia accounted for 8.5 percent of GDP (Cylus, 2015). The slowdown in health expenditure growth following the financial crisis was much more pronounced in Slovenia than in many other EU countries. In 2015, with 8.3 percent of GDP devoted to health care Slovenia thus continues to lag behind the EU-28 with 9.9 percent of GDP dedicated to heath care. Spending on inpatient and outpatient care represents the lion's share of health expenditures across EU countries. The second major category of spending is medical goods that include pharmaceuticals. This element of spending is also characterised by the largest variation between countries. Expenditures for pharmaceuticals in the EU have also experienced considerable cuts following the crisis. In the 2009–2014 period, per capita pharmaceutical expenditures in the EU fell by 1.1 percent annually on average in real terms, a decline comparable to Slovenia (OECD, 2016).

Cuts in pharmaceutical expenditures can be achieved by influencing the prices through price freezing, price cuts, the use of generic substitutes or by influencing the

consumption of pharmaceuticals (Arts, Habl, Rosian, & Vogler, 2006). An extensive body of empirical literature investigates how regulation of the pharmaceutical market affects the consumption of pharmaceuticals, their prices, expenditures and co-payments. The effects of pharmaceutical price regulation are probably the most emphasised area (see, for example, Puig-Junoy (2010), Galizzi, Ghislandi & Miraldo (2011) and Acosta et al. (2014)). Price drops due to reference pricing were also observed and analysed in Slovenia (Podnar, Molj, & Golob, 2007; Kajdiž & Bojnec, Učinek Sistema Referenčnih Cen na Oblikovanje Cen Zdravil, 2010). Papers published more recently for the case of Slovenia confirm that pharmaceutical prices declined substantially over the 2003–2010 period (Kajdiž & Bojnec, 2013; Kajdiž & Bojnec, 2010; Kajdiž & Bojnec, 2012). This paper adds to the existing available evidence for Slovenia by extending the studied period and observing expenditures for prescription pharmaceuticals in the entire 2001–2014 period and selected sub periods. We explore the changes in the consumption of prescription pharmaceuticals, measured in defined daily doses (DDD), and changes in total expenditures for all prescription pharmaceuticals combined and also separately for innovative pharmaceuticals.

Figure 2: *Consumption of prescription pharmaceuticals in million DDDs (left) and total expenditures in million € (right) over the period 2001–2014*



Note: DDD – defined daily dose

Figure 2 shows both the consumption of prescription pharmaceuticals and expenditures in nominal terms. The data indicate that Slovenia was able to maintain a positive consumption trend while cutting total expenditures for prescription pharmaceuticals since 2010. The share of expenditures for prescription pharmaceuticals in total current health expenditures also decreased from 15.3 percent in 2008 and 2009 to 13.7 percent in 2014 (OECD, 2015b). In the next chapter, we explain the reasons behind the observed pattern.

2 PRESCRIPTION PHARMACEUTICAL PRICE DYNAMICS IN SLOVENIA

Based on publicly available data on expenditures and consumption of prescription pharmaceuticals published by the HIIS, we explored price changes for 4,110 prescription pharmaceuticals between 2001 and 2014. Only 560 pharmaceuticals were on the market for the entire 13-year period. Other pharmaceuticals were gradually added to or

removed from the analysis as they entered or exited the market or the list of reimbursed pharmaceuticals. In this paper, the total dataset is used when determining annual price changes of individual pharmaceuticals and investigating how the price structure of pharmaceuticals changed during the analysed 2001–2014 period. Sub-sets of available data are used to calculate price indices for selected representative baskets of prescription pharmaceuticals and to assess price changes for innovative pharmaceuticals. In line with the relevant literature (Lou, Oliveira, Ramos, Maria, & Osorio-de-Castro, 2014; Hsieh & Sloan, 2008), we defined the price of a pharmaceutical as the price per defined daily dose (DDD), as shown in the next equation:

$$P_i = \frac{E_i}{Q_i}$$

where E_i indicates the current or nominal expenditure for the i_{th} pharmaceutical obtained from the HIIS data, Q_i indicates the consumption for the i_{th} pharmaceutical expressed in DDDs, and P_i represents the current price per DDD for the i_{th} pharmaceutical. Studies examining the impact of pharmaceutical price regulation (Puig-Junoy, 2010) analyse either the price paid by the insurer/patient (the consumer price) or the pharmacy purchase price. The HIIS database includes both information on the expenditures for prescription pharmaceuticals incurred by the HIIS and total expenditures with co-payments. This allows us to investigate both the total price changes and the fluctuations in pharmaceutical prices paid by the largest payer organisation in Slovenia, i.e. the HIIS. To evaluate the pharmaceutical price dynamics, we observe both the price changes of individual pharmaceuticals and price indices to measure aggregate price changes over time by comparing the cost of purchasing a specific basket of pharmaceuticals at different points in time. Considered superior to other measures (Diewert, 1992), the Fisher price index is a geometric average of the Laspeyres and the Paasche indices and thus more closely aligned with the composition of goods sold over time (Aizcorbe & Nestoriak, 2012):

$$I^F = \left(\frac{\sum_i P_{i,1} Q_{i,0}}{\sum_i P_{i,0} Q_{i,0}} \cdot \frac{\sum_i P_{i,1} Q_{i,1}}{\sum_i P_{i,0} Q_{i,1}} \right)^{1/2}$$

The first term in the Fisher equation is the Laspeyres index, which compares what would happen with expenditures if the same amount of pharmaceuticals, which was bought at time 0 at prices of time 0, were bought at the prices of time 1. On the other hand, the Paasche index (the second term) uses a different market basket to measure the price change. Instead of using the amount of pharmaceuticals bought at time 0, it uses the amount bought at time 1. Since the Laspeyres index tends to overstate the inflation while the Paasche index tends to understate it, the Fisher index compromises between both extremes. Considering that pricing for newly introduced pharmaceuticals can be quite different from that of more established ones, an index that analyses new pharmaceuticals only will likely show different price growth than one that includes all pharmaceuticals (Berndt, 2002). This is why a special section of this paper assesses the price changes of newly introduced and innovative pharmaceuticals. To determine whether the intensity and pace of price changes altered during the investigated 2001–2014 period, we compare

price changes between five sub-periods, i.e. 2002–2006, 2004–2008, 2006–2010, 2008–2012 and 2010–2014. This allows us to alter the baskets of observed pharmaceuticals and enables the new pharmaceuticals to be gradually included in the analysis.

The analysis is divided into three subsections. In *subsection 2.1,* we show the price structure and yearly price dynamics of prescription pharmaceuticals in Slovenia for the period 2001–2014. We calculate the Fisher price indices and average annual price changes for the entire investigated period and the period following the 2008 economic crisis. In *subsection 2.2,* we focus the analysis on new pharmaceuticals, giving special attention to the group of innovative medicines.

2.1 Price structure and price dynamics of prescription pharmaceuticals

Pharmaceuticals are first categorised in one of seven price groups (€0.0 – €0.2, €0.2 – €0.4, €0.4 – €0.60, €0.6 – €0.8, €0.8 – €1.0, €1.0 – €2.0, and above €2.0 per DDD). For each year of the analysis, the structure of all prescribed pharmaceuticals according to these price groups is shown in *Figure 3.* All pharmaceuticals prescribed within an individual year are included. The results thus show both changes in the current price and changes in the array of prescribed pharmaceuticals. The latter is the result of the introduction of innovative pharmaceuticals or modifications of pharmaceuticals that were already on the market. Up to 2009, the share of pharmaceuticals in higher price groups was slowly increasing, while after 2009 more expensive pharmaceuticals were replaced by more affordable counterparts. *Figure 4* shows the first (p25), second (p50) and third (p75) quartiles of prices over the analysed period. The median price, which was equal to €0.59 in 2001, increased by 2008 to €0.84, and then fell to €0.72 in 2014. Changes of the third quartile indicate that the variability of current prices importantly increased during the period 2001–2006 and remained constant in the subsequent years.

Figure 3: *Price structure of prescribed pharmaceuticals in %, 2001–2014*

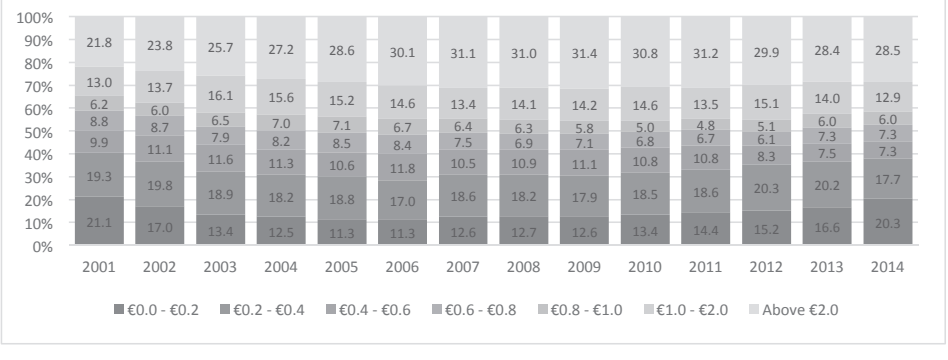


Figure 4: *Quartile values of current prices in €, 2001–2014*

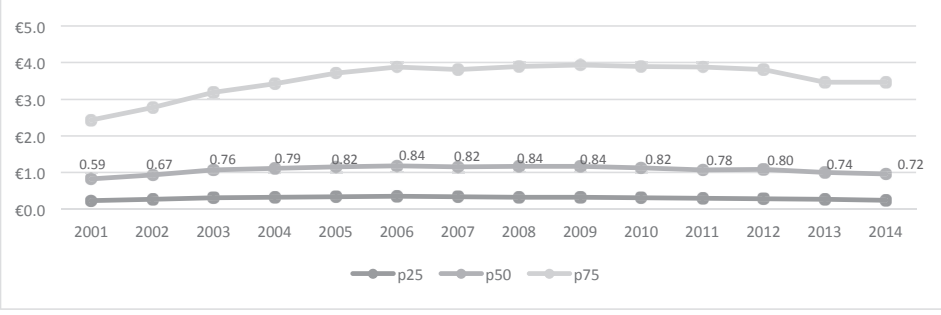


Figure 5 shows the structure of prescribed pharmaceuticals according to the relative annual changes. To identify the annual price changes in each year, pharmaceuticals that are prescribed in both year *t* and the preceding year *t-1* are included in the analysis. We categorised pharmaceuticals in five groups based on the percentage change in the current price over the 1-year period (up to -3, -3 to -1, -1 to 1, 1 to 3, 3 and more). Since 2003, there was a substantial drop in the share of pharmaceuticals with high price growth (3 percent and more per year). The share of such pharmaceuticals was the lowest in 2011 (5.4 percent). At the end of the analysed period, that share was considerably below the pre-crisis levels. The share of pharmaceuticals with a strong price fall started to grow after the crisis began. One significant price decrease happened in 2007, while the strongest decrease was in 2012 when more than 70 percent of all pharmaceuticals experienced an annual price fall. In 2012, 55 percent of all pharmaceuticals saw a price decline of 3 percent or more. Annual price changes are also shown in *Figure 6* with the help of the first, second and third quartiles. Up to 2005, the median price change of the pharmaceutical was above 1, meaning that its price was rising. After 2005, that value drops below 1, meaning that more than 50 percent of all prescription pharmaceuticals experienced a price decline. In 2012, the median price of the pharmaceutical fell by almost 4 percent.

Figure 5: *The structure of prescription pharmaceuticals in % according to annual price changes, 2001–2014*

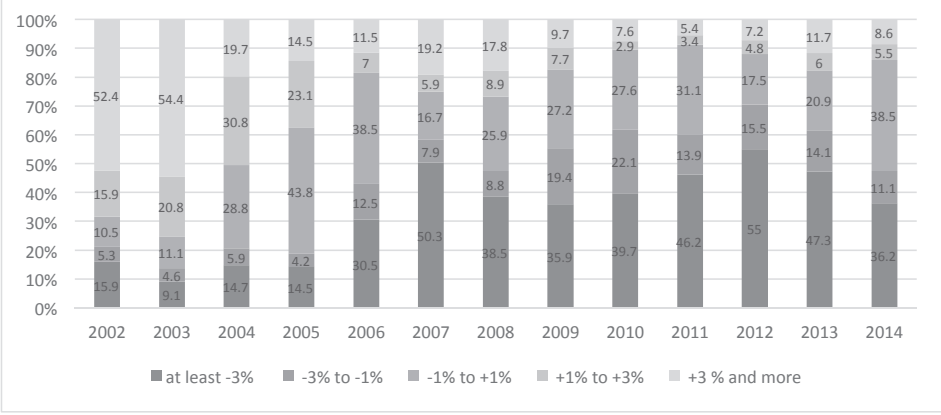


Figure 6: *Quartile values of annual price changes of prescription pharmaceuticals (ratio of two subsequent years), 2001–2014*

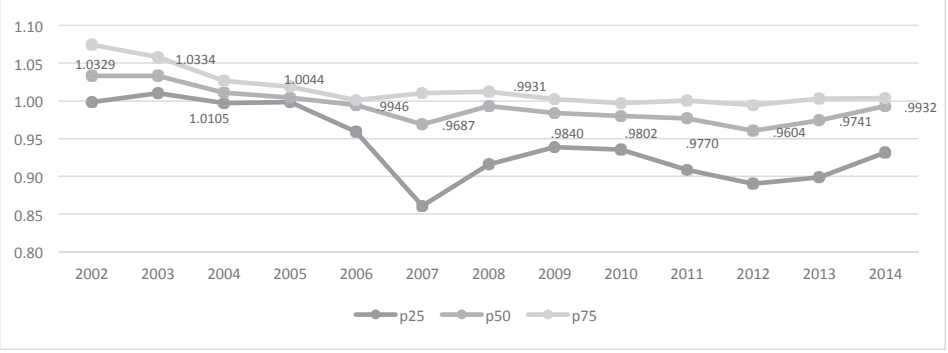
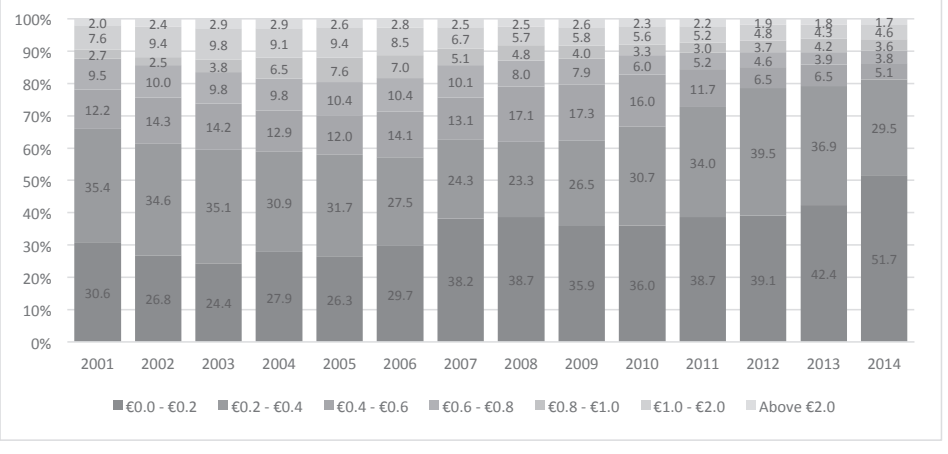


Figure 7 displays the changing structure of the consumption of prescription pharmaceuticals. While *Figure 3* shows the share of pharmaceuticals grouped in the individual price groups, *Figure 7* illustrates the consumed amount of DDDs of pharmaceuticals grouped into one of the seven price groups. The consumption of relatively more expensive pharmaceuticals was steadily decreasing. The consumption of relatively cheaper pharmaceuticals saw a growing share after 2005. In 2005, 70 percent of all consumed pharmaceuticals had a current price below €0.6 per DDD, while in 2014 the share of pharmaceuticals in this price range rose to 86.3 percent, an increase of over 23 percent. In the last decade, the structure of consumption has thus changed notably in favour of lower-priced pharmaceuticals.

Figure 7: *Structure of the consumption of pharmaceuticals in DDDs in % according to selected price groups, 2001–2014*



The expenditures for prescription pharmaceuticals available on the market during the entire period 2001–2014 represent 39.2 percent of total expenditures for prescription pharmaceuticals over the entire analysed period (see *Table 1*). For these pharmaceuticals,

the Fisher price index is shown in Table 1. The Fisher price index shows the price change over the full analysed period. Based on the values of the Fisher index, we calculated the average annual price change for the studied period (current prices were used). In addition, we separated the change in the full price and the price reimbursed by the HIIS (CHI price). During the period 2001–2014, the average annual decrease of the total price was 3 percent, while the CHI price was declining faster by 1.4 percentage points. In the same period, average annual inflation was positive and slightly exceeded 3 percent. Annual inflation measured by the consumer price index ranged between 2.5 and 7.5 percent in the pre-crisis period with the inflation rate reaching 5.7 percent in 2008 and then dropping to between 1 and 2 percent after 2009, reaching the highest level of 2.6 percent in 2012 and then nearing 0 in 2014 (SURS, 2016a).

Table 1: *Fischer price index and average annual price change for two time periods*

Prescription pharmaceuticals included in the index	Share of pharmaceuticals included in the index in total expenditures over the analysed period in %		Fischer index	Average annual price change in %
2001–2014 n = 560	39.2	Total price	66.9	-3.0
		CHI price	55.5	-4.4
2008–2014 n = 1,249	80.4	Total price	65.2	-6.9
		CHI price	58.1	-8.7

Note: Current prices were used

Given that the pharmaceuticals included in the 2001–2014 results do not represent a large enough share of total expenditures, the analysis was narrowed to the 2008–2014 period to assure a more representative sample of pharmaceuticals and to investigate the post-crisis price trends, especially considering the low level of general inflation. As shown by *Table 1*, the average annual price change calculated for a shorter time period (2008–2014) includes 1,249 prescription pharmaceuticals, representing 80.4 percent of total expenditures over the entire analysed period. In this more recent period, the price of prescription pharmaceuticals fell considerably faster, resulting in an average annual total price drop of 6.9 percent. The average annual decrease of the CHI price was notably higher, i.e. 8.7 percent. In this post-crisis period, the average annual inflation measured by the consumer price index remained positive at the level of 1.5 percent (SURS, 2016a), thus notably deviating from the price dynamics characterising prescription pharmaceuticals.

2.2 Price structure and price dynamics of new and innovative prescription pharmaceuticals

In this subsection, we investigate the pricing of new pharmaceuticals and explore whether the pressures to slow the growth of pharmaceutical expenditures impacted the rate and the time lag of changes of current prices for innovative pharmaceuticals. New

pharmaceuticals, as used in this study, are classified as either innovative pharmaceuticals entering the market or as previously available pharmaceuticals that were introduced in a different form (e.g. new packaging). In the first part, we analyse both types of new pharmaceuticals together, and later we investigate the price dynamics for a group of innovative pharmaceuticals only.

To explore whether the intensity and speed of the current price changes altered during the investigated 2001–2014 period, we compared the price dynamics over five sub-periods. For every initial year of a selected sub-period we identified new pharmaceuticals which were added to the list of pharmaceuticals reimbursed by HIIS in that year. The number of new pharmaceuticals and their share in expenditures are shown in *Table 2*. The results show that while during the first sub-period the price of pharmaceuticals fell on average yearly by only 2.5 percent (2.3 percent in case of the CHI price), this average annual decrease was considerably stronger over the last sub-period, i.e. 8.3 percent (8.7 percent for the CHI price). An interesting shift is characteristic for 2008, which can be related to the stronger pressures to limit health expenditure growth in the crisis period. Before that year, the total price was on average falling faster than the CHI price. After 2008, however, there was a stronger decrease in the CHI price reimbursed by the HIIS that was achieved by shifting some of the burden of funding pharmaceuticals to voluntary health insurance by increasing the co-payment rate.

Table 2: *Fischer price indices and average annual price changes of new pharmaceuticals for five time periods*

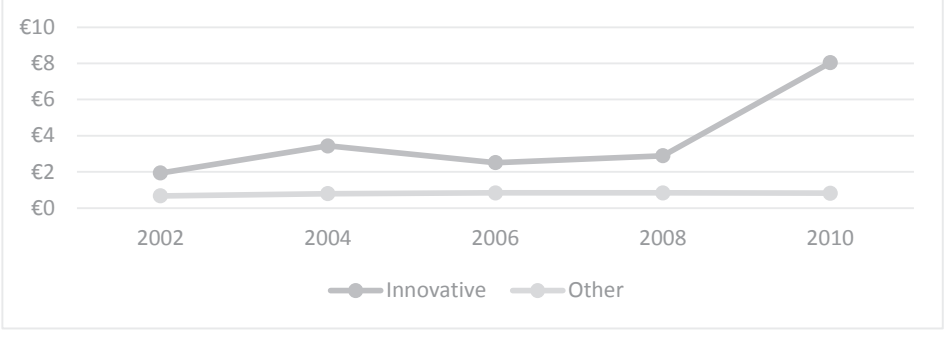
New prescription pharmaceuticals included in the index	Share of pharmaceuticals included in the index in total expenditures over the analysed period in %		Fischer index	Average annual price change in %
2002–2006 n = 115	7.8	Total price	90.4	-2.5
		CHI price	91.1	-2.3
2004–2008 n = 118	8.8	Total price	81.4	-5.0
		CHI price	83.3	-4.5
2006–2010 n = 140	4.9	Total price	81.3	-5.1
		CHI price	71.6	-8.0
2008–2012 n = 125	3.8	Total price	81.8	-4.9
		CHI price	72.9	-7.6
2010–2014 n = 192	2.3	Total price	70.6	-8.3
		CHI price	69.4	-8.7

Note: Current prices were used

Given that some newly introduced pharmaceuticals are actually only minor modifications of existing pharmaceuticals, we can expect that the price dynamics of new innovative

pharmaceuticals is different. To analyse the price changes of innovative pharmaceuticals, we first categorised every pharmaceutical in either the group of innovative pharmaceuticals (in the case of a new molecule or a new combination of molecules, or if the pharmaceutical was introduced to the market prior to patent expiration) or in the group of non-innovative pharmaceuticals (i.e. other pharmaceuticals). For every initial year of the studied sub-periods, median prices in € per DDD for innovative and other pharmaceuticals are shown in *Figure 8*. Innovative pharmaceuticals were more expensive, with the difference considerably widening in 2010. The average median price per DDD in the selected years shown in *Figure 8* was €3.8 for the innovative pharmaceuticals and €0.8 for the other pharmaceuticals.

Figure 8: *Median prices in € for innovative and other pharmaceuticals*



As shown in *Table 3*, the price of innovative pharmaceuticals dropped considerably slower than the price of other new pharmaceuticals. However, even though the average annual decline of prices of innovative pharmaceuticals was fairly low in the first three time periods, after the 2008 crisis prices started to also significantly decline for this group of pharmaceuticals. In the last sub-period, the average annual price decline for innovative pharmaceuticals was -3.6 percent compared to -7.7 percent for other new pharmaceuticals.

Table 3: *Fischer price indices and average annual price changes for innovative and other new pharmaceuticals for five time periods*

Time period		Innovative	Fischer index	Average annual price change in %
2002–2006	Total price	YES, n = 50	99.2	-0.2
		NO, n = 1,116	95.5	-1.1
	CHI price	YES, n = 50	105.9	1.5
		NO, n = 1116	94.9	-1.1
2004–2008	Total price	YES, n = 50	98.1	-0.5
		NO, n = 1,160	79.6	-5.5
	CHI price	YES, n = 50	100.6	0.2
		NO, n = 1,160	79.7	-5.5
2006–2010	Total price	YES, n = 44	97.5	-0.6
		NO, n = 1,296	74.6	-7,1
	CHI price	YES, n = 44	88.9	-2.9
		NO, n = 1,296	71.0	-8.2
2008–2012	Total price	YES, n = 38	90.3	-2.5
		NO, n = 1,406	74.3	-7.2
	CHI price	YES, n = 38	81.0	-5.1
		NO, n = 1,406	67.4	-9.4
2010–2014	Total price	YES, n = 36	86.2	-3.6
		NO, n = 1,553	72.5	-7.7
	CHI price	YES, n = 36	85.9	-3.7
		NO, n = 1,553	69.0	-8.9

Note: Current prices were used

Since *Table 3* only reveals the price dynamics of pharmaceuticals introduced to the list of pharmaceuticals reimbursed by the HIIS in 2010 or in selected prior years, we have only limited insight into the pricing and dynamics of current prices of the most recently introduced pharmaceuticals. This is why we additionally investigated how the newly introduced innovative pharmaceuticals were priced over the period 2011–2014. *Table 4* compares the median current price in € per DDD for all pharmaceuticals with the median current price of innovative pharmaceuticals. The difference between the median prices per DDD of new innovative pharmaceuticals and all pharmaceuticals also continued to grow in the most recent years, reaching nearly €6 in 2014.

Table 4: *Median prices in € for all and innovative pharmaceuticals, 2011–2014*

Pharmaceuticals	2011	2012	2013	2014
Innovative	4.60	4.71	6.49	6.63
All	0.78	0.80	0.74	0.72

Note: Current prices were used

Table 5: *Quartile percentage price changes in % within one year after the introduction of an innovative pharmaceutical*

	Group	2011–2012	2012–2013	2013–2014
p25	Innovative	-9.9	-1.3	-0.2
	All	-11.0	-10.1	-6.9
Median	Innovative	-3.6	0.0	0.0
	All	-4.0	-2.6	-0.7
p75	Innovative	-1.1	0.4	0.1
	All	-0.6	0.3	0.4
Share of pharmaceuticals with a price decrease	Innovative	94.0	49.0	46.0
	All	86.0	74.0	62.0

Note: Current prices were used

Table 5 shows quartile values of price changes between 2011 and 2014. In 2012, 50 percent of innovative pharmaceuticals had a price decline of at least 3.6 percent compared to the previous year, which is slightly less than the 4.0 percent level characteristic of the case of all pharmaceuticals together. In 2013 and 2014, annual price decreases slowed down and the prices of half of innovative pharmaceuticals, introduced in the preceding year, remained unchanged. Recent slower price decreases of new innovative pharmaceuticals are also revealed by the first quartile and the shares of those pharmaceuticals that experienced a current price decrease. While in 2012 25 percent of new innovative pharmaceuticals experienced an annual price decline of at least -9.9 percent, the value of the first quartile fell to only -0.2 percent in 2014. The share of innovative pharmaceuticals with a price decrease fell from 94 percent in 2012 to 46 percent in 2014. Quartile values of the annual price changes indicate that the prices of innovative pharmaceuticals remained more stable than the prices of other pharmaceuticals, although the pace of the price decreases of all prescription pharmaceuticals in Slovenia slowed significantly in 2013 and 2014.

CONCLUSIONS AND DISCUSSION

Decreases in current prices and the altered structure of the consumption of prescription pharmaceuticals in favour of relatively less expensive counterparts explain well why Slovenia was able to increase its consumption while cutting its nominal expenditures for prescription pharmaceuticals after 2010. The paper shows that up to 2009 the share of pharmaceuticals in the highest price groups was slowly increasing, while after that year the share started to decline. The structure of pharmaceuticals, according to the relative price changes, also altered. Since 2003, there has been a substantial decrease in the share of pharmaceuticals with high current price growth exceeding 3 percent per year. The share of such pharmaceuticals was lowest in 2011. The strongest price decreases occurred in 2012 when more than 70 percent of all pharmaceuticals experienced an annual price decline. In

2012, 55 percent of all pharmaceuticals had at least a 3 percent price cut. The structure of the consumption of pharmaceuticals, measured in DDDs, also changed in the investigated time period in favour of pharmaceuticals from the two lowest price groups. In 2005, 70 percent of prescribed pharmaceuticals had a price below €0.6 per DDD, while in 2014 the share of pharmaceuticals in this price range rose to 86.3 percent.

Fisher price indices were utilised to summarise changes in the current prices of individual pharmaceuticals. The results reveal notable declines in prices, especially after the economic crisis. During the period 2008–2014, the prices of a large share of pharmaceuticals, representing over 80 percent of total expenditures for prescription pharmaceuticals over the analysed period, dropped considerably, resulting in an average annual price decrease of 6.9 percent. The average annual decrease of the CHI price was even stronger, totalling 8.7 percent. In this post-crisis period, average annual inflation remained positive at the level of 1.5 percent, thus notably deviating from the price dynamics characterising the prescription pharmaceuticals. The analysis presented in this paper also reveals that, before 2008, the total prices of prescription pharmaceuticals fell faster than the CHI prices reimbursed by the HIIS. In the post-crisis period, the CHI price decreases became stronger than the total price decreases.

To show whether the intensity and pace of the price changes also altered for new innovative pharmaceuticals during the investigated 2001–2014 period, we compared five sub-periods. We found that the innovative pharmaceuticals exhibited higher prices compared to the other pharmaceuticals, and that the price reduction for the innovative group was less pronounced. However, even though the average annual decline in prices of innovative pharmaceuticals was low in the first three sub-periods, prices started to fall faster after the 2008 crisis. Over the 2008–2012 period, the average annual price decrease of innovative pharmaceuticals introduced in 2008 equalled 2.5 percent (7.2 percent for all pharmaceuticals), and over the latest analysed sub-period of 2010–2014 the average annual price decline for innovative pharmaceuticals introduced in 2010 was 3.6 percent (7.7 percent for all pharmaceuticals). A more detailed analysis of the most recent four years including 2011, 2012, 2013 and 2014 reveals, however, that the price difference between innovative pharmaceuticals and other pharmaceuticals has been widening. Annual price changes characteristic for this period indicate that the prices for the majority of newly introduced innovative pharmaceuticals in 2013 and 2014 remained stable within 1 year of their inclusion on the list of pharmaceuticals reimbursed by the HIIS. Further, the pace of the price decreases of all prescription pharmaceuticals in Slovenia significantly slowed in 2013 and 2014.

The results presented in this paper reveal the price changes for prescription pharmaceuticals in Slovenia in the 2001–2014 period and selected sub-periods. The sub-periods were selected to account for the impact of the 2008 economic crisis. However, it is important to note that a more detailed investigation of the determinants of price changes was not the primary goal of this paper. This lies beyond the scope of this paper given that numerous changes to both the macroeconomic environment (EU entry, adoption of the euro, severe economic crisis) and the health care system level were adopted in Slovenia to control the

growth of pharmaceutical expenditure. The latter include the supervision of prescription practices in 2002, new rules on the formation of prices from 2005 and their amendments in subsequent years, changes in co-payment rates for pharmaceuticals on intermediary lists in 2009, negotiations for mandatory discounts by innovative pharmaceutical companies in the 2010–2012 period, introduction of therapeutic reference pricing in 2013 etc. (Fürst, 2015). Since the listed measures impact different groups of pharmaceuticals and take effect with different time lags, a closer investigation of the determinants of price and expenditure changes is both a possibility and a challenge for further research. Another area that is a limitation of this paper and also a further research possibility is a more detailed decomposition of the dynamics of expenditures for prescription pharmaceuticals. This paper primarily focused on price changes but price changes need to be coupled with changes in consumption and changes in the mix of pharmaceuticals to fully explain how the price cuts contributed to the growth of consumption and accessibility to new innovative pharmaceuticals. Even though this paper provides some clear insights into the structural changes that emerged in the investigated period, further research and more detailed data which are currently unavailable in publically published datasets particularly for innovative pharmaceuticals is needed to investigate how the change in the mix and pricing of new innovative pharmaceuticals has impacted the overall expenditures for prescription pharmaceuticals in Slovenia.

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E/B/R

POVZETKI V SLOVENSKEM JEZIKU

THE IMPACT OF IMPLICIT ELECTRICITY MARKET COUPLING ON THE SLOVENIAN-AUSTRIAN BORDER ON THE EFFICIENCY OF CROSS-BORDER TRANSMISSION CAPACITY ALLOCATION AND SOCIAL WELFARE IN SLOVENIA

VPLIV IMPLICITNEGA SPAJANJA TRGOV Z ELEKTRIČNO ENERGIJO NA SLOVENSKO-AVSTRIJSKI MEJI NA UČINKOVITOST DODELJEVANJA ČEZMEJNIH PRENOSNIH ZMOGLJIVOSTI IN DRUŽBENO BLAGINJO V SLOVENIJI

ANŽE PREDOVNIK, MATEJ ŠVIGELJ

POVZETEK: *Na slovensko-avstrijski meji se trenutno razpoložljive količine čezmejnih prenosnih zmogljivosti (ČPZ) dodeljujejo po metodi eksplicitnih avkcij. V skladu s ciljnim modelom vzpostavitve enotnega evropskega trga z elektriko se bodo v prihodnosti razpoložljive količine ČPZ na tej meji dodeljevale po metodi implicitnih avkcij v okviru mehanizma spajanja trgov. Namen članka je s pomočjo simulacije proučiti vpliv implicitnega spajanja trgov na slovensko-avstrijski meji na učinkovitost dodeljevanja ČPZ in družbeno blaginjo v Sloveniji. Rezultati simulacije so pokazali, da bi uvedba implicitnega spajanja trgov na slovensko-avstrijski meji povečala učinkovitost dodeljevanja ČPZ na tej meji, znižala ceno elektrike in povečala obseg trgovanja na slovenskem borznem trgu z elektriko. Poleg tega bi uvedba implicitnega spajanja trgov na slovensko-avstrijski meji povečala družbeno blaginjo v Sloveniji.*

Ključne besede: *spajanje trgov, implicitne avkcije, trg elektrike za dan vnaprej, Slovenija*

IMPACT OF CORPORATE POWER ON CONSUMPTION, DEBT AND INEQUALITY: POLITICAL-ECONOMIC MODEL OF CCC

VPLIV KORPORATIVNE MOČI NA POTROŠNJO, DOLG IN NEENAKOST: POLITIČNO EKONOMSKI MODEL KUMULATIVNE IN KROŽNE VZROČNOSTI

FRANCI PORENTA

POVZETEK: *Literatura je bogata s študijami o dohodkovni neenakosti, potrošnji, javnem dolgu in dolgu gospodinjstev, vendar pomanjkljiva s študijami o korporacijah ter njihovi korporativni moči. Ta članek prikazuje kako korporativna moč vpliva na povečano potrošnjo z namenom zavarovanja svojih investicij in zagotovitve zadostnega povpraševanja. Drugič, naraščajoče potrošništvo vpliva na rastoči dolg gospodinjstev in javni dolg z več transmisijski mehanizmi, ki delujejo hkrati in se medsebojno krepijo. Tretjič, rastoči dolg gospodinjstev in javni dolg povečujeta neenakost, onemogočata vladi, da vlaga v izobraževanje, zdravstvo, infrastrukturo ali socialne transferje ter preprečuje ljudem, da vlagajo v svojo izobrazbo ali povečujejo svoje prihranke in posledično svojo premoženjsko in finančno neodvisnost. Nazadnje, neenakost povzroča naraščanje korporativne moči. Ljudje, ki so osiromašeni, in s tem neenaki v primerjavi s produkcijskimi lastniki in kapitalisti, so tudi šibkejši v pogajalskem procesu. Ne morejo izboljšati svojega položaja, zato se korporativna moč poveča, kar sklene kumulativno in krožno vzročnost.*

Ključne besede: *korporativna moč, potrošnja, dolg, kumulativna krožna vzročnost, neenakost*

DOES A FIRM'S OPEN INNOVATION MODE MATTER?

KAKO POMEMBNE SO RAZLIČNE DIMENZIJE ODPRTEGA INOVIRANJA?

KAJA RANGUS

Odprto inoviranje je večdimenzionalni konstrukt, ki pod eno streho združuje številne organizacijske aktivnosti, kot so vključevanje uporabnikov, zunanje partnerstvo, licenciranje intelektualne lastnine, ustanavljanje novih podjetij, ipd. S študijo, ki temelji na kvalitativnih in kvantitativnih statističnih analizah, želimo prispevati teoretično in empirično podlago za odgovore na nekatera pomembna vprašanja, ki se pojavljajo v literaturi o odprtem inoviranju, kot na primer: Ali obstajajo različni načini odprtega inoviranja? Kako implementirati različne dimenzije odprtega inoviranja? Ali so podjetja, ki so bolj odprta v vseh dimenzijah odprtega inoviranja, bolj inovativna? Vzorec podjetij iz treh različnih držav smo razvrstili glede na njihov rezultat izvajanja posamezne dimenzije odprtega inoviranja in tako prikazali različne oblike odprtega inoviranja, tj. različne kombinacije združevanja različnih dimenzij odprtega inoviranja. S tem želimo pomagati managerjem pri odločitvah o tem, katere dimenzije odprtega inoviranja morajo najbolj spodbujati ter kako uspešno implementirati omenjeni koncept v svojem podjetju.

Ključne besede: *odprto inoviranje, uspešnost inoviranja, klasterska analiza, vključenost zaposlenih*

DETERMINANTS OF OUTSOURCING SATISFACTION: THE CASE OF SLOVENIAN SMES

DETERMINANTE ZADOVOLJSTVA Z ZUNANJIM IZVAJANJEM: PRIMER SLOVENSKIH MALIH IN SREDNJE VELIKIH PODJETIJ

TADEJ SMOGAVEC, DARJA PELJHAN

POVZETEK: *V primerjavi z velikimi podjetji se mala in srednje velika podjetja soočajo z drugačnimi izzivi zunanjega izvajanja. Obstoječe raziskave zunanjega izvajanja v malih in srednje velikih podjetjih so skope in nepreprič̌ljive, zato je namen našega članka raziskati, ali so managerji malih in srednje velikih podjetij zadovoljni z zunanjim izvajanjem in kaj vpliva na njihovo zadovoljstvo. S tem namenom smo izvedli empirično raziskavo na vzorcu 249 slovenskih malih in srednje velikih podjetij. Opravljena raziskava prispeva k obstoječemu znanju o zunanjem izvajanju v malih in srednje velikih podjetjih, zlasti na področju determinant, ki vplivajo na zadovoljstvo z zunanjim izvajanjem. Prvi prispevek raziskave je posodobljena opredelitev zunanjega izvajanja, ki jo je mogoče uporabiti v podjetjih vseh velikosti. Navedena opredelitev je primernejša za raziskovanje v malih in srednje velikih podjetjih kot doslej obstoječe opredelitve, ki so bolj uporabne za raziskovanja v večjih podjetjih. Drugi prispevek predstavlja ugotovitev, da mala in srednje velika podjetja v večji meri predajajo aktivnosti v strateško zunanje izvajanje na podlagi občasnih naročil, kar je v nasprotju z obstoječimi teoretičnimi in empiričnimi ugotovitvami. To pomeni, da so podjetja izpostavljena večjim tveganjem in nižji stopnji zadovoljstva z zunanjim izvajanjem. V članku definiramo in argumentiramo štiri determinante, ki vplivajo na zadovoljstvo z zunanjim izvajanjem, in sicer razloge za zunanje izvajanje, kriterije za izbor zunanjega izvajalca, dejavnike tveganja in težave z zunanjim izvajanjem. Razlogi vplivajo na zadovoljstvo s strateškim zunanjim izvajanjem, kriteriji za izbor zunanjega izvajalca vplivajo na zadovoljstvo s tradicionalnim zunanjim izvajanjem, težave pa vplivajo na zadovoljstvo tako s strateškim kot tudi s tradicionalnim zunanjim izvajanjem.*

Ključne besede: *zunanje izvajanje, zadovoljstvo, tveganje, mala podjetja, srednja podjetja, tradicionalno zunanje izvajanje, strateško zunanje izvajanje*

NEW INSIGHTS INTO THE PRICE DYNAMICS OF PRESCRIPTION PHARMACEUTICALS IN SLOVENIA OVER THE PERIOD 2001–2014

NOVI VPOGLEDI V DINAMIKO CEN ZDRAVIL V SLOVENIJI

PETRA DOŠENOVIĆ BONČA, DENIS MARINŠEK

POVZETEK: *V članku so proučene spremembe cen zdravil na recept v Sloveniji v obdobju 2001-2014, posebna pozornost pa je namenjena cenovni politiki inovativnih zdravil. Cenovna struktura zdravil, letna dinamika cen in spremembe strukture potrošnje zdravil so grafično in statistično analizirane, prikazan pa je tudi Fisherjev indeks cen. Članek pokaže, da so se cene zdravil po začetku ekonomske krize leta 2008 začele opazno zniževati, njihov poprečni letni upad pa je v obdobju 2008-2014 znašal kar 6,9 %. Letne spremembe cen in prilagoditev strukture potrošnje pojasnjujejo, kako smo lahko v Sloveniji od leta 2010 dalje kljub naraščanju potrošnje zdravil na recept, zniževali izdatke zanje.*

Ključne besede: *zdravila na recept, indeks cen, inovativna zdravila*