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ANALÝZA ZÁVISLOSTI SILNIČNÍ DOPRAVNÍ INFRASTRUKTURY A PŘEPRAVNÍCH VÝKONŮ VE VAZBĚ NA HDP ČESKÉ REPUBLIKY

THE ANALYSIS OF THE DEPENDENCE OF THE ROAD TRANSPORT
INFRASTRUCTURE AND TRANSPORT PERFORMANCES IN THE RELATION
WITH GDP OF THE CZECH REPUBLIC

Barbora Antonová, Jan Chocholáč, Ivo Drahotský

Abstract: *The economic performance of a country can be measured by various macroeconomic indicators. Gross domestic product (GDP) is considered as one of the most important and closely critical indicator of economic performance. GDP and its development in time are influenced by many factors. Transport infrastructure is one of the pillars of economic development. The paper deals with the relationship between the quality of the road transport infrastructure and transport performances in the Czech Republic and the economic development (measured by the key macroeconomic indicator, GDP growth rate). The attention is focused on the influence of the range of highway infrastructure and road transport performances in the Czech Republic on GDP. Statistical methods (the regression and correlation analysis) are used for examining the relation between these indicators.*

Keywords: *Transport infrastructure, Gross domestic product, Transport performance, Economy growth, Road freight transport.*

JEL Classification: *H54.*

Úvod

Hospodářskou výkonnost jakéhokoliv státu je možné měřit a hodnotit s využitím různých makroekonomických ukazatelů. Každý stát si přitom klade za cíl maximalizovat produkt, zvyšovat míru zaměstnanosti, udržovat cenovou stabilitu a dosahovat vyrovnané bilance se zahraničím. K tomu využívá fiskální, monetární, zahraničně-obchodní a důchodovou politiku.

Z hlediska měření makroekonomické výkonnosti dané ekonomiky je jako nejdůležitější ukazatel definován hrubý domácí produkt (HDP). Tento ukazatel je velmi úzce spojen s hospodářským výkonem dané ekonomiky a je možné jej definovat jako tržní hodnotu všech vyrobených statků a služeb v dané ekonomice během určitého časového období výrobními faktory na území dané ekonomiky bez ohledu na to, kdo dané výrobní faktory vlastní.

Vývoj a kontinuita HDP v čase je determinována mnoha faktory. Vzhledem k tomu, že dopravní infrastrukturu je možné označit za jeden ze základních podmiňujících prvků, který implikuje hospodářský rozvoj daného státu a je klíčový pro hospodářský růst ve všech státech, tak je nutné akcentovat i provázanost kvality dopravní infrastruktury a HDP daného státu. Kvalitní dopravní infrastruktura, zejména její rozsah, hustota sítě, propustnost, bezpečnost, rizikovost vzniku dopravních kongescí a další aspekty, se odrážejí i v dalších ekonomických ukazatelích daného státu.

Dopravní infrastruktura totiž představuje veřejný kapitál, který může mít výrazný vliv například při rozhodování investorů o jejich budoucích aktivitách, ať již z hlediska lokace logistických center, výrobních závodů a při dalších manažerských rozhodnutích, zda investoři vloží do daného geografického regionu svá aktiva, která na základě multiplikačního efektu ovlivní i další ekonomické ukazatele.

Cílem tohoto článku je analyticky posoudit, zda existuje závislost mezi rozsahem páteřních pozemních komunikací České republiky, přepravních výkonů silniční nákladní dopravy a hospodářským vývojem České republiky, který je sledován na základě klíčového makroekonomického ukazatele (růstu HDP), za současného abstrahování příčinných souvislostí. K dosažení tohoto cíle bude využito statistických metod (regresní a korelační analýzy). Uvedený cíl se skládá ze dvou dílčích cílů. Prvním z nich je posouzení, zda existuje závislost mezi rozsahem silniční dopravní infrastruktury, vyjádřeným délkou dálniční sítě, a HDP České republiky. Druhým dílčím cílem je posouzení, zda existuje závislost mezi přepravními výkony silniční nákladní dopravy a HDP České republiky. Analýza bude provedena za období 1995 až 2012 pro Českou republiku.

1 Formulace problematiky

Teoretické vymezení řešené problematiky je rozděleno s ohledem na definované dílčí cíle na dvě části, přičemž je vždy v teoretické rovině sledován vztah jednoho ze sledovaných ukazatelů a hrubého domácího produktu.

1.1 Teoretické vymezení vztahu dopravní infrastruktury a HDP

Zkoumání vlivu investic do infrastruktury ve vazbě na hospodářský růst daného státu se věnovala celá řada výzkumů a autorů v posledních mnoha desetiletích. Mezi ty nejvýznamnější můžeme zařadit: Strassmann [24], Turin [25], Drewer [7], Wells [27], Akintoye a Skitmore [1], Pradhan a Bagchi [20], Ball a Wood [3] nebo Crosthwaite [5]. Všechny tyto studie se zabývaly jednoduchými korelacemi mezi dvěma základními proměnnými, a to investicemi do infrastruktury a hospodářským růstem daného státu. Většina z těchto studií dospěla k pozitivnímu závěru, respektive k tomu, že vyšší míra investic do infrastruktury daného státu implikuje hospodářský růst tohoto subjektu.

Někteří autoři, například Granger [14], se nezabývali pouze analýzou vztahu mezi investicemi do infrastruktury a hospodářskou výkonností dané ekonomiky, ale také hledáním příčin a faktorů, které tento vztah implikují a do jaké míry závislost ovlivňují.

Na výzkum Grangera navázali Tse a Ganesan [26], kteří testovali Grangerovu definovanou kauzalitu mezi investicemi do infrastruktury a výkonností ekonomiky na bázi čtvrtletních dat. Grangerem definovanou kauzalitu potvrdili, avšak pouze jednosměrně, a to tak, že růst HDP ovlivňuje růst investic do infrastruktury. Jejich metodika však umožňuje pouze odhad některých krátkodobých stavů, ale není možné ji aplikovat pro dlouhodobě trvající rovnovážné stavy. [8,13,15]

Infrastrukturu je možné členit podle Zákona č. 350/2012 Sb., o změně stavebního zákona a změně souvisejících zákonů, ve znění pozdějších předpisů, na:

- Dopravní infrastrukturu (stavby pozemních komunikací, drah, vodních cest, letišť a s nimi související zařízení).
- Technickou infrastrukturu (vedení a stavby a s nimi související zařízení technického vybavení, například vodovody, kanalizace, čistírny odpadních vod, trafostanice, energetické vedení, komunikační vedení, produktovody a další).

- Občanské vybavení (stavby, zařízení a pozemky sloužící pro vzdělávání a výchovu, sociální služby, zdravotní služby, kulturu a jiné). [19]

Liszt [17], Bougheas [4] a Chiang [16] ve svých vědeckých statích potvrdili, že kvalita a rozsah infrastruktury jsou významným předpokladem pro další ekonomický růst daného státu. Je nutné akcentovat, že se však jedná o podmínku nutnou, nikoliv však postačující, k zajištění ekonomického růstu. Výkonnost dané ekonomiky je totiž ovlivněna celou řadou dalších faktorů.

Někteří autoři, jako například Démurger [6] nebo Esfahami a Ramirez [9], se zabývali pouze závislostí dopravní infrastruktury ve vazbě na ekonomický růst, přičemž výsledkem jejich zkoumání byl pozitivní vliv [6,9]. Naopak jejich oponentem je Ghali [12], který dospěl k závěru, že investice do dopravní infrastruktury mají negativní vliv na ekonomický růst.

První empirický výzkum, který se zabýval problematikou vztahu dopravní infrastruktury a ekonomického růstu státu, provedl Aschauer [2] v USA. Výsledky jeho výzkumu potvrdily, že páteří dopravní infrastruktura, mezi kterou jsou řazeny dálnice a letiště, má výrazný vliv na produktivitu státu. Meng [18] ve své studii, která je zaměřena na město Tianjin (Čína), dospěl k závěru, že dopravní infrastruktura přispívá velkou měrou k ekonomickému růstu a naopak ekonomický růst nepodporuje rozvoj dopravní infrastruktury. Příčinou této jednostranné vazby je podle jeho názoru v podmínkách Tianjinu vláda, která spravuje dopravní infrastrukturu a pro její financování využívá především cizí kapitál.

Salava a Švadlenka [23] se zabývali makroekonomickými aspekty rovnováhy dopravního systému, které jsou v souladu s hlavními makroekonomickými cíli dané ekonomiky. Dále definovali, že produkt, respektive HDP a segment dopravy jsou vzájemně obousměrně závislé. Vztah mezi ekonomickým růstem (HDP) a vývojem v sektoru nákladní dopravy podle nich sice není proporcionální, v některých případech se může jednat až o dvojnásobný růstový rozdíl mezi oběma sledovanými proměnnými.

1.2 Teoretické vymezení vztahu přepravních výkonů silniční nákladní dopravy a HDP

Ramanathan [22] ve své obsáhlé studii konstatuje, že existuje široké spektrum výzkumů, jež se zaměřují na sledování přepravních výkonů, ať již v osobní nebo nákladní dopravě, ve vazbě na další proměnné, kterými například jsou: spotřeba pohonných hmot, spotřeba elektrické energie, kupní síla obyvatelstva, ceny energií a podobně.

Autor dále uvádí, že je realizace přepravních výkonů, zejména silniční nákladní dopravou, nutnou podmínkou pro další ekonomický rozvoj daného státu a že má pozitivní vliv na základní makroekonomické ukazatele, zejména pak na HDP. Z tohoto důvodu je třeba pečlivě plánovat rozvoj a růst tohoto odvětví. Budoucí přepravní výkon tohoto tržního segmentu musí být také správně predikován s dostatečným časovým předstihem, aby mohlo dojít ke zpřístupnění a nabídnutí příslušné dopravní infrastruktury ještě předtím, než jsou dané přepravní výkony poptány trhem. [22]

Článek se zabývá rozsahem dálniční sítě České republiky (ČR), která je považována za páteří síť z hlediska dopravní infrastruktury daného státu (viz Aschauer [2]) a zkoumá její vliv a závislost ve vazbě na vývoj HDP v přepočtu na obyvatele. Dále je sledován vztah přepravních výkonů silniční nákladní dopravy v České republice, který je podle Salavy a Švadlenky [23] závislý, avšak není proporcionální, ve vazbě na vývoj HDP

v přepočtu na obyvatele. Analýza bude provedena v České republice v období let 1995 – 2012. Následně budou diskutovány získané výsledky.

2 Metody

Z hlediska metodologie výzkumu budou zvoleny stejné postupy a metody, které uplatnili i autoři následujících studií (Strassmann [24], Turin [25], Drewer [7], Wells [27], Akintoye a Skitmore [1], Pradhan a Bagchi [20], Ball a Wood [3] a Crosthwaite [5]) při zkoumání vlivu investic do infrastruktury ve vazbě na hospodářský růst daného státu, přičemž využívali vždy jednoduchých korelací sledovaných základních proměnných.

Analýza závislosti mezi rozsahem dálniční infrastruktury, resp. přepravních výkonů v silniční nákladní dopravě, a hospodářským vývojem ČR je provedena prostřednictvím korelační analýzy, konkrétně byl využit Spearmanův koeficient pořadové korelace.

Před samotnou korelační analýzou bude proveden Shapiro-Wilkův test normality dat (1), který ověřuje, zda má zkoumaný statistický výběr normální rozdělení pravděpodobnosti. [21]

$$W_n = \frac{\sum_{i=1}^{k_n} a_{n,i} \cdot (x_{(n-i+1)} - x_{(i)})^2}{\sum_{i=1}^n (x_i - \bar{x})^2} \quad (1)$$

kde

n – rozsah výběru,

$x_{(i)}$ – i -tá pořadková statistika (i -té nejmenší číslo ve výběru),

$a_{n,i}$ – tabelované konstanty závislé na rozsahu výběru,

k_n – počet konstant $a_{n,i}$ závislý na rozsahu výběru,

$$k_n = \begin{cases} \frac{n}{2} & \text{pro sudá } n \\ \frac{n+1}{2} & \text{pro lichá } n \end{cases}$$

\bar{x} – aritmetický průměr výběru.

Hypotézu H_0 zamítáme na hladině významnosti α , když platí:

$$W_n > CW_{n,\alpha},$$

kde $CW_{n,\alpha}$ jsou tabelované hodnoty.

V opačném případě není možné hypotézu zamítnout.

Spearmanův koeficient pořadové korelace [21]

$$r_s = \frac{\sum_i (R_i - \bar{R})(S_i - \bar{S})}{\sqrt{\sum_i (R_i - \bar{R})^2} \cdot \sqrt{\sum_i (S_i - \bar{S})^2}} \quad (2)$$

Testovací kritérium (3), které využívá Studentovo rozdělení s $N-2$ stupni volnosti [21]

$$t = r_s \sqrt{\frac{N-2}{1-r_s^2}} \quad (3)$$

3 Rozbor problému

3.1 Vývoj vybraných analyzovaných ukazatelů

Rozsah dálniční infrastruktury, přepravní výkony i výkonnost ekonomiky byla v ČR sledována v období let 1995 až 2012. Výchozí data jsou prezentována v Tab. 1.

Celkový rozsah dálniční infrastruktury v ČR byl 751 kilometrů v roce 2012. Za sledované období docházelo k postupnému nárůstu rozsahu dálniční infrastruktury; v ČR o 81,4 %. Nejvíce byla dálniční infrastruktura v ČR rozšířena v roce 2006, kdy došlo k nárůstu o 69 km. V letech 1999 a 2003 nebyl v ČR zprovozněn žádný nový úsek dálniční infrastruktury.

Z údajů v Tab. 1 je zřejmý nárůst počtu kilometrů dálniční infrastruktury po roce 2004, kdy Česká republika vstoupila do EU a měla tak možnost čerpat finanční prostředky určené na zkvalitnění a rozšíření dopravní infrastruktury ze strukturálních fondů. Od roku 2004 se v ČR rozšířila dálniční síť o 233 kilometrů nových dálnic (tj. o 45 %). V současné době jsou v ČR plánovány a postupně realizovány investice do zlepšení technického stavu dálnic a dále je plánováno rozšíření dálniční infrastruktury v návaznosti na evropské dopravní cesty.

Tab. 1: Výchozí data

Rok	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Rozsah dálniční sítě (km)	414	423	486	499	499	501	517	518	518	546	564	633	657	691	729	734	745	751
Přepravní výkony (mld. tkm)	31,26	30,05	40,64	33,91	36,96	39,03	40,26	45,05	46,56	46,01	43,44	50,36	48,14	50,87	44,95	51,83	54,83	51,22
HDP (běžné ceny na 1 obyv. EUR)	4400	5100	5300	5800	5900	6500	7400	8500	8600	9400	10700	12100	13400	15400	14100	14900	15600	15300

Zdroj: [10,11]

Vývoj přepravních výkonů silniční nákladní dopravy je uveden také v Tab. 1. Z tabulky je patrné, že přepravní výkony nerostou v celém sledovaném období. ČR zaznamenala sedm poklesů v letech 1996, 1998, 2004, 2005, 2007, 2009 a 2012. Přepravní výkony poklesly nejvíce ve dvou letech, a to v roce 1998 (pokles o 6,729 mld. tkm) a v roce 2009 (5,923 mld. tkm). Vzhledem k tehdejšímu hospodářskému krizi je velmi pravděpodobné, že pokles v roce 2009 byl implikován hospodářskou krizí. Celkově je však možné konstatovat, že přepravní výkon vzrostl, přičemž v případě ČR o 63,8 %.

Vývoj hrubého domácího produktu ČR je zobrazen v Tab. 1. ČR vykazovala v období 1995-2007 ekonomický růst. ČR dosáhla v roce 2007 HDP na jednoho obyvatele ve výši 13 400 EUR, což představovalo trojnásobek oproti roku 1995. ČR vykazovala ekonomický růst i v roce 2008. O rok později došlo k poklesu HDP na obyvatele

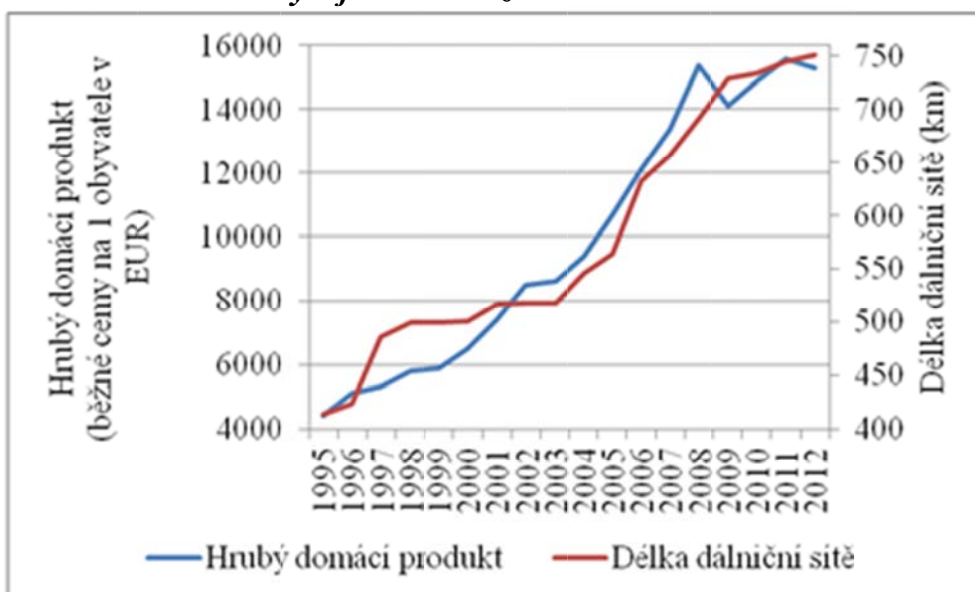
(z hodnoty 15 400 EUR na hodnotu 14 100 EUR). Pokles HDP byl způsoben hospodářskou krizí. Od roku 2010 však byl opět nastartován ekonomický růst a HDP roste.

3.2 Vývoj HDP a vybraných sledovaných ukazatelů

V další části textu je graficky zpracován vývoj sledovaných datových řad, a to závislost mezi:

- Vývojem HDP a rozsahem dálniční sítě ČR,
- vývojem HDP a přepravními výkony silniční nákladní dopravy ČR.

Obr. 1: Vývoj HDP a rozsahu dálniční sítě v ČR



Zdroj: vlastní zpracování autorů na základě [10,11]

Obr. 1 zobrazuje závislost mezi vývojem HDP a rozsahem dálniční sítě v ČR. Je patrné, že ve dvou letech ve sledovaném období dochází k poklesu HDP, nikoliv však k poklesu rozsahu dálniční sítě, ta roste, ve dvou letech pak stagnuje (1993 a 2003).

Obr. 2: Vývoj HDP a přepravních výkonů silniční nákladní dopravy ČR



Zdroj: vlastní zpracování autorů na základě [10,11]

Na Obr. 2 je zachycen vývoj HDP a přepravních výkonů silniční nákladní dopravy v ČR. Lze konstatovat, že vývoj přepravních výkonů silniční dopravy ČR vykazuje největší výkyvy (celkem sedm), zatímco HDP pokleslo ve sledovaném období dvakrát.

3.3 Testování závislosti sledovaných datových řad

Pro posouzení, zda mají sledované datové řady normální rozdělení pravděpodobnosti, byl využit Shapiro-Wilkův test normality dat. Výsledky testu (W_n) a p-hodnoty jsou zobrazeny v Tab. 2.

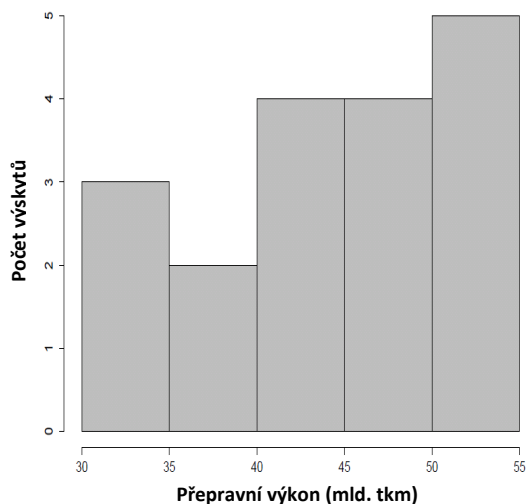
Tab. 2: Výsledky Shapiro-Wilkova testu normality dat

Datová řada	W_n	p-hodnota	Výsledek testu
ČR – HDP	0,8946	0,046400	H_0 zamítáme
ČR – přepravní výkony	0,9559	0,525200	H_0 přijímáme
ČR – rozsah dálniční sítě	0,8964	0,049765	H_0 zamítáme

Zdroj: vlastní zpracování autorů

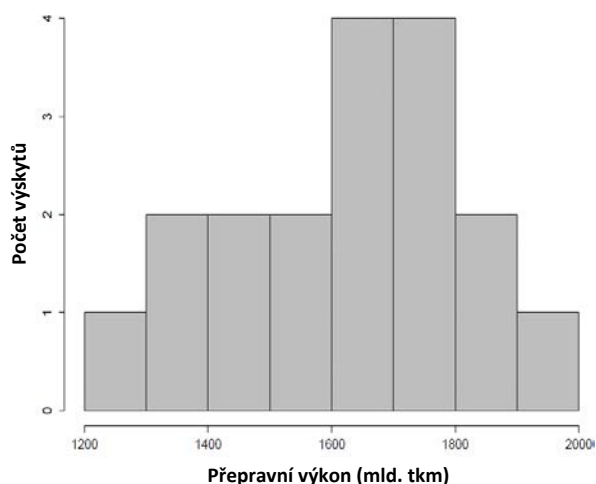
Z testování vyplynulo, že dvě datové řady (hrubý domácí produkt ČR a rozsah dálniční infrastruktury ČR) nesplňují podmínku Shapiro-Wilkova testu normality dat a mají jiné než normální rozložení pravděpodobnosti. Dále lze konstatovat, že datová řada (přepravní výkony ČR) splňuje kritéria Shapiro-Wilkova testu normality dat, tedy má normální rozdělení pravděpodobnosti. Tyto tři datové řady však vykazují nízké p-hodnoty, proto byly sestaveny histogramy, které tyto řady zobrazují (viz Obr. 3,4).

**Obr. 3: Četnost výskytů
(přepravní výkon ČR)**



Zdroj: vlastní zpracování autorů

**Obr. 4: Četnost výskytů
(přepravní výkon EU)**



Zdroj: vlastní zpracování autorů

Z histogramů je patrné, že ani tyto tři datové řady nemají normální rozdělení pravděpodobnosti. Z tohoto důvodu bude pro zjišťování vazby mezi těmito řadami využit Spearmanův koeficient pořadové korelace, který je neparametrický.

V Tab. 3 je zachycen Spearmanův koeficient pořadové korelace, který je ve všech třech případech velmi vysoký a ukazuje na silnou závislost HDP a přepravního výkonu silniční nákladní dopravy, resp. rozsahu dálniční infrastruktury. Pro potvrzení závislosti byl proveden test významnosti (nulová hypotéza H_0 : zkoumané veličiny jsou nezávislé, hladina

významnosti 0,05). Závislost byla testem potvrzena (viz p-hodnoty; nulová hypotéza H_0 byla zamítnuta).

Tab. 3: Výsledky testování závislosti mezi datovými řadami

Datová řada	Spearmanův koeficient pořadové korelace	p-hodnota	Výsledek testu
ČR – HDP a přepravní výkon	0,9153767	$1,011328e^{-07}$	H_0 zamítáme
ČR – HDP a rozsah dálniční sítě	0,9824385	$4,305445e^{-13}$	H_0 zamítáme

Zdroj: vlastní zpracování autorů

4 Diskuze

Nosným prvkem této kapitoly je diskuze výsledků získaných s využitím statistických metod. Analýza závislosti mezi rozsahem dálniční infrastruktury, respektive přepravními výkony silniční nákladní dopravy, a hospodářským vývojem České republiky, měřeným klíčovým makroekonomickým ukazatelem (růstem HDP), byla provedena prostřednictvím korelační analýzy, konkrétně byl využit Spearmanův koeficient pořadové korelace. Před samotnou korelační analýzou byl proveden Shapiro-Wilkův test normality dat, který potvrdil, že zkoumaný statistický výběr nemá normální rozdělení pravděpodobnosti. Z tohoto důvodu byl pro zjišťování vazby mezi datovými řadami využit Spearmanův koeficient pořadové korelace, který je neparametrický. Výsledné hodnoty Spearmanova koeficientu pořadové korelace, verifikované testem významnosti, implikují existenci závislosti mezi vyšetřovanými proměnnými.

4.1 Diskuze výsledků analýzy vztahu rozsahu dopravní infrastruktury a HDP

Z analýzy vstupních dat vyplynulo, že celkový rozsah dálniční infrastruktury České republiky byl na konci sledovaného období 751 kilometrů, přičemž mezi hraničními body analyzovaného období došlo k postupnému nárůstu rozsahu dálniční infrastruktury o 81,4 %. V letech 1995-2008 vykazovala Česká republika ekonomický růst. Následující dva roky byla česká ekonomika ovlivněna dopady hospodářské krize a v roce 2010 byl opět nastartován ekonomický růst.

Z provedené regresní a korelační analýzy vyplynulo, že vztah mezi zkoumanými datovými řadami (rozsah dálniční infrastruktury a HDP) je ve sledovaném období extrémně těsný; mezi analyzovanými veličinami tedy existuje silná funkční závislost. Tento závěr je podložen výsledky korelační analýzy, kdy byl využit Spearmanův koeficient pořadové korelace, jenž pro sledované datové řady dosáhl hodnoty 0,9153767; což implikuje silnou funkční závislost. Tento předpoklad byl následně verifikován testem závislosti (viz Tab. 3), který ji potvrdil. První ze stanovených dílčích cílů je tedy splněn.

Lze konstatovat, že výsledky analýzy jsou tedy v souladu s výše uvedenými výzkumy, které provedli Strassmann [24], Turin [25], Drewer [7], Wells [27], Granger [14], Akintoye a Skitmore [1], Pradhan a Bagchi [20], Ball a Wood [3] nebo Crosthwaite [5]. Tyto studie se zabývaly vztahy mezi dvěma základními proměnnými, a to infrastrukturou a hospodářským růstem daného státu, a dospěly k pozitivnímu závěru, respektive k tomu, že vyšší míra investic do infrastruktury, reprezentovaná například rozsahem sítě pozemních komunikací daného státu, implikuje i hospodářský růst tohoto ukazatele.

4.2 Diskuze výsledků analýzy vztahu přepravních výkonů silniční nákladní dopravy a HDP

Na základě vývoje přepravních výkonů silniční nákladní dopravy je možné konstatovat, že nemají rostoucí tendenci v celém sledovaném období. V letech 1996, 1998, 2004, 2005, 2007, 2009 a 2012 byly zaznamenány poklesy, přičemž k největšímu z nich došlo v roce 1998 (o 6,729 mld. tkm). Vzhledem k tehdejšími konsekvencím je opětovně velmi pravděpodobné, že pokles, zejména v roce 2009, byl implikován hospodářskou krizí. Celkově, za celé analyzované období, je však možné konstatovat, že přepravní výkon vzrostl o 63,8 %.

Z provedené regresní a korelační analýzy vyplynulo, že vztah mezi zkoumanými datovými řadami (přepravní výkony silniční nákladní dopravy a HDP) je ve sledovaném období extrémně těsný; mezi analyzovanými veličinami tedy existuje silná funkční závislost. Tento závěr je podložen výsledky korelační analýzy, kdy byl využit Spearmanův koeficient pořadové korelace, jenž pro sledované datové řady dosáhl hodnoty 0,9824385; kdy lze předpokládat silnou funkční závislost. Výsledek zkoumání byl následně verifikován testem závislosti (viz Tab. 3), který ji potvrdil. Druhý ze stanovených dílčích cílů je tedy taktéž splněn.

Výsledek provedené analýzy je v souladu se studií, kterou provedl Ramanathan [22]. Autor konstatuje, že realizace přepravních výkonů, zejména silniční nákladní dopravou, je nutnou podmínkou pro další ekonomický rozvoj daného státu a má pozitivní vliv na základní makroekonomické ukazatele, zejména na HDP.

Závěr

Problematickou závislosti mezi hospodářskou výkonností ekonomiky státu, měřenou některou z makroekonomických veličin (nejčastěji hrubým domácím produktem), ukazateli výkonnosti jednotlivých dopravních módů a rozsahem dopravní infrastruktury, se zabývá velké množství autorů. Tato publikace se zaměřila především na vazbu stěžejního makroekonomického ukazatele (hrubého domácího produktu) a rozsahu dálniční infrastruktury, kterážto je považována za kruciální, a ukazatele výkonnosti dopravní infrastruktury, resp. objemu přepravních výkonů silniční nákladní dopravy ČR v období 1995-2012.

Z hlediska analytických metod byla aplikována korelační analýza, která prokázala, že vztah mezi zkoumanými datovými řadami je extrémně těsný, což implikuje existenci silné funkční závislosti mezi sledovanými proměnnými. Na základě toho je tedy možné konstatovat, že rozsah dálniční sítě pozitivně ovlivňuje hospodářskou výkonnost dané ekonomiky. Dále byl potvrzen závěr studie provedené Ramanathanem [22], a to že přepravní výkony, zejména nákladní silniční dopravy, podmiňují ekonomický růst státu a ovlivňují vývoj hrubého domácího produktu.

Poděkování

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DEVELOPMENT OF SOCIOECONOMIC DISPARITIES ACROSS THE EU 2004+ COUNTRIES

Petra Applová

Abstract: *The aim of this paper is to determine whether it is possible, in line with the purpose of the cohesion policy, to identify the elimination of disparities across the EU 2004+ countries and their cohesion regions, as measured by a relevant method of geographical analysis of disparities. The disparities were assessed, based on the indicator of gross domestic product per capita, both for each country as a whole and for individual cohesion regions. We have chosen the Theil index as the primary method of assessment, with the results then being checked using the Adjusted Geographic Concentration index (AGC). Both methods have consistently shown that, although there are disparities in the GDP per capita indicator among the countries and their cohesion regions, the disparities can be qualified as relatively low (with the exception of Hungary) based on the values gained using the two methods. Regarding the actual development of disparities, the Theil index identified a significant increase, especially after the crisis year of 2008, while the harmonized AGC index of production revealed, with regard to the different development of individual national indices (stagnation, decline and growth), that the development of discrepancies in wealth creation has not changed.*

Keywords: *Regional disparities, Theil index, Concentration of production, Adjusted Geographic Concentration index (AGC).*

JEL Classification: *O57, R11.*

Introduction

Uneven regional development within the EU is an issue of growing importance, with the elimination of socioeconomic disparities at regional level and the strengthening of the region's competitiveness, social, and territorial cohesion being the primary objectives of the EU cohesion policy. The effectiveness of this policy is assessed based on its influence on the development of regional disparities, or on the elimination, growth or stagnation of regional differences that could be identified after the intervention of regional policy. The term "disparity" is generally perceived as a discord, inequality or imbalance of various phenomena, but the concept of regional disparity is understood in different ways and so far it does not have a complete theoretical and methodological framework for accurate interpretation. For example, Hučka [18] defines disparities as "*a difference or inequality of characteristics, phenomena or processes assigned to a definite location and occurring in at least two entities of this territory structure*". OECD [26] gives the term "disparity" clear economic overtones by stating that: "*territorial disparity indicates the degree to which the intensity of a certain economic phenomenon differs between regions of the same country*".

The causes and continuing importance of the cohesion policy can be also seen in the enlargement of the EU to include new member states of mostly lower economic performance. It is clear that its enlargement, mainly to the east, will continue in the coming years; therefore, we can anticipate in this context, among other things, an increase in regional disparities within the entire integration grouping.

Substantial volumes of funds have been spent in the context of cohesion policy to eliminate regional inequalities and disparities, and it is planned that to this important support of regional policy will continue throughout the 2014–2020 programming period¹. It is undisputable that the aim of cohesion policy is to enhance the efficiency of the provided funds. For this reason it is necessary to know how the affected regions develop in relation to the allocated resources, i.e. for example, whether the amount of funds received into the economies sparked the necessary multiplier effect or the undesirable deadweight effect [3].

1 Statement of problem

The topical problems of economic, social and regional inequalities, and the related evaluation of the impact of regional policy interventions are not just a contemporary phenomenon - already in the 1930s the first quantitative macroeconomic models emerged, for more detail see example [31]. The mentioned evaluation is a subject of a number of empirical studies in which research is often focused on the identification of trends in regional development in terms of convergence or divergence of the EU countries and regions, such as [6]; [15]; [22]; [33].

Given the importance of conducting an evaluation of EU regional policy, the objective of the presented paper is to determine whether it is possible to identify the elimination of discrepancies across countries after them becoming Member States in 2004, 2007, and 2013 ("EU 2004+²"), as well as across their cohesion regions, as measured by an appropriate method of geographic disparities analysis. For this paper the following parts of the research were selected: a) a relevant approach to the measurement of regional disparities was selected based on literature search; b) the results of the measurements; c) verification of the research results using a suitable evaluation method of disparities development across analyzed regions. As the beginning of the reference period the year 2000 was chosen, i.e. the period before the largest EU enlargement to date, which resulted in significant deepening of disparities across European regions (according to achieved economic performance as measured by GDP per capita, the acceding countries were the least developed regions across the entire EU [2]; [12]. The final year of the analysis is, based on the availability of data, the year 2013.

2 Methods

To achieve the main objective and to select a suitable method for regional disparities evaluation, a literature search was conducted, where the economic diversity of regions, the potential for international comparison, and also the possibility to break down the overall identified discrepancies into their components were considered the main prerequisites for the selection. Based on these conditions the research then focused on methods based on spatial (geographic) concentration and working with the comparison of relative values³, namely it focused on the approaches of generalized entropy that allow the break down

¹ Based on the approved multiannual financial framework there is an intention to allocate to the cohesion policy approximately 45.7% of the EU budget during the 2014–2020 period, which is 1.25 percentage points less than in the previous programming period [7], while there is almost 18% of the total cohesion policy expenditure allocated for the countries that acceded after 2004 [8].

² Czech Republic (CZ), Slovak Republic (SK), Poland (PL), Hungary (HU), Slovenia (SI), Malta (MT), Cyprus (CY), Lithuania (LT), Latvia (LV), Estonia (EE), Romania (RO), Bulgaria (BG), Croatia (HR).

³ Among the approaches based on geographic concentration most frequently belong the degree of concentration; localization quotient method; Gini coefficient; Lorenz curve; Theil index of inequality, or concentration coefficient [21].

of a particular discrepancy into an intergroup and intragroup component of the measured variability [27]; [29].

Within the approaches of generalized entropy the most commonly used methods for determining regional disparities is the so called basic rate of entropy (the formula for general entropy), which is defined in the population-weighted form by equation (1) in such a way as to capture the impact of socio-economic disparities per capita in defined areas [5]; [20]; [32]:

$$GE(\alpha) = \frac{1}{\alpha^2 - \alpha} \left[\sum_{i=1}^k \frac{n_i}{n} \left(\frac{y_i}{\bar{y}} \right)^\alpha - 1 \right] \quad (1)$$

where n is the number of individuals in the sample, y_i is the income of an individual i , and \bar{y} the arithmetic mean income.

The GE (α) index values fall in the $<0; \infty$) interval and it holds true that the more the index approaches 0, the more evenly dispersed is the monitored socioeconomic variable (income) within the group, i.e. disparities across regions are eliminated; conversely, higher values give a signal of greater heterogeneity of the group. [20].

If we substitute 1 for the parameter α in the equation (1), we get Theil's measures of inequality [30], the mean log deviation and the Theil index respectively, in the population-weighted form (2) [16]; [20]:

$$GE(1) = T_W = \left(\sum_{i=1}^k \frac{n_i}{n} \frac{y_i}{\bar{y}} \ln \frac{y_i}{\bar{y}} \right) \quad (2)$$

where in the symbols are as defined in (1).

The Theil index takes values from a closed interval $<0; \ln(n)>$, while again it holds true that the closer to 0 is the achieved value, the more homogenous are the regions. An indisputable advantage of this evaluation approach, compared to other methods, can especially be seen in the residue-free break down of the overall level of inequalities, i.e. when dividing groups into interregional (between-country inequality) (first summand - T_B) and intraregional components (within-country inequality) (second summand - T_w) [4] on the basis of belonging to regions:

$$GE(1) = T = \left(\sum_{i=1}^k \frac{n_i}{n} \frac{y_i}{\bar{y}} \ln \frac{y_i}{\bar{y}} \right) + \left(\sum_{i=1}^k \frac{1}{n} \frac{y_i}{\bar{y}} \sum_{j=1}^{n_i} \frac{\bar{y}_{ji}}{y_i} \right) = T_B + T_w \quad (3)$$

where \bar{y}_{ji} denotes the average value of the monitored phenomenon in the j^{th} unit in the i group; other symbols are as defined in (1).

Unlike the more frequently used methods for determining disparities across regions, such as e.g. standard deviation, coefficient of variation, or Gini coefficient, the Theil index, respectively its interregional and intraregional disparities components, can be broken down in order to assess the relative share of individual regional disparities on the overall total disparity [24].

However, the Theil index has some restrictions; for example, a rather difficult interpretation of its results and the fact that the values of this break down may be affected by stochastic and contextual components of inequality (more e.g. in [20]), where the contextual component of inequality represents the part of inequality, which is in excess of stochastic inequality, i.e. inequality that can be statistically determined and that would be expected in randomly distributed regional data (e.g. based on the Central Limit Theorem, more e.g. in [19]; [24]). After clearing the total disparity results of the stochastic component

we gain the so-called geographical standardization, thus the research results are free of the regional arrangement component [23].

Besides the Theil index there is another frequently applied method for measuring production concentration, the so-called Adjusted Geographic Concentration index ("AGC"), which is a general measure of concentration based on the comparison of the distribution of two phenomena and is determined by the following equation [28]:

$$AGC = \frac{\sum_{i=1}^N |y_i - a_i|}{\sum_{i \neq \min} a_i + 1 - a_{\min}} \quad (4)$$

where a_{\min} is the area of the smallest region, y_i indicates the proportion of production level of region i at national level; a_i is the proportion of the region's area and the size of the country; N the number of regions. AGC index can be divided into two parts, the geographical concentration of population and regional disparities in wealth creation, where in the case of production the relationship is as follows:

$$y_i - a_i \equiv (y_i - p_i) + (p_i - a_i) \quad (5)$$

where p_i represents the size of population in region i on the national level, other symbols are as defined in (4).

Due to this fact, we can adjust the AGC index for the level of production as the so-called relationship between the effect of territorial disparities in GDP per capita (first summand) and the effect of geographic concentration of population (second summand) in which the symbols used are defined as in (4) and (5) [28]:

$$AGC = \sum_{i=1}^N \frac{y_i - p_i}{y_i - a_i} |y_i - a_i| + \sum_{i=1}^N \frac{p_i - a_i}{y_i - a_i} |y_i - a_i| \quad (6)$$

The AGC production index reaches values that fall in the interval $<0; 1>$, and it holds true that the higher the index, the higher the production concentration, and conversely, the lower the index, the more dispersed is the monitored phenomenon, i.e. disparities in wealth creation across regions are eliminated.

The necessity to perform an evaluation of cohesion policy is indisputable, besides other things, due to the volume of European funds that are allocated to this policy. In view of this fact and also in view of the aim of this paper we selected the Theil index as a method for evaluating the disparities development, which allows, as already mentioned, a residue-free break down of the examined socioeconomic inequality into intragroup and intergroup, respectively interregional (between-country inequality) and intraregional (within-country inequality) components of measured variability. The Theil index calculations were performed using the statistical program EasyStat.

3 Research results and discussion

The following section presents the empirical insight of defined evaluation methods of regional disparities.

3.1 Determination of regional discrepancies in the 2004+ EU countries using the Theil index

The main part of the research monitored the development of regional disparities in all cohesion regions of the 2004+ EU economies using the Theil index, i.e. in particular the fundamental regional indicator of wealth creation — the regional GDP in PPS in relation to the population size of the area, specifically for 58 NUTS II regions, which have enlarged

the EU since 2004. It follows that in this part of the research we examined the relative value of inequalities in the achieved level of production, by breaking it down into sub-components according equation (3).

Based on the research results captured in Tab. 1, which are also displayed graphically for greater clarity (Fig. 1), it can be stated that there is a relatively low level of disparities in wealth creation among these economies, since throughout the period the values of the selected index fall within 1/16 of the defined interval $<0; \ln(58)>$.

**Tab. 1: Theil index for the EU 2004+ NUTS II regions
(regional GDP in PPS weighted by population)**

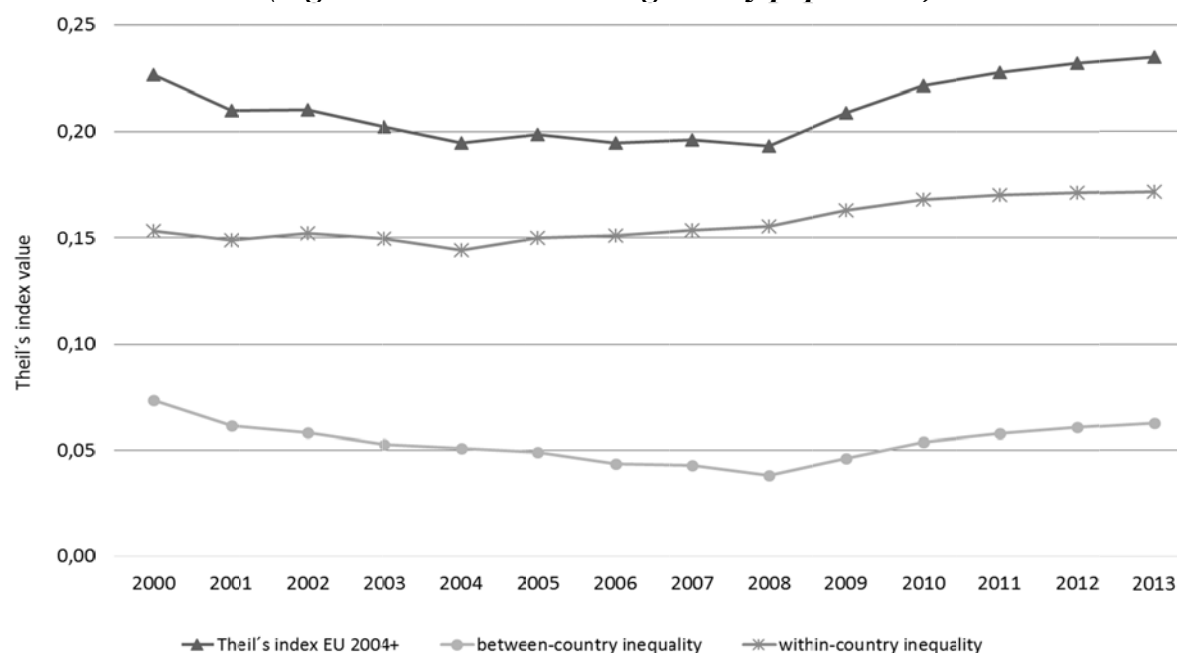
	2000	2001	2002	2003	2004	2005	2006	2007
T	0.22667	0.21024	0.21028	0.20260	0.19503	0.19900	0.19481	0.19638
T _B	0.07343	0.06132	0.05826	0.05297	0.05087	0.04925	0.04382	0.04302
T _B (v %)	32.39	29.16	27.70	26.14	26.08	24.75	22.49	21.91
T _w	0.15324	0.14892	0.15203	0.14963	0.14416	0.14975	0.15099	0.15335
T _w (v %)	67.61	70.83	72.30	73.86	73.92	75.25	77.51	78.09
	2008	2009	2010	2011	2012	2013	change 2000-2008	change 2008-2013
T	0.19353	0.20895	0.22167	0.22766	0.23191	0.23495	-0.03313	0.04142
T _B	0.03830	0.04617	0.05373	0.05780	0.06063	0.06297	-0.03513	0.02467
T _B (v %)	19.79	22.10	24.24	25.39	26.14	26.80	-12.60	7.01
T _w	0.15523	0.16278	0.16794	0.16985	0.17128	0.17198	0.00199	0.01675
T _w (v %)	80.21	77.91	75.76	74.61	73.86	73.20	12.60	-7.01

Source: the author according to data from [13]; [14]; [25].

Regarding the actual development of regional disparities, it is clear that undoubtedly the breakthrough year was 2009, when the consequences of the financial crisis began to gradually show in the form of a decline in economic performance in almost all the world economies (e.g. [17]). Therefore, in 2009 the gradual trend of elimination of disparities among the EU 2004+ countries was replaced by a different and more dynamic development of the selected indicator (already in 2011 the Theil index reached its initial value of 2000).

In the period before this significant increase in disparities, specifically in 2005, we can also identify an increase in the index value, although quite small, which was due to an increase in disparities within individual economies. This fact can be assigned to a higher level of wealth creation in metropolitan regions based on the GDP values of individual regions (this also applies when we eliminate those countries that only have one cohesion region) [12].

Fig. 1: Theil index
(regional GDP in PPS weighted by population)



Source: the author according to data from [13]; [14]; [25].

When accenting individual sub-components of the examined inequality it is apparent from the break down of the index that throughout the whole reference period these disparities were mainly caused by disparities in the achieved level of GDP weighted by population within individual economies (within-country inequality); while up to 2008 they were gradually increasing their proportion (more than 80% of the final value), subsequently they began to decline gradually (in 2013 they formed 73.2% of the index value).

The development itself, i.e. the growth, stagnation, and decline of both components of the resulting inequality of GDP weighted by the population of the EU 2004+ countries is largely similar. One exception is the period 2004–2008, during which the disparities between countries were reducing (between-country inequality), but the inequalities within the EU 2004+ countries were increasing (within-country inequality), which led to fluctuations of the Theil index within the interval $<0.19353; 0.19900>$.

At present the countries still struggle with an unfavourable development of disparities (in the last analyzed year the initial value was already exceeded by 3.65%), but according to the expected development of the individual economies' GDP we can assume that in the next period the monitored inequalities will be eliminated [9].

3.2 Theil index vs. AGC production index

As mentioned before, the methods that are based on spatial (geographical) concentration represent very important approaches that are increasingly used to evaluate the development of socioeconomic or socio-geographic impacts of cohesion policy, with the chosen method of production concentration, the AGC index, meeting all of the requirements defined by the research.

When calculating the AGC production index, the focus is again on the NUTS II regions, but the regional GDP in PPS is replaced by the level of production, the number of individuals is replaced by the population size and the area by the area of a region.

Because of the dependence of the AGC production index on the differences in percentage shares of given indicators among various national NUST II, those economies that consist exclusively of one cohesion region had to be excluded from the research.

From Tab. (2), respectively from Fig. (2), it is clear that EU 2004+ countries form three clusters within the defined interval $<0, 1>$: 1. countries that fall quite considerably below the middle value of this interval; 2. a cluster consisting of countries that fall around the index value of 0.5; and 3. economies, where concentration of production index value is close to 1, which is HU.

Tab. 2: AGC production index for EU 2004+ NUTS II regions

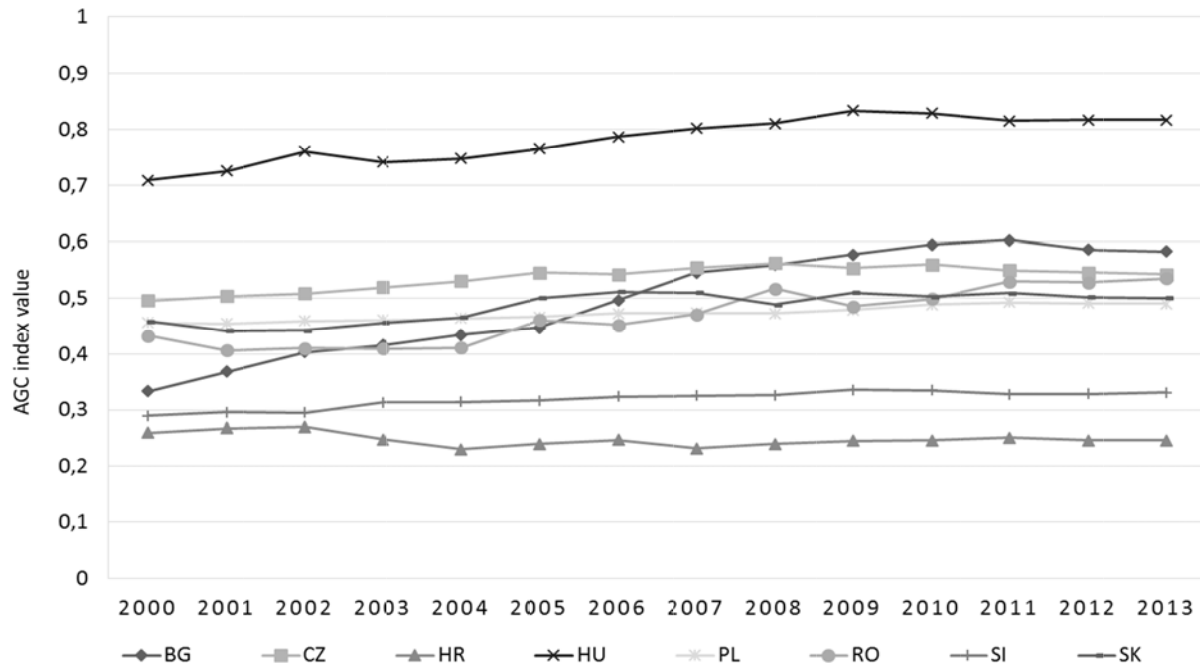
	2000	2001	2002	2003	2004	2005	2006
BG	0.33333	0.36807	0.40326	0.41575	0.43442	0.44651	0.49656
CZ	0.49574	0.50369	0.50808	0.51951	0.53031	0.54576	0.54262
HR	0.25997	0.26765	0.27031	0.24791	0.23073	0.23983	0.24746
HU	0.70923	0.72611	0.76076	0.74158	0.74863	0.76598	0.78684
PL	0.45540	0.45419	0.45840	0.46076	0.46331	0.46595	0.47229
RO	0.43225	0.40620	0.41039	0.40932	0.41146	0.46047	0.45133
SI	0.28971	0.29551	0.29467	0.31351	0.31433	0.31610	0.32325
SK	0.45791	0.44095	0.44202	0.45541	0.46495	0.50034	0.51163
	2007	2008	2009	2010	2011	2012	2013
BG	0.54553	0.55913	0.57745	0.59483	0.60242	0.58610	0.58264
CZ	0.55402	0.56222	0.55377	0.56005	0.54978	0.54576	0.54242
HR	0.23211	0.24041	0.24584	0.24611	0.25101	0.24627	0.24627
HU	0.80268	0.81089	0.83454	0.82940	0.81611	0.81778	0.81777
PL	0.47279	0.47214	0.47836	0.48796	0.49210	0.49031	0.48946
RO	0.47064	0.51674	0.48541	0.49872	0.52949	0.52811	0.53550
SI	0.32545	0.32589	0.33562	0.33441	0.32784	0.32857	0.33102
SK	0.50943	0.48831	0.51006	0.50238	0.50879	0.50208	0.49987

Source: the author according to data from [11]; [12]; [14].

Based on the similar development of a selected indicator the first group of countries include HR and SI, i.e. 4 NUTS II. It is clear that the inequalities of both economies, or regions, were very similar at the beginning of the monitored period, but since 2003 they have slightly grown (the AGC index values have stagnated at around 0.25 to 0.32). In the 1st group the index of production concentration reaches its peak in 2009 (0.33562 - SI).

The second cluster is the largest as it comprised of a total of 5 national economies (42 cohesion regions), whose AGC index values are in the range of $<0.33334, 0.602419>$. Although a gradual increase in the values of production concentration prevailed during the period, the group is characterized by similar inequalities in wealth creation.

Fig. 2: AGC production index for EU 2004+ NUTS II



Source: the author according to data from [11]; [12]; [14].

From a detailed analysis of the AGC index expressed by equation (6) it follows that, in the case of SI, BG, and RO the resulting index value was mainly due to the impact of regional disparities in GDP per capita (e.g. in SI during 2004–2007 by more than 60%, in BG during 2008–2010 by even more than 65%). In the case of SK the initially steady influence of both components was, after 2004, also replaced by the prevailing influence of regional disparities in GDP per capita. Conversely, disparities identified in PL, HU, and CZ were mainly caused by the geographic concentration of population (for the entire period in HU and CZ of more than 50%, PL of even more than 67%, the maximum was achieved in 2000 — 72%). Detailed analysis of the resulting index value of production concentration in HR revealed the major impact of this component, i.e. geographic concentration of population that made up more than 89% of the total disparities over the whole fourteen year periods, with 2004 being the only year in which there was actually recorded a negative influence of regional disparities in GDP per capita.

We can also find another common trait within the established clusters, i.e. their response to the financial crisis: the 1st group was resistant to the financial crisis, as the AGC index value stagnated after 2008; in the 2nd and 3rd groups the crisis accentuated the slow growth of national production concentration indexes, at the same time we can identify convergence tendencies among the 2nd group's index values. In terms of partial effects of the AGC index on the production concentration the financial crisis affected economies differently: Within the 1st group in SI there was a decline in the impact of regional disparities in GDP per capita after 2009 (by almost 5 percentage points by 2013); in HR, on the contrary, the effect of regional disparities in GDP per capita grew despite the fact that the effect of geographic concentration of population continued to be dominant (with more than 89.3%). In the case of HU the financial crisis was initially reflected in a slight decrease in the effect of geographic concentration of population (of less than 1 percentage point), while in 2010 the impact of this component on the overall level of production concentration compounded (an increase of almost 2 percentage points compared to the situation before the crisis). This

effect can be also identified by analogy in the countries that belong to the 2nd cluster, i.e. specifically in CZ and PL. In the case of SK, BG, and RO the crisis caused a decline in the influence of the prevailing regional disparities in GDP per population (in the SK a decline of less than 1 percentage point by 2013, in BG a reduction of 1.5 in RO there was even a drop of 2.4 percentage points).

If we focus on the achieved extreme values, i.e. on the comparison of HR and the 3rd group formed by HU, we have no doubt that there are significant differences in wealth creation among regions, since the value of the production concentration indicator for HR reached approximately one-third the values of the AGC index for HU during the reference period, which means that production in some Hungarian regions was more concentrated.

Regarding the actual developments of achieved values of the selected production concentration index for all the relevant EU 2004+ countries and their regions, it is possible to identify in the calculation of the harmonic average of the group some common features with the results that have already been achieved through the Theil index: the prevailing stagnation in the development of disparities across countries and their cohesion regions up until 2005, which is then replaced by a significant increase in the value of the harmonic average, i.e. by an increase in inequality in wealth creation. Although the Theil index results revealed that the financial crisis caused dynamic growth of disparities in both groups after 2009, this fact has not been proved by the development of the harmonised AGC index for EU 2004+ countries, because according to the development of indexes of individual economies the crisis' negative impact was eliminated by a stagnation or even in some countries by a decline in the concentration of production in the following years.

Conclusion

In order to determine the effectiveness of cohesion policy, measured by the development of inequality across EU 2004+ countries and their cohesion regions, two survey approaches were selected: The Theil index and the so called AGC index, an evaluation method of the geographic concentration of production that was used to verify the results.

Both methods have consistently shown that although there are disparities in the relative indicator of wealth creation, respectively in his economic level, i.e. in GDP per capita, among the countries and their regions of cohesion, we can identify such inequalities as relatively low due to the achieved values of the methods used (only HU is an exception according to the AGC index value, as it comprises areas with a greater production concentration). The chosen approach of generalized entropy identified the so called inequalities within individual EU 2004+ countries (within-country inequality) as having the most significant impact on the overall level of disparities. Although since 2008 the impact of these inequalities has been decreasing slightly, in 2013 their contribution to the total value was still significant (of 73.2%). Based on the achieved values and similar development of production concentration the monitored countries can be divided into three groups, whereas a detailed analysis of individual components of the AGC index revealed heterogeneity across the groups, i.e. in individual clusters there is no apparent predominant influence of a particular concentration of production. Due to this fact it is therefore quite surprising that, according to the AGC index development, countries within the formed groups reacted to the financial crisis in a similar way in terms of developing production disparities.

The fulfilment of the objectives of the Europe 2000 strategy with the deployment of all the EU combined policies, i.e. including economic, social, and regional cohesion policies, should also help to address inequalities across the EU countries and regions of cohesion in the programming period 2014–2020

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FROM CUSTOMER ORIENTATION TO SOCIAL CRM. NEW INSIGHTS FROM CENTRAL EUROPE

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Abstract: *In the context of the gradual virtualization of social relationships, the traditional form of relationship management has begun to change. Original concept of customer relationship management (CRM) based rather on face-to-face and offline communication in the physical environment is converting into social CRM (SCRM), where the contact through social networks and relationships within online communities. Therefore, the paper aims to analyse SCRM in medium and large businesses based on the primary research.*

Research sample (N=81) includes medium and large enterprises operating in the Czech Republic. The findings showed that sampled firms perceived the digital marketing as slightly more important than the traditional type of marketing. More than nine-tenth of companies considered CRM to be a significant marketing tool for their own practice. Subsequently, SCRM was perceived as significant by approximately two-thirds of respondents. Czech enterprises practice rather investigation of external online communities and contributing to them than building their own internal online community. Finally, the social sites are in this process used rather for short-term communication with the customer than for the purpose of self-promotion or data mining. Furthermore, some differences were found in approach to digital marketing, CRM, and SCRM between consumer oriented and business oriented organizations.

Keywords: *Customer Relationship Management, Social CRM, Social Media, Business Intelligence, Czech Republic.*

JEL Classification: *M310, M15, C8.*

Introduction

Historically, from 1980s, the customer relationship management (CRM) became a reality as the customer orientation started to dominate in various areas of business. Agrawal [1] defines CRM as a toolset for guiding sales team and supporting engineers and other specialists in developing sales prospects, creating appropriate business proposals, dealing with customer objections, and providing post-sales customer support.

The original concept of the customer relationship based on loyalty, quality and personal approach was typically conducted face-to-face and mainly in physical environment of the retail store. Traditional CRM focuses on management solutions for dealing with customers through channels such as web sites, call centres, and brick and mortar locations. However, with the advent of information and communication technologies and their spread across society and business, the relationship management tools were changed. Social CRM (SCRM) encompasses the dynamic community of customers who communicate through social media – an environment in which control of the relationship has shifted to the customer, who has the power to influence others, in his or her social network. [3] [4].

Moreover, the CRM or SCRM system plays a significant role not only as a management approach, but also as an information system. This system is, next to, for example, data warehouse, knowledge management, decisions support systems and other systems, part

of the information systems that are components of business intelligence (BI) concept [24]. Many authors classify customer relationship system as one of the resource systems of BI [5] [25].

Although, SCRM can be considered as a very effective marketing approach, primarily for customer acquisition, we know just a very little about its application in business sector [15]. Research studies investigating businesses of Central European post-communist countries focus rather on traditional CRM approach [7] [22] [25] than SCRM. This research gap together with higher involvement of social media in Czech society are among the reasons why this study aims to identification of the SCRM practices of Czech enterprises.

1 Review of the Literature and Research Questions

1.1 Digital Marketing, CRM, and SCRM significance

Adequately to the growth of competition and increase of supply over the demand, the marketing principles are more intensely applied in the market economy. However, the principles remains stable, marketing principles are applied in the market environment adequately to the growth of competition and increase of supply over the demand, Nevertheless, these principles remain the same, marketing tools change [20]. We live in a digital or even already post-digital age. Digital marketing itself is defined by [31] as a sub branch of traditional marketing that uses modern digital channels primarily for communicating with stakeholders (e.g. customers and investors) about brand, products and business progress. The more customer oriented definition is than provided by Digital Marketing Institute where it refers to “the use of digital technologies to create an integrated, targeted and measurable communication which helps to acquire and retain customers while building deeper relationship with them” [33, p. 94].

The tone and the orientation of the latter definition underlines the importance of marketing itself for CRM as well as the importance of digital marketing for social CRM. Despite the similarity of the approaches, there are some specific differences among them, too. While the marketing focuses mainly on creation of appropriate communication to establish a long-term customer relationship, the CRM was traditionally more involved in setting of the methodologies, organizational processes and – in a technical view – the information systems enabling acquiring and retention of the customers and the building relationship [17],[6]. Obviously, there is a valid parallel for the digital marketing and social CRM, too.

Medium and large enterprises are implementing the digital marketing and CRM approaches to varying extents, reaping a range of performance benefits and facing a range of challenges. Moreover, the significant regional differences were found in the application of digital marketing and CRM practices in small and medium enterprises. While some countries are more concerned with technical issues of implementation, others with organizational barriers [16],[9]. Additionally, there was just a little research performed in the countries of Central and Eastern Europe. Therefore, the research question 1 (RQ1) is formulated as: *What significance is assigned to the digital marketing, CRM and SCRM approaches by Czech enterprises?*

1.2 Integration of Social CRM in the enterprise

With the social media advent, the customer is no longer limited to a passive role in the relationship built with a company. Mobile devices providing more information about competitive products available anywhere and also enable customers to express

and distribute their opinions to large audiences. Therefore, the companies are likely to find it increasingly difficult to manage the messages that customers receive about their products/services [34]. Companies have started to focus on data collected from tools as Facebook, Twitter, YouTube, LinkedIn, blogs, and other relevant media. They try to engage such tools or communication ways into their daily sales process [30]. In addition, SCRM has a positive impact not only on getting a new customer, but it also influences the number of sales. Today's integration of social media into the CRM is to be essential for customer acquisition in the future [32]; [30] and this resulted into emerge of SCRM. The term of social CRM was firstly introduced by Greenberg [10]. In his other work [11] Greenberg also addresses the full definition of SCRM; it is a “philosophy and a business strategy, supported by a technology platform, business rules, workflow, processes and social characteristics, designed to engage the customer in a collaborative conversation in order to provide mutually beneficial value in a trusted and transparent business environment. It's the company's programmatic response to the customer's control of the conversation.” Malthouse et al. [21] conceptualize social CRM as being composed of two dimensions: a CRM dimension and a social media dimension. The CRM dimension comprises the three basic components of the traditional CRM process: relationship initiation (acquisition), maintenance (retention), and termination. Consequently, the social media dimension is initiated when the customers become active participants in the relationship and get the opportunity to engage with the firm. When a user generates content related to a specific brand, he or she is *engaging* with the company.

For most companies, though, the deployment of a social CRM program is still in its early stages, execution is patchy and concerns about ROI remain [3]. Therefore, the RQ2 investigated this situation in Czech businesses: *To what extent are the social media used in the enterprise CRM systems?*

1.3 Online Communities use and creation

Online community plays a significant role in the relationship between the customer and organization, thus more significant in SCRM. Lawrence Ang [2] even suggests to reject the term social CRM and rather use the term “community relationship management” instead. The growing presence of online communication and consequent creation of myriad of online communities is the contemporary trend. Such a method of communication, transferred into the business world, means that customers are feeling: (1) free of the barriers of physical and offline world, and (2) more anonymous. Vice versa, a sense of duty is reduced. [26]

Virtual community arises on the basis of various factors. One of the reasons or incentives is to create community for customers by the firm itself. Frequently, this approach is taken by the organization to strengthen customer relationships [28], or to increase the perceived value of the product that comes from a connection to the community of users [23]. Virtual communities are part of an emerging way of using technology for strategic, social and informative interface between companies and customers. Building consumer confidence through such communities helps companies to gain competitive advantage based on information gathered from these groups and by communicating with them [29] [14].

Obviously, companies can access the virtual communities in different ways. They can make their own online community, proactively manage them, or just use data from these online social communities for their own CRM system. Therefore, the RQ3 is formulated as: *What is the way how the enterprises approach online communities?*

1.4 Information capture and use

With the progress of online communities, customer referrals and overall customer behaviour realized online, the new opportunities for data collection emerged. [15].

Wimalchandra et al's [35] study underlines significance of various external data sources (mainly common and informal communication with customers) that helps firms improve their internal product quality control procedures. Nowadays, an increased use of information technology to collect customer data can be observed [19]. Today's successful companies regularly measure not only the total number of customers or sales volume, but also calculate their current value, lifetime value, customer retention and many other indicators of customer satisfaction. Nowadays, the traditional methods as suggestions and complaints records, customer satisfaction surveys, mystery shopping, or lost customer analysis [18] can be transferred and measured on the Internet. Therefore, we formulate RQ4: *How the customer information is captured and used in the enterprise?*

2 Methodology

2.1 Construction of the questionnaire

The majority of studies dealing with social media and CRM practices [30],[13],[15] considered the questionnaire consistently the main effective research method. The questionnaire construct was partially taken from studies of Harrigan and Miles [13], and Jayachandran et al. [15] and it was partially adjusted to the Czech business environment. Moreover, such approach enabled the possibility of international comparison of findings. The questionnaire design aimed at current level of company's identification with digital marketing, CRM and SCRM approaches. Questionnaire comprised of fifty questions divided into six main sections: (1) significance assigned in the organization to traditional, modern marketing, digital marketing, CRM and SCRM; (2) building a relationship with the customers; (3) use and creation of online communities; (4) use of social media in CRM; (5) information capture and use; and (6) categorical organizational data. Majority of questions used the five-level Likert scale (with the options 1-strongly disagree, 2-disagree, 3-neutral, 4-agree, 5-strongly agree).

2.2 Research sample and data

The sample consisted of 81 enterprises with more than 250 employees operating their business in the Czech Republic. In the first step, the organizations were asked by the interviewers, bachelor students studying the economic field of study, to fill out an online questionnaire. If necessary, the second step, a follow-up communication between the interviewer and the organization was used to improve the response rate. Pre-test was conducted on a nonprobability sample of respondents before the distribution of questionnaire during January 2015 was realized. Researched companies concentrate their business on either B2C market (32.1 %), B2B market (14.8 %), or on both of the markets (54.3 %). Marketing specialists (29.6 %), managers (25.9 %), social media specialists (22.2 %) and other employees (22.2 %) were asked to fill out the questionnaire.

The data were processed with SPSS 17 statistical software. As a normality test showed that all the data have a normal distribution, the Student t-test calculations were applied to find statistically significant differences in the results.

3 Results

3.1 Significance attributed to digital marketing, CRM and SCRM

The research showed that the respondents perceive the importance of traditional and digital marketing similarly. Digital marketing with use of ICT (49.4% “strongly important”) is considered to be just a slightly more significant than the traditional type of marketing without use of ICT (45.7% “strongly important”).

Respondents’ replies stressed out the importance of CRM as more than 90% of them stated that CRM is rather or strongly important for their company. In addition, according to the findings the SCRM can be considered as an integral part of customer relationship management concept of Czech businesses; almost two-thirds (64.2%) of addressed companies selected rather important or strongly important option. Detailed results on significance in all relevant categories are available in table 1.

Tab 1: Significance of traditional and digital marketing, CRM, SCRM

N=81		0 I don't know	1 Unimportant	2 Rather unimportant	3 Rather important	4 Strongly important
Role of traditional marketing	<i>Abs.</i>	2	3	10	29	37
	<i>Rel.</i>	2.5%	3.7%	12.3%	35.8%	45.7%
Role of digital marketing	<i>Abs.</i>	2	4	8	27	40
	<i>Rel.</i>	2.5%	4.5%	9.9%	33.3%	49.4%
Role of CRM	<i>Abs.</i>	0	1	6	21	53
	<i>Rel.</i>	0%	1.2%	7.4%	25.9%	65.4%
Role of Social CRM	<i>Abs.</i>	5	10	14	28	24
	<i>Rel.</i>	6.2%	12.3%	17.3%	34.6%	29.6%

Source: Author

Furthermore, the comparison between the subgroups of enterprises with focus either on business market (B2B) or consumer market (B2C) was done; enterprises with focus on both markets were not analysed in detail. Findings showed that researched aspects have higher significance for B2C enterprises. B2C organizations considered all the roles as more significant, especially the role of digital marketing, the role of CRM and the role of SCRM. Among the digital marketing and social media tools the companies mostly use the website (97.5%), social networks (87.7%), email marketing (61.7%), other forms of promotion and PPC campaigns, promotion context, or banners (61.7%). E-newsletters (23.5%) and blogs (23.5%) were also used.

3.2 Social media use in the enterprise CRM systems

For CRM purposes, the companies likely take such social data as a feedback for their marketing campaigns as the highest approval of respondents got the assertion ‘Social media enables our CRM system to analyse responses to marketing campaigns’ (3.79). The second important advantage of social media is to customize organizational communication directly to individual customers (3.62). Slightly lower approval rate was found with assertions that social media enable provision of cross sell/up sell opportunities (3.43) and support of the sales force in the field with customer information (3.40). Interestingly, options of customer retention rate (3.14) and customer lifetime value (3.10) calculations have got lower level of agreement approaching a neutral opinion. Obviously, the social sites are still used rather

for short term feedback and communication than for long term marketing planning or calculations.

Tab 2: Use of social media in the CRM system

N = 42 ¹	In total		B2B focus		B2C focus	
	Mean ²	SD	Mean ²	SD	Mean ²	SD
Social media enables our CRM system (continued in a row)						
..to analyse responses to marketing campaigns	3.79	0.976	3.80	1.304	3.82	1.168
..to customize our communication to customers	3.62	1.103	4.00	1.000	3.82	1.168
..to provide sales force cross sell/up sell opportunities	3.43	1.309	3.00	1.581	3.73	1.104
..to support sales force in the field with customer information	3.40	1.251	3.20	1.483	3.73	1.104
..to calculate customer retention rates	3.14	1.072	2.40	1.340	3.27	0.905
..to support marketing planning and budgeting	3.10	1.100	3.20	0.837	3.09	1.136
..to calculate customer lifetime value	3.00	1.269	2.40	1.342	3.36	0.924

Source: Author

¹ Only respondents from organizations with social site presence answered

² Mean calculated from values on Likert scale: 1=strongly disagree; 2=slightly disagree; 3=neutral; 4=slightly agree; 5=strongly agree.

In general, some differences among B2B and B2C organizations in social media use were found. At first, there is a higher level of agreement with all assertion on the side of consumer oriented businesses, which implies an assumption that these organizations use social media more in their CRM systems. At second, the B2C organizations use social media more for customization of communication to customers and analysing of marketing campaign responses. However, none of these variations between B2B and B2C organizations were found as statistically significant. Detailed results of all answers are summarized in table 2.

3.3 What is the way how the enterprises approach to online communities?

The opinions gained in the area of use of online communities for building customer relationships showed that organizations access to customers via multiple media networks and channels (mean value 3.70).

Tab 3: Approach to online communities in relation to organizational CRM

N = 81	In total		B2B focus		B2C focus	
	Mean ¹	SD	Mean ¹	SD	Mean ¹	SD
We do track customers across more media/channels	3.70	1.219	3.17	1.528	3.50	1.068
We have a strategic approach to managing online communities	3.53	1.256	3.00	1.537	3.39	1.023
Other online customer communities are central to our marketing	3.46	1.107	3.42	1.444	3.39	1.169
We use communities to have conversations with our customers	3.43	1.193	2.92	1.565	3.39	.941
We build our online communities with our customers	3.42	1.192	3.17	1.586	3.58	1.137
We use these communities to promote ourselves to customers	3.40	1.211	2.83	1.642	3.58	0.987
Customers use these communities mainly to make positive comments and reviews	3.15	1.119	2.75	1.215	3.12	1.211
Our online customer communities are central to our marketing	3.12	1.249	2.58	1.443	3.15	1.156
We participate in relevant customer-owned communities	3.10	1.147	2.83	1.403	3.08	1.129
We monitor and act on interactions between customers in these communities	3.10	1.310	2.42	1.240	3.12	1.306
Online communities are a way of engaging with our customers	3.02	1.183	2.42	1.379	3.00	1.095
These communities allow us to involve customers in product/service development	2.89	1.183	2.08*	0.900	2.85*	1.046
We proactively manage interactions in these communities	2.86	1.339	2.08*	1.165	3.08*	1.262

Source: Author

¹ Mean is calculated from values on Likert scale: 1=strongly disagree; 2=slightly disagree; 3=neutral; 4=slightly agree; 5=strongly agree.

* Significant difference on 95 % level; Student t-test for B2B and B2C organization comparison was used

In addition, the companies argue that the strategic approach to managing online communities is taken (3.53). Interestingly, when the respondents stated that the company is thinking strategically, at the same time they rather disagree that customer relationships are proactively managed by the company (2.86). Moreover, the results revealed that rather other customer online communities (3.46) than own online customer community (3.12) are central for the organizational CRM systems.

Generally, the use of communities lies in the conversation with the customers (3.43); however, just slightly lower rate of approval was then detected in the use of community

for the self-promotion (3.40). Detailed findings on the approach to online communities are provided in table 3.

Regarding the market orientation, the results are consistent to the previous findings. B2C organizations declare higher agreement rate in majority of researched aspects. The biggest difference was found in assertion “We use these communities to promote ourselves to customers”; while B2C organizations have the highest average rate of agreement 3.58 there, the B2B organizations reached only 2.83 average agreement value. In assertions that “communities allow to involve customers in product/service development” and “proactive management of interactions among the communities” the statistically significant difference between business and consumer oriented organization was found. In both cases the consumer oriented organizations have reached higher scores.

3.4 Capture and use of the customer data

When examining the way of customer data collection and consequent use of them was found that companies gather such information on ongoing basis (3.83). In addition, the enterprises in the sample integrate information received from different business functions (3.51). Findings also showed that integration of information from different communication channels is still quite common (3.33). However, the lower level was found in integration of internal customer information and customer information from external sources (3.19) and the merging of information relevant for individual customer (3.16).

Regarding to metrics, the respondents agreed rather with measuring the value of each customer’s referral (3.23) than for assessment of lifetime customer value (3.10). Summary of all findings relevant to the research question is provided in table 4.

Tab. 4: Capture and use of the customer data

N = 81	In total		B2B focus		B2C focus	
	Mean ¹	SD	Mean ¹	SD	Mean ¹	SD
We collect customer information on an ongoing basis	3.83	1.170	4.08*	0.793	3.38*	1.267
We integrate customer information from the various functions that interact with customers	3.51	1.142	3.42	1.165	3.23	1.177
We integrate customer information from different communication channels	3.33	1.214	3.33	1.497	3.00	1.200
We use customer information to measure the value of each customer's referrals to other customers	3.23	1.121	2.67	1.155	3.31	1.192
We integrate internal customer information with customer information from external sources	3.19	1.205	3.17	1.193	2.85	1.190
We merge information collected from various sources for each customer	3.16	1.199	3.17	1.193	2.92	1.294
We use customer information to assess the lifetime value of our customers	3.10	1.366	2.50	1.314	3.08	1.440

Source: Author

¹ Mean is calculated from values on Likert scale: 1=strongly disagree; 2=slightly disagree; 3=neutral; 4=slightly agree; 5=strongly agree.

* Significant difference on 95 % level; Student t-test for B2B and B2C organization comparison was used

B2C organisations rather integrate customer information from the various functions where they interact with the customers, they work more with customer's referrals to other customers, and also they assess the lifetime of their customers more. On the other hand, the B2B organizations collect information more regularly.

4 Discussion and Conclusion

The presented paper brings several new insights into four main areas of interest aiming at: significance assigned by sampled organization to traditional and digital marketing, CRM and SCRM; use of social media for organizational CRM; use of online communities for building a relationship with the customer; and customer information capture and use.

Results showed that researched companies consider digital marketing as slightly more important than traditional one without use of ICT. Moreover, CRM practice seems to be natural part of firm's marketing in more than 90 % of sampled companies. Interestingly, almost two third of the companies considered SCRM approach as significant. Furthermore, remarkable difference between organizations conducting their business on either business or consumer market exists. The latter organizations considered all the researched marketing roles as more significant for their business success, particularly the roles of digital marketing, CRM, and SCRM.

Social media are in organizational CRM systems of Czech medium and large enterprises used primarily for provision of feedback to conducted marketing campaigns and customized communication. On the other hand, the social media are less used for support of marketing

planning and budgeting or calculation of customer lifetime value. It can be assumed that consumer oriented businesses use social media in their CRM systems more frequently and mainly for customization of communication and monitoring of marketing campaign success.

Sampled medium and large organizations accessed online customer communities via multiple media networks and channels. Despite the respondents argue that organizations “take a strategic approach to managing online communities”, at the same time, they rather disagree with assertion that “companies proactively manage customer relationships in online communities”. The consumer focused organizations use these communities for “involvement of customers in product/service development” and “proactive management of interactions” significantly more than their business oriented counterparts.

Customer information is collected on a regular basis. In addition, organizations also integrate information received from different business areas or channels. A high level of agreement was found in assertions connected to the management of customer’s referrals and lifetime customer value. Consumer oriented organisations in comparison to business oriented ones integrate more the customer information from various functions where they interact with the customers, they also work more with customer’s referrals, and assess the lifetime of their customers. On the other hand, it was statistically proved that business oriented organizations collect information more regularly.

Although the research presents several inspiring findings, it has also some limitations. Questionnaires were filled out online solely, thus, the research does not include testimonies of respondents that dislike this approach. Furthermore, rather quantitative data were gathered and only smaller sample of respondents reduced to Czech business organizations was obtained. Therefore, the following research should also address these problems.

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ZPRACOVATELSKÝ PRŮMYSL ČESKÉ REPUBLIKY: NEPŘÍMÁ PODPORA VÝZKUMU A VÝVOJE

THE MANUFACTURING INDUSTRY IN THE CZECH REPUBLIC: INDIRECT SUPPORT FOR RESEARCH AND DEVELOPMENT

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Abstract: *This paper describes the historical development of indirect support in the Czech Republic and analyses the available data from the period 2005–2013. The aim of the research is to demonstrate a dependence between the introduction of a new type of support for research and development and the increase in investment in companies' own R&D in the manufacturing after 2005. The objects of the research are all domestic concerns engaged in business that reported the financing of their own research by means of the deductible item for R&D. The number of concerns in individual branches of the manufacturing industry differs markedly, for which reason more-detailed analysis of individual branches did not comprise part of the investigation into the subject of this research. We used regression analysis to monitor the development of R&D expenditure in the manufacturing industry. Exponential regression was best suited to the estimation of non-linear parameters. By analysing secondary data, we discovered that the introduction of the deductible item in 2005 is acting as support for increasing companies' own investment in R&D. The tax incentive is a method of financing a company's own R&D that is being used increasingly often.*

Keywords: *Research, Development, Tax Credit, Effectiveness, Manufacturing industry.*

JEL Classification: *C20, H32, O39, L60.*

Úvod

Podpora inovací jako jeden z nástrojů hospodářského růstu jsou na pořadu jednání ve všech ekonomikách Evropské Unie (EU) a vyspělých zemích OECD. Silná vazba mezi vlastními investicemi do výzkumu, vývoje a inovací a ekonomickým růstem ekonomik je v současné době považována za samozřejmou. Všeobecně rozšířené povědomí předpokládá, že zejména inovační mladé, malé a střední podniky se mohou stát tahounem technologických změn a budoucího růstu. [4]; [18] Některé ekonomiky mají tradičně silnou základnu v investicích z podnikatelského sektoru, např. Německo a Dánsko, ostatní státy s výjimkou Chorvatska, Lucemburska a Anglie zvyšují veřejné investice do výzkumu a vývoje (V a V), s cílem co nejvíce se přiblížit závazným stanoviskům strategie Evropa 2020. Implementace závazných společných cílů do interních rozvojových strategií jednotlivých ekonomik naznačuje, že existuje prostor pro vládní intervence, ale i možná selhání na trhu investic do V a V. Teoreticky by mohla tržní selhání vést k nadměrnému investování do výzkumného sektoru a nedostatečným investicím v podnikatelském sektoru, který je největším zdrojem tvorby HDP. V odborné literatuře již existuje několik empirických výzkumů z oblasti podpory V a V z veřejných prostředků, zejména z USA a Kanady [6], kde daňové pobídky na výzkum a vývoj vznikly, ale i z členských zemí Evropské Unie [5]; [20]; [23] a asijských lídrů Číny [12] a Japonska [11]. Česká republika je malou otevřenou ekonomikou, členskou zemí Evropské Unie a je tedy vhodné zaměřit se

na inovační politiku, kterou ČR uplatňuje v rámci členství. Na dotační programy v oblasti výzkumu a vývoje vynakládají země EU vysoké částky a inovační politika je předmětem veřejné diskuse. Pro členské státy EU je závazným dokumentem strategie Evropa 2020, podle které mají výdaje na V a V do roku 2020 dosáhnout 3 % hrubého domácího produktu. [22] Neexistuje shoda ohledně účinku typu podpory výzkumných a vývojových aktivit. První zemí, která zavedla daňové úlevy v rámci evropských států, bylo Norsko. [16] Česká republika po vyhodnocení situace ve vyspělých členských zemích EU uzákonila systém používání snížení daňového základu pro daň z příjmu. Legislativně je nepřímá podpora, v podobě tzv. super odpočtu, upravena od roku 2005. Česká republika umožňuje podnikům využití podpory i v případě ztráty a to po dobu tří let od příslušného zdaňovacího období. V rámci EU je nejčastěji využívána přímá podpora prostřednictvím veřejných rozpočtů, 17 členských států využívá v roce 2015 nepřímou podporu [9].

Výzkum provedený v tomto příspěvku vychází ze statistického zpracování údajů pro sekci C – Zpracovatelský průmysl v členění podle CZ NACE 10 – 33. Cílem výzkumu je analýza vývoje V a V investic a prokázání závislosti mezi zavedením nového typu podpory výzkumu a vývoje a zvýšením investic do vlastního V a V v českém zpracovatelském průmyslu po roce 2005. V tomto příspěvku jsou diskutována hlavní zjištění.

1 Formulace problematiky

1.1 Historie nepřímé podpory v České republice

Do roku 2005 se v ČR používal velmi omezený počet nástrojů nepřímé podpory výzkumu a vývoje (NNPVV). Platila pouze 2 opatření:

1. Osvobození od daně ze zisku u *nepodnikajících subjektů*, je-li tento využit na podporu VV. Jedinou úlevu tohoto typu upravoval Zákon 586/1992 Sb. o daních z příjmů, ve znění pozdějších předpisů v §20 odst. 7: „Poplatníci vymezení v § 18 odst. 3 tohoto zákona, kteří nejsou založeni nebo zřízeni za účelem podnikání, mohou základ daně...dále snížit až o 30 %, maximálně však o 1 000 000 Kč, použijí-li takto získané prostředky ke krytí nákladů (výdajů) souvisejících s činnostmi, z nichž získané příjmy nejsou předmětem daně, a to ve třech bezprostředně následujících zdaňovacích obdobích; ... V případě, že 30% snížení činí méně než 300 000 Kč, lze odečíst částku ve výši 300 000 Kč, maximálně však do výše základu daně.“
2. Daňové úlevy na dary, které měly umožnit daňovým poplatníkům daňovou úlevu při poskytování darů pro V a V. Tuto část daně z příjmů upravoval Zákon 586/1992 Sb. o daních z příjmů v § 15, a § 20 Nezdánitelná část základu daně: „*Od základu daně lze odečíst hodnotu darů poskytnutých obcím a právnickým osobám se sídlem na území České republiky na financování vědy a vzdělání, výzkumných a vývojových účelů, pokud úhrnná hodnota darů ve zdaňovacím období přesáhne 2 % ze základu daně anebo činí alespoň 1000 Kč. V úhrnu lze odečíst nejvýše 5 % ze základu daně ...*“ (konkrétně – pro fyzické osoby §15, odst. 8; právnické osoby §20, odst. 8). [18]

Do 1. 5. 2004 bylo využíváno osvobození dovozů na V a V od cla, je-li příjemcem organizace mající jako hlavní činnost vědu a výzkum podle vyhlášky MF č. 136 (ze dne 4. 6. 1998) o osvobození zboží od dovozního cla přestalo platit okamžikem vstupu

ČR do EU. Oproti stavu před 1. 5. 2004 se situace dokonce zhoršila, neboť dovoz přístrojů a zařízení byl nově zatížen daní z přidané hodnoty. [17]

V roce 2004 vláda České republiky přijala usnesení, kterým uložila tehdejší ministryni školství, mládeže a tělovýchovy (MŠMT) vypracovat studii k možnostem zavedení NNPVV v ČR. Z průzkumů prováděných mezi firmami všech velikostí, s čistě českým, čistě zahraničním i smíšeným kapitálem vyplynulo, že velké firmy by preferovaly nejvíce daňovou úlevu v podobě odčitatelné položky (Tax Deduction) a daňový dobropis (Tax Credit), daňovou úlevu při spolupráci s vysokoškolským sektorem a výzkumnými organizacemi, daňovou úlevu při zaměstnávání pracovníků ve V a V a možnost snížení odvodů na sociální pojištění hrazené zaměstnavatelem. Malé i drobné podniky by preferovaly nejvíce daňovou úlevu v podobě odpočtu vynaložených nákladů. Pro podniky střední velikosti by bylo zajímavější uplatňovat zrychlené odpisy a daňový dobropis. Odpovědi respondentů podle účasti zahraničního kapitálu v podnicích se výrazně nelišily mezi tuzemskými podniky a podniky s nízkým podílem zahraničního kapitálu z hlediska celkových preferencí jednotlivých nástrojů. Korporace s více než 90 % zahraničního kapitálu nejvíce preferovaly daňový dobropis. Na dalších pořadích umístily podniky slevu na dani při tvorbě nových pracovních míst ve V a V oddělení, daňovou úlevu v podobě odpočtu vynaložených nákladů na V a V z více než 100 %, daňovou úlevu při spolupráci s veřejným výzkumným sektorem a snížení odvodů na sociální pojištění hrazené zaměstnavatelem. Podniky preferovaly jednoznačně daňové pobídky. Z výzkumu vyplynulo, že pro podniky s vysokým podílem zahraničního kapitálu nejsou zajímavé pobídky zaměřené na zvýhodnění pronájmu infrastruktury a sponzoring V a V. [7]

1.2 Česká republika od roku 2005

Odčitatelná položka na V a V byla v ČR zavedena v roce 2005. A to úpravou týkající se odpočtů na výzkum a vývoj u právnických osob podle § 34 odst. 4 - 8 Zákona č. 586/1992 Sb., o daních z příjmů, a odpočtů na V a V u fyzických osob podle § 34 odst. 4 Zákona č. 586/1992 Sb. V roce zavedení odpočtu na V a V byla daňová sazba na daň z příjmu právnických osob 26 % (dále DPPO). Od roku 2006 se daňová sazba na DPPO postupně snižovala až na 19 %. Daňová sazba pro daň z příjmu fyzických osob byla v letech 2006 – 2007 progresivní. Podle výše příjmu se pohybovala mezi 12 až 32 %. Od roku 2008 je sazba daně z příjmu fyzických osob upravena podle § 16 zákona č. 586/1992 Sb. a činí 15 % ze základu daně. Od roku 2013 se platí podle § 16a zákona č. 586/1992 Sb. ještě solidární daň ve výši 7 % z měsíčního příjmu nad 103 536 Kč.

2 Metody

V příspěvku je mimo standardních logických metod – analýza, syntéza a dedukce použita matematickostatistická metoda – regresní analýza. Cílem regresní analýzy je přispět k poznání příčinných vztahů mezi statistickými znaky, které jsou uspořádány do prostorově, časově i věcně uspořádaného souboru. [11] Sekundární data získaná z Českého statistického úřadu, Generálního finančního ředitelství jsou doplněna primárními daty, získanými z dotazníkového šetření. (Bočková, 2015) Výzkumným vzorkem jsou domácí podniky působící ve zpracovatelském průmyslu (CZ NACE: C) a zahrnující oddíly CZ NACE 10 - 33.

Průběh závislosti je sledován mezi nezávislou proměnnou – výše odčitatelné položky vynaložené podniky na vlastní V a V a závislou proměnnou – roky využívání nepřímé podpory výzkumu a vývoje v jednotlivých oddílech zpracovatelského průmyslu.

Pro potřeby regresní analýzy byla testována nejjednodušší verze regresní úlohy, kdy regresní funkce $n(x)$ je vyjádřena přímkou $n(x) = \beta_1 + \beta_2 x$ a platí:

$$E(Y|x) = n(x) = \beta_1 + \beta_2 x \quad (1)$$

Odhady koeficientů $\beta_1 + \beta_2$ regresní přímky pro zadané dvojice (x_i, y_i) označíme b_1 a b_2 . K určení koeficientů byla použita metoda nejmenších čtverců. Minimalizující funkce $S(b_1, b_2)$ je vyjádřena předpisem

$$S(b_1, b_2) = \sum_{i=1}^n (y_i - b_1 - b_2 x_i)^2 \quad (2)$$

Funkce $S(b_1, b_2)$ je tedy rovna součtu kvadrátů odchylek naměřených hodnot y_i od předpokládaných hodnot $n(x_i) = b_1 + b_2 x_i$ na regresní přímce. [14]

Hodnoty proměnných vstupujících do regresní analýzy nebyly lineární z hlediska parametrů a nebylo vhodné využít metodu nejmenších čtverců přímo. Byla využita linearizující transformace a byla použita exponenciální regresní funkce. Úpravou rovnic pomocí logaritmů na

$$\log b_0 = \frac{\sum \log y_i \sum x_i^2 - \sum x_i \log y_i \sum x_i}{n \sum x_i^2 - (\sum x_i)^2} \quad (3)$$

$$\log b_2 = \frac{n \sum x_i \log y_i - \sum \log y_i \sum x_i}{n \sum x_i^2 - (\sum x_i)^2} \quad (4)$$

Výběr regresní funkce byl podložen koeficientem determinace R^2 , který vyjadřuje úspěšnost zvolené regrese. [13] Při prokládání dat, která kolísají, vhodnou spojnicí trendů je možné zvolit polynomickou regresi

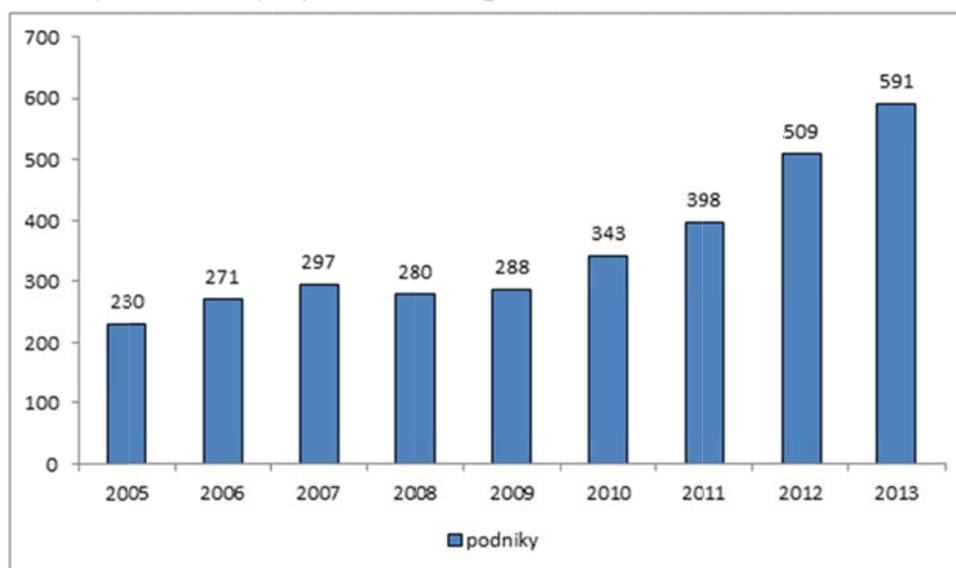
$$\sum y_i x_i^p = b_0 \sum x_i^p + b_1 \sum x_i^{p+1} + \dots + b_p \sum x_i^{2p} \quad (5).$$

3 Rozbor problému

Počet domácích podniků, které se aktivně zapojily do programu využívání odpočtu na V a V, se zvýšil z 230 podniků v roce 2005 na 591 podniků v roce 2013. Celkový počet soukromých podniků uplatňující nepřímou podporu ve zpracovatelském průmyslu byl v roce 2013 667 podniků. Podíl domácích podniků je 88,6 %. Srovnatelný podíl zahraničních a domácích podniků byl v roce 2013 v CZ NACE 24 Metalurgický průmysl 7:7, v ostatních oddílech zpracovatelského průmyslu jsou domácí podniky dominantní. [8] Historický vývoj podniků ve zpracovatelském průmyslu bez rozlišení velikosti a podrobných oddílů je uveden v Obr. 1.

Nejaktivnější podniky uplatňující odpočet na V a V byly v odvětví CZ NACE 28 Výroba strojů a zařízení jinde neuvedených. V roce 2005 uplatnilo odpočet 40 podniků, v roce 2013 to byl trojnásobek, celkem 118 domácích podniků. Mezi výzkumně aktivní odvětví je možné zařadit také CZ NACE 25 Výroba kovových konstrukcí a kovodělných výrobků, kromě strojů a zařízení, které začínalo v roce 2005 s 31 podniky a v roce 2013 uplatňovalo náklady na V a V již 94 podniků.

Obr. 1: Vývoj počtu domácích právnických osob uplatňujících nepřímou podporu výzkumu a vývoje v České republice v období 2005 – 2013



Zdroj: vlastní zpracování podle GfR

V CZ NACE 27 Výroba elektrických zařízení bylo evidováno v roce 2005 19 domácích podniků s nepřímou podporou V a V, mezi roky 2007 a 2008 došlo k poklesu ze 40 na 36 podniků a v roce 2013 již aktivně uplatňovalo odčitatelnou položku 59 domácích podniků. Průměrný počet podniků celkově uplatňujících odpočet se snížil v letech 2008 a 2009. V ostatních odvětvových sekcích CZ NACE tento pokles nebyl zaznamenán.

Celkově se počet podniků s využíváním nepřímé podpory od roku 2005 zvyšuje. V roce 2012 poprvé počet podniků využívajících nepřímou podporu V a V překročil počet podniků využívajících k financování V a V podporu přímou. [8]

Nulovou aktivitu ve využívání odpočtu na V a V vykazuje CZ NACE 12 Výroba tabákových výrobků. Náklady na V a V začaly domácí podniky uplatňovat v oddílu CZ NACE 11 Výroba nápojů až od roku 2009, v oddílu CZ NACE 31 Výroba nábytku od roku 2010.

Podle výzkumného šetření provedeného mezi daňovými poradci České republiky v roce 2013 byl zájem o financování výzkumu a vývoje z vlastních zdrojů s uplatněním odpočtu nízký. Manažeři podniků se nejvíce obávali možného vyřazení nákladů na V a V z daňově uznatelných výdajů a následného dodanění daně z příjmu ze strany správce daně.

Vzhledem k nejednotnému výkladu pojmů inovace, inovativní řešení a dalších vydalo Ministerstvo financí Pokyn D-288 ze dne 3. 10. 2005 k jednotnému postupu při uplatňování ustanovení § 34 odst. 4 a 5 zákona č. 586/1992 Sb., o daních z příjmů, ve znění pozdějších předpisů. Další bariérou ve využívání plné refundace V a V nákladů byla neinformovanost managementu podniků o této možnosti.

V současné době probíhá nabídka na zpracování projektové dokumentace k financování interního V a V z vlastních zdrojů a využitím odpočtu na webových stránkách několika komerčních zprostředkovatelů přímé podpory V a V.

Pro české podniky uplatňující pobídky na V a V je základním kritériem, které odlišuje výzkum a vývoj od jiné činnosti, přítomnost měřitelného prvku *novosti* a vyjasnění výzkumné nebo technické nejistoty. Měřitelný prvek novosti a výzkumné nebo technické nejistoty musí být přítomen, i když je předmět výzkumu v průmyslu již známý. Pokud

daňový poplatník prokáže, že výsledek výzkumu a vývoje je pro něj věcně či ekonomicky nedostupný nebo nepoužitelný pro jiný druh materiálu nebo z ekonomických důvodů, a v době trvání projektu o něm neměl žádné informace, má nárok na uplatnění daňové pobídky. Kritéria pro definici výzkumu jsou velmi podobná definici VV ve Frascati Manualu⁴.

Jako kvalifikované činnosti V a V mohou být: zavedení nové nebo zlepšené technologie, systémů nebo služeb, dále výroba nových nebo vylepšených materiálů, výrobků a zařízení, konstrukce a ověření prototypů, pilotních nebo názorně demonstrativních zařízení. Způsobilé výdaje na výzkum a vývoj mohou být uplatňovány 3 roky po ukončení hospodářského roku, ve kterém byl projekt realizován.

Uznatelné náklady mohou být: mzdy a platy; odpisy hmotného a nehmotného majetku použitého v přímé souvislosti ve vztahu k projektu; a ostatní provozní náklady přímo vztahující se k projektu (tj. materiál, zásoby, drobný hmotný/nehmotný majetek, výdaje na knihy a časopisy, elektřina, teplo, plyn, telekomunikace). Subdodavatelské služby v oblasti výzkumu a vývoje nemohou být zahrnuty jako kvalifikované výdaje, s výjimkou certifikace výsledků výzkumu a vývoje. Český štedrý systém vylučuje z odpočtu výdaje zaplacené za ochranu duševního vlastnictví prostřednictvím vlády a státních dotací na ochranu duševního vlastnictví. Nárok na daňovou pobídku není podmíněn žádným požadavkem na registraci V a V výsledků v rámci duševního vlastnictví. Náročnost zpracování *projektové dokumentace* je ve srovnání s žádostmi o financování výzkumu z veřejných zdrojů velmi nízká. Před zahájením projektu sestaví daňový poplatník písemně "souhrnný" dokument s uvedením kvalifikovaných činností. Povinnou součástí interní dokumentace je shrnutí. Interní dokumentace musí být dokončena před zahájením projektu. Shrnutí obvykle zahrnuje:

- Popis a cíle projektu,
- harmonogram a fáze projektu,
- administrativní proces,
- personální a projektové rozpočty,
- poplatník může (ale nemusí) podat žádost o závazné posouzení o nákladech kvalifikovaného výzkumu a vývoje u místně příslušného správce daně.

V novele zákona o daních z příjmů (zákon č. 458/2011 Sb., který je účinný od r. 2015) je zachována podpora projektů V a V odpočtem nákladů na projekt od základu daně z příjmu (odpočet 100 % nákladů) a přináší dvě hlavní změny. Na rozdíl od předcházejícího stavu budou do nákladů moci být zahrnuty i služby, které souvisí s realizací projektu výzkumu a vývoje a které jsou pořízené od veřejné vysoké školy nebo výzkumné organizace. Výše odpočtu se celkově zvyšuje ze 100 % na 110 % u nárůstu výdajů oproti minulému období.

⁴ Frascati Manual – mezinárodně uznávaná metodika sběru a využití statistik V a V, je nepostradatelným nástrojem pro statistické úřady po celém světě.

Tab. 1: Průměrná částka na podnik vynaložená na výzkum a vývoj v jednotlivých oddílech v mil. Kč

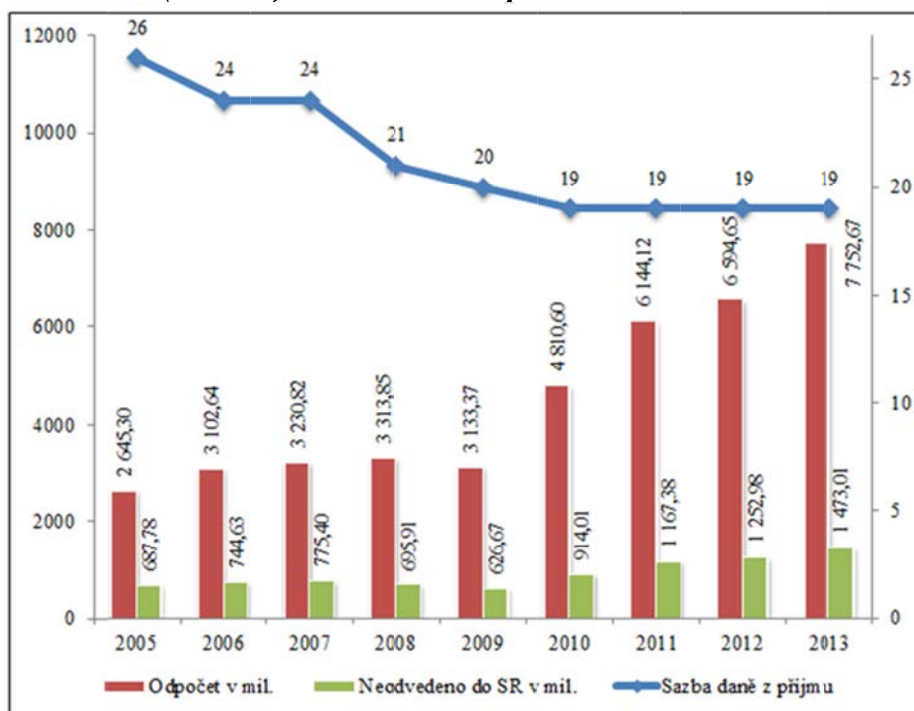
CZ NACE	2005	2009	2013
10	1,94	2,23	5,41
11	-	2,35	9,76
12	-	-	-
13	1,71	3,64	3,92
14	-	-	2,05
15	-	5,72	3,39
16	0,13	1,68	6,57
17	-	-	4,41
18	0,09	-	4,09
19	-	-	-
20	3,60	3,87	7,59
21	27,24	14,50	19,89
22	2,08	21,09	7,70
23	12,77	1,62	10,08
24	1,23	3,00	5,57
25	3,80	3,52	5,19
26	4,65	6,04	6,30
27	4,73	3,41	6,95
28	4,54	6,46	10,16
29	229,22	177,66	98,35
30	32,49	29,94	49,44
31	-	-	1,48
32	1,21	5,32	3,32
33	1,58	3,31	6,01

Zdroj: vlastní zpracování podle GŘ

Se zvyšujícím se počtem podniků rostla i průměrná výše V a V výdajů. V Tab. 2 je uvedena průměrná částka v mil. Kč, kterou vynakládaly jednotlivé podniky ve vybraném oddílu CZ NACE. Ve vedoucím oddílu české ekonomiky – automobilovém průmyslu, CZ NACE 29, se průměrná částka na podnik mezi lety 2005 a 2013 výrazně snížila. Ke snížení průměrné částky na podnik došlo i u CZ NACE 21 Výroba základních farmaceutických výrobků a farmaceutických přípravků a CZ NACE 23 Výroba ostatních nekovových minerálních výrobků. Nejvyšší průměrná částka je v automobilovém průmyslu, nejnižší v CZ NACE 31 Výroba nábytku.

Uplatněné V a V náklady snižují odvody poplatníků daně z příjmu právnických osob do státního rozpočtu (SR). Při analýze jednotlivých roků je nezbytné zahrnout vývoj sazby daně z příjmů právnických osob. Od roku 2005 do roku 2013 došlo v České republice ke snížení sazby daně z příjmu právnických osob z 26 % na 19 %. Tato sazba daně je platná i pro zdaňovací období 2015. Přehled uplatněných odpočtů na vlastní V a V ve zpracovatelském průmyslu je uvedený v obrázku 2.

Obr. 2: Vývoj odpočtu V a V výdajů (mil. Kč), sazby daně z příjmu (%) a částky sníženého odvodu (mil. Kč) do státního rozpočtu v období 2005 - 2013



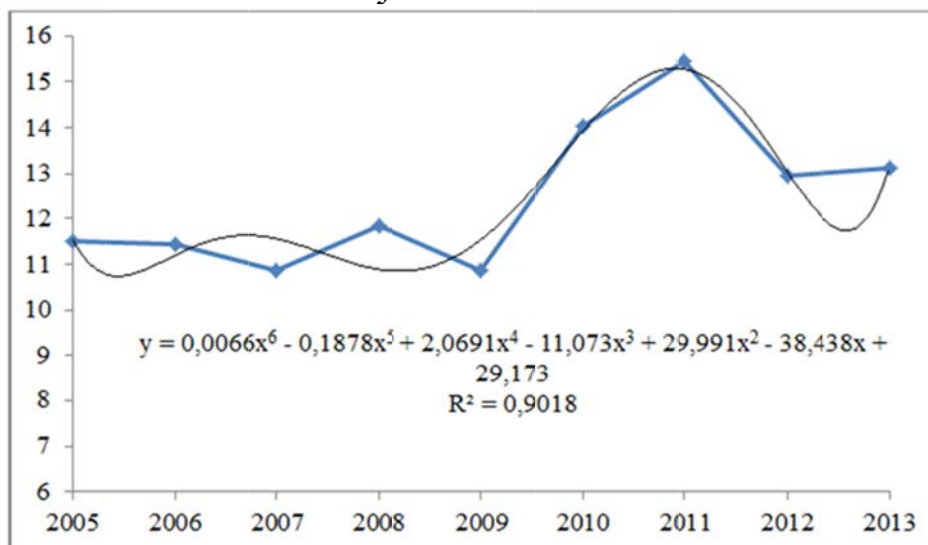
Zdroj: vlastní zpracování podle GFR

Pokles výdajů na vlastní V a V oproti předchozímu roku je patrný pouze mezi lety 2008 až 2009. Je to začátek celosvětové hospodářské recese vyvolané hypoteční krizí na trhu USA.

S poklesem sazby daně z příjmů klesá výhodnost odpočtu pro podniky. Zatímco v roce 2005 mohly podniky snížit odvody z daně z příjmu právnických osob o 26 %, od roku 2010 je to pouze o 19 %. Pokud by byla sazba daně příjmu zachována, zůstalo by v roce 2010 podnikům o 336,74 mil. Kč více.

Statistické zpracování dat a jejich posouzení statistickomatematickými metodami bylo provedeno nejjednodušší formou regresní analýzy. Částky za jednotlivá období byly zprůměrovány a posouzeny na základě vývoje v čase. Získanými hodnotami byla proložena lineární regresní funkce, jejíž výsledný tvar je $y = 371\,609,79t + 10\,595\,260,47$. Směrnice regresní funkce časové řady vyjadřuje trend vývoje závisle proměnné y (průměrné částky vynaložené na vlastní V a V ve zpracovatelském průmyslu) ve vybraném období. Meziročně rostl celkový průměr výdajů na vlastní V a V o 371 610 Kč, při koeficientu determinace $R^2 = 43 \%$. Vyšší spolehlivost zvoleného modelu představila exponenciální regresní funkce, kdy koeficient determinace nabyl hodnoty $R^2 = 44,6 \%$, při rovnici $y = 10,677e^{0,0294x}$. Koeficient determinace R^2 je výběrovou verzí čtverce korelačního koeficientu mezi y a \hat{y} , takže speciálně musí být $0 \leq R^2 \leq 1$. Hodnota koeficientu determinace se blížila v případě lineární i exponenciální regresní funkce 50 %. Tvar vývoje průměrných hodnot V a V výdajů vykazuje výrazné kolísání mezi roky 2007 – 2012, proto nejvhodnější funkcí pro zjištění statistické závislosti se jevila polynomická funkce 6. stupně. Počet stupňů byl určen podle vrcholů, kterých nabývaly hodnoty V a V výdajů ve vybraném období.

Obr. 3: Regresní analýza závislosti průměrného odpočtu V a V výdajů (mil. Kč) ve vybraném období



Zdroj: vlastní zpracování

Polynommická spojnice trendu je křivka používaná u dat, která kolísají. Hodnota koeficient determinace R^2 se rovná 90,2 %, bylo tedy dosaženo dobrého přizpůsobení zvolené křivky datům. Sledování V a V výdajů v závislosti na čase nevykázalo lineární přírůstky. Vzhledem k rozkolísanosti polynommické křivky je odhad vývoje v budoucnosti nejistý. Jako nejpravděpodobnější se jeví mírný růst V a V výdajů ve zpracovatelském průmyslu.

4 Diskuze

Zjistili jsme, že v souladu s vládním záměrem, česká forma nepřímé podpory V a V zavedená v roce 2005 působí v ekonomice pozitivně. Od zavedení tohoto typu podpory roste počet firem, které ji využívají. V roce 2013 to bylo celkem 591 domácích podniků v 22 odvětvích zpracovatelského průmyslu. Tyto podniky celkem uplatnily 7,75 mld. Kč na výzkumné aktivity financované z vlastních zdrojů. Odvody na dani z příjmu snížily o 1,47 mld. Kč. Přesto, že podíl firem podle velikosti nebyl předmětem zjišťování, podle počtu velkých firem uvedených v jednotlivých odvětvích zpracovatelského průmyslu, lze předpokládat, že tato daňová pobídka stimuluje k investicím do výzkumu a vývoje střední i malé firmy. Podle [16] mají malé a střední podniky v jednom oddílu zájem o využívání této formy podpory V a V více než o přímou podporu. Podle ČSÚ byl v roce 2013 podíl velkých podniků využívajících nepřímou podporu 22 %. [18] Zkušenosti z Norska [3] naznačují, že i odpočet na V a V aktivity je jako daňová úleva pro některé podniky motivací ke zneužívání systému a tyto pobídky jsou využívány k daňové optimalizaci. Výzkum v ČR nebyl na toto téma podrobně zaměřený, nelze tedy s jistotou uvést, zda i v českých podmínkách dochází k podobnému jevu. Další rozvoj daňové úlevy pro podniky v oblasti V a V aktivit, který naznačila novela Zákona o dani z příjmu, rozšiřuje oblast o spolupráci s výzkumnými institucemi, což je předpokladem rozvoje užší spolupráce i se sektorem výzkumných pracovišť vysokých škol. Česká republika na rozdíl od některých zemí Evropské unie (EU) [1] nezvýhodňuje systémem daňového odpočtu určité typy firem. Naopak podporuje provádění vlastního výzkumu a vývoje v nejširší škále podle Frascati Manuálu. Výsledky evropských studií naznačují, že nepřímá podpora V a V je stimulací pro růst mezd u výzkumných pracovníků. [15] Přes výsledky, které jsou prezentovány v našem příspěvku, ČR zaostává ve V a V výdajích za vyspělými státy EU a také za průměrem EU-28. V roce 2013 byl podíl V a V výdajů na HDP v ČR 1,91 %, v roce

2014 2,01 %. V roce 2014 vydávalo Finsko 3,16 %, Švédsko 3,17 %, Dánsko 3,08 %. Česká republika však dosahuje nejlepších výsledků ze zemí Visegradské čtyřky, když poměr V a V výdajů k HDP na Slovensku byl 0,89 %, v Maďarsku 1,38 % a v Polsku 0,94 %. EU-28 byl v roce 2013 2,03 %. [10]

Výzkum zaměřený na účinnost podpory V a V ze strany vlády prokázal pozitivní vliv na vytváření přidané hodnoty z výzkumných projektů i větší flexibilitu nepřímé podpory. [2] V České republice v současné době nejsou dostupné studie o konkrétním přínosu odpočtu na V a V aktivity pro zvýšení tržeb aktivních podniků, či zvýšení zaměstnanosti v podnicích užívajících nepřímou podporu V a V.

Závěr

Článek vychází z analýzy sekundárních dat, doplněných vlastním výzkumem využívání odčitatelné položky na výzkum a vývoj v domácích podnicích působících v oddílech zpracovatelského průmyslu. Cílem výzkumu bylo prokázání závislosti mezi zavedením nového typu podpory výzkumu a vývoje a zvýšením investic do vlastního V a V v českém zpracovatelském průmyslu po roce 2005. Po zavedení odčitatelné položky na výzkum a vývoj v roce 2005 se investice do vlastního V a V u domácích podniků v odvětví zpracovatelského průmyslu zvýšily o 293 %. Počet podniků, právnických osob se zvýšil o 256 %. Provedením regresní analýzy byla potvrzena domněnka, že výhodnost pobídky pro podniky zvyšuje vlastní investice podniků do V a V i přes snižující se atraktivnost odpočtu se snižováním přímé daně. Další cenné informace by mohlo přinést provedení dotazníkového šetření mezi zahraničními podniky, které mohou srovnávat podpory V a V investic v několika státech. Podrobné šetření by se zaměřilo na zjištění souvislosti mezi využíváním investicemi do V a V a změnou rentability, výkonnosti a konkurenceschopnosti podniků ve sledovaném odvětví.

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A COMPARATIVE STUDY OF THE LEGAL LIABILITY OF EXECUTIVES IN LLC IN THE CZECH REPUBLIC AND SOME OF OTHER EU MEMBER STATES

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Abstract: *The limited liability company (LLC) appears to be among the most popular forms for business conduct for small and medium sized enterprises (SME) in the EU. Due to the extreme competitiveness and challenging global market, there is a strong external, as well as internal, pressure on the executives of LLCs from various angles. Their challenging situation is projected within the legal framework of the status and the function of executives, and in particular in the regime of their legal liability. It is highly instructive to compare the Czech regime to regimes in other EU member states while focussing on the liability issue. Interestingly, there is a big diversity in modes of addressing this liability and, consequently, the very same problem of the business judgment rule and the liability coverage is resolved in a different manner. Ultimately, the insurance approach v. professional advice approach shows how the shifting of the liability of executives of LLCs is done in various legal systems and testifies about underlying concepts and particularities of conducting business in EU member states.*

Keywords: *Limited Liability Company (LLC), Statutory authority, Liability, Executive service agreement, Re-codification.*

JEL Classification: K22, M12.

Introduction

One of today's big challenges for individuals, businesses and society is sorting through an enormous amount of both relevant and irrelevant information, and assessing it during a time when, [15] the conventional concept of a society has undergone a re-assessment based on expectations presented by sociologists as well as economists [20]. The common denominator is the omnipresent integration [16] and the dependence upon information systems and information technologies (IS-IT) in a highly competitive environment [13]. In such a setting, having the optimal business form, with appropriate management, is indispensable for a competitive advantage and sustainable business success. The limited liability company (LLC) appears to be among the most popular forms for business conduct for small and medium sized enterprises (SME) in the EU and there are no indices about their decline in the near future. Almost 99% of all business entities in the EU are SMEs, accounting for over 70% of the jobs and producing 60% of the total gross domestic product [13]. Therefore, the understanding of the legal framework of an LLC, as the favourite form for SMEs, and its executives, is a must for business conduct in the EU. Boldly, the existence of a business organization, especially a LLC, and its success is influenced by outlined goals [2] and how these goals are reflected by LLC decision-makers, executives. Regardless, whether they have the employee status [19] or the free-lance status, these executives make more or less educated business decisions based on their perception of the LLC's needs as well as their personal needs, including the need to reduce their legal liability.

1 Statement of a problem

Both LLCs and their executives are under tremendous pressure from many angles, as the current market imposes many demands on the competitiveness of enterprises [13]. The extreme competitiveness and challenging global market, divergent interests of the stockholders, variations of state policies, and many other factors generate complex tensions to which are exposed executives. The law tries to reflect this economic reality and provides an appropriate legal framework justly balancing legitimate expectations and setting correctly and justly the rights and duties of executives, i.e. their status and function, and, in particular, in the regime of their legal liability. The huge Czech re-codification of private law also impacted the LLC sphere and brought significant changes in the legal liability regime of executives, which needs to be approached in a scientific manner, described and critically assessed while comparatively examined with regimes in other EU member states. The very flexible SMEs in the EU [13] need a matching flexible form, LLC, with a responsible and appropriately liable executive. Not just candidates for the executive function should be assessed [19], but as well the function itself and its regime. This study and analysis culminates in a conclusion which should anchor the collected information and assist with the presentation of an ultimate evaluation and of recommendations.

2 Methods

This article has two fundamental goals – the first one deals with the new Czech legal liability regime for executives, the awareness about it and related consequences and the second deals with a brief presentation of similar regimes in other EU member states along with comparative comments. Since these goals are related but conceptually different, the methodology for each needs to be established and explained separately and independently. The first goal and the cornerstone of this article is to overview and analytically describe the new regulation of the liability of executives of LLCs, by the Act No. 90/2012 Coll., on Business Corporations (BCA), and to assess whether this new legal regulation will influence the status of the already appointed executives of the already created LLCs, and whether these executives are well informed about these changes and perceive their status as changed. The assessment will be based on a questionnaire investigation and its evaluation via a categorial data analysis.. The questionnaires were given to selected executives of already existing LLCs in the territory of the capital town, Prague. The questionnaire investigation was split into two parts. The 1st part was aimed at an assessment about whether the executives are sufficiently informed about the new legal regulation according to the BCA, particularly about their newly regulated liability. The 2nd part focused on an evaluation of whether these changes (as summarized, presented and explained) when taking into account the liability of executives, will influence the status of the current statutory authorities. The introductory hypotheses were set as follows: H1 – executives are sufficiently informed about their newly regulated liability; H2 – the newly regulated liability of the executives will have an influence on the status of the already existing executives. The introductory method was the literature research, which considered old legislation and also the new legislation. The analytic assessment of the LLC had a deductive nature and was closely linked to the preceding literate research. H1 and H2 were set based on the experimental investigation and the assessment of the questionnaire's investigation and analysis of categorial data. Since it is suggested that the best forecasting method for businesses, especially SMEs, is the scenario method instead of econometric and mathematical methods, the combination of a real direct data mining via a questionnaire,

complemented by published academic data, seems highly suitable to address H1 and H2 [2]. The second goal covers the descriptive analysis of the legal liability in selected EU member states and its comparison to the Czech regime, and thus requires the employment of both approaches, the quantitative and the qualitative approach. Quantitative research and analysis relies on mathematically measurable values and thus deals with countable data about the regime of the legal liability of executives in the selected EU member states. Quantitative analysis attempts to deductively determine and assess, based on the collected data, what, when, how much, and how likely a phenomenon occurs, but not why. The explanatory part of the research and study about the legal liability of executives abroad should be addressed by qualitative, comparative analysis, which rather inductively assumes a similarity and confronts with such assumptions the collected data and explains why and how the original theoretical assumption about the similarity should be modified, and what recommendations can be extracted.

The opposition between qualitative and quantitative methods should not be overplayed [21] and their dichotomy is only *prima facie* cannot reconcile. The statistical approach can be useful, but also is undeniably impaired by many inherent deficiencies [7]. Yet this is not to suggest that qualitative methods are intrinsically superior and that quantitative methods should be avoided [21]. On the contrary, the hallmark and key instrument of quantitative research, statistics, does not generate exclusively black-and-white results if properly worked with and if new approaches are employed. The Meta-Analysis methods geared to contrasting, combining and reconciling data and results from different studies in order to identify patterns, relations, and relationships are highly relevant for the study of the interaction and inter-play between business competition and intellectual property. The system of the legal liability of executives is in each jurisdiction unique, even if *prima facie* similar to systems in other European jurisdictions, and thus the Meta-Analysis should be fully employed in the comparative part of this article. It needs to be stressed that the second goal compares both legal and economic aspects, so it must include both deductive and inductive aspects of legal thinking [18] as legal theoretic orientation reflects the legal science which is not axiomatic but argumentative [11].

3 Legal liability of the executives in LLC in the Czech Republic

On January 1, 2014, the BCA became effective. It was enacted in relation with the significant re-codification of the Private law, which occurred through the new BCA, and further Act No. 89/2012 Coll., Civil Code (New Civil Code), which became effective as well on January 1, 2014. This statute replaced Act No. 513/1991 Coll., Commercial Code (Commercial Code). Further law questions related to the commercial law, such as, for example, the obligation law relationships, are, as of January 1, 2014, regulated only by the New Civil Code. The BCA covers only commercial companies and does not provide the entire complex regulation of all matters of commercial companies. Thus, a number of issues and elements regarding the commercial companies, and related to the commercial law, are directly regulated by the New Civil Code.

The LLC is one of the capital type companies, despite the fact that it demonstrates several features of personal type companies. The LLC associate members are jointly and severally liable for debts up to the amount of their unpaid deposit duty, as recorded in the Commercial Registry. Previously, the LLC was the most commonly used company legal form for business activities, i.e. during the validity of the Commercial Code. The LLCs, created under the aegis of the Commercial Code, had to adjust their foundational

documents and enter into new Executive service agreements before the end of June 2014. Further, the new regulation of the liability of the members of statutory authorities, including executives, during their decision making activity, can have an impact on executive's private proprietary sphere.

According to both the previously valid Commercial Code and the newly valid BCA, the liability of associate members ceases once they fully pay their deposit duty. However, the BCA creates major changes by setting significant liability elements with an impact into the private sphere of executives. Part of the professional public shares the opinion that the new legal regulation of the liability of executives is correct. New risks for these executives, able to be enforced against them if in breach of their duties according to the law, are represented specially by the duty to return any profits gained in relation to the breach of careful manager duty, the disqualification from the function of a member of a statutory authority, such as of the executive, the liability for debts of their LLC, the duty to return the profits for the last 2 years before the start of the insolvency proceedings and the unlimited liability of executives for the debts of their LLC in bankruptcy, which extends even unto executives which withdrew from their functions in the two years previous to the final court decision about the bankruptcy. All of these risks, generating the liability of the executives, including the return of financial and non-financial profits, are linked to the beginning of the insolvency proceedings according to Act No. 182/2006 Coll., on Insolvency Act (Insolvency Act). The requirement for the beginning of the insolvency proceedings is the bankruptcy of the commercial companies or, considering all circumstances, the clear threat of the bankruptcy of the commercial companies. In 2013, over 7000 applications were filed in insolvency courts in the Czech Republic, about half of them were linked to the bankruptcy issue of commercial corporations. In total, one half of all applications were filed by creditors and one half by debtors, though applications filed by creditors slightly prevail for cases of non commercial corporation bankruptcy issues, while applications filed by debtors (such as LLCs) slightly prevail in cases of commercial corporation bankruptcy issues [9]. The reason may be because executives of LLCs were not threatened by a preset action in the form of the liability of executives. In the future, the number of filed applications might decline, as executives will carry, based on their functions, the liability for behaviour in the LLCs with an impact on their private sphere.

The BCA brings a newly regulated duty of executives to act according to the business judgment rule, which emanates from the common law and should contribute to the protection of executives much better than the previously set duty of a careful manager [22]. The duty of a careful manager is a fundamental duty of the member of the statutory authorities, which is known already from the previous legal regulation of commercial corporations and which is now regulated by Art. 159 (1) New Civil Code. For the first time, the duty to act according to the business judgment rule is added to the duty of a careful manager.

Pursuant to Art. 51 BCA, diligently and with necessary knowledge acts the person who in good faith could reasonably assume in his business decision making that he acts in an informed manner and in a legitimate interest of the corporation. For the assessment whether the executive acted in accordance with the care of careful manager, the setting of the required standard is critical. This provision and standard are perceived by certain authors as a further developed old concept of the care of careful manager enriched by a new business judgment rule in *lege artis* manner [12]. Other authors argue that the direct en-block inclusion of the "American" business judgment rule in the Czech BCA was not

perfectly done and that it leads to perceiving the business judgment rule as a mere instrument to interpret the old concept of the care of careful manager [8]. The wording, interpretation, and application of Art. 51 raise several issues and the appropriate case-law is not yet developed. The case-law related to some elements from Art. 51 is available, such as e.g. good morals [17] and the old concept of the care of a diligent manager on both criminal, see 15 Tdo 294/2009, as well as civil, see 29 Cdo 3542/2011, level. But how this will be transposed to this new provision, allegedly unnecessarily creating a safe harbour [8], is unclear.

If it's proven that the executive violated his fiduciary duty of a careful manager, together with the duty based on the business judgment rule, he must return to the LLC the profits which he or she earned in relation to such behaviour. According to Art. 3(2) BCA, he also has the duty to return all non-proprietary advantages which he obtained in re to the position of the executive of the LLC, including meal vouchers, use of a business vehicle, etc. The burden of proof is borne by the defendant.. In the case of LLC bankruptcy, current as well as past executives can be in the reach of this new regulation and the decision of the insolvency court can lead not only to their return of "all that they got from the LLC", but also to their disqualification to perform the executive function in another LLC in the next three years. If the executive breaches this prohibition, the prohibition to perform the function of the member of the statutory authority is extended to 10 years.

Does the Executive service agreement represent the Czech solution of the executive liability and business judgment rule? The BCA regulates by Art. 59 and following the Executive service agreement. The legislative goal was mostly to avoid duplicity of contractual documents when the executive was in the top management position and concurrently a mere employee of the LLC [6]. The new Executive service agreement is regulated only in a general manner and is always created when appointing the given executive, regardless whether this agreement was really entered into and this despite the fact that the statute directly requires a written form and a direct approval of the agreement as well as of its changes by the executive [5]. If the LLC reaches the point where it can't pay its obligations, thus satisfying requirements for the beginning of insolvency proceedings and insolvency proceedings begin, then the executive must, if the insolvency administration asks him or her for it, return any (!!!) profit obtained, based on the Executive service agreement. The active legitimacy to file such a complaint for return is entrusted to the insolvency administrator, provided several conditions are met: The insolvency application was filed by a creditor (i), the insolvency court decided about the bankruptcy (ii), the request by the insolvency administrator for the payment of the financial as well as non-financial benefit (iii). The court can decide that the current or prior executive is liable for the satisfaction of duties by the LLC, provided the bankruptcy of the LLC was declared or if it was declared that the current or prior executive knew or should and could have known about the threatening bankruptcy of the LLC and, in a breach of the duty of a careful manager, did not take any necessary and reasonably expected steps to avoid the bankruptcy. The insolvency administrator and creditors have active legitimacy to sue for payment up to the amount of the receivables identified in the insolvency proceedings. They can request the executive to pay the receivables of the insolvency proceedings, (being the difference between the receivables as identified and the actual paid amount from the insolvency assets). This is not an incidence dispute and the reverse burden of proof is applied, i.e. the defendant has to prove out that he did not commit the alleged acts.

Based on the questionnaire investigation and its assessment via categorical data analyses, it was researched if the new legal liability regulation is known to executives and has an influence on their status. The questionnaire investigation has two parts. The 1st questionnaire was formulated to discover whether the executives are sufficiently informed about the new legal regulation of their liability by the BCA. Next, they obtained the 2nd questionnaire for their evaluation of the new legal regulation of the liability and its potential impact on their status. Questionnaires were submitted to executives of already existing LLCs in Prague. No two respondents came from the same LLC. In total, 50 questionnaires were filled out by 50 respondents, who were informed about the consequences of the newly regulated liability of statutory authority and provided with the follow-up, second questionnaire. The collected data was assessed by the categorical data analysis using the computer program STATISTIKA. The importance level was set at $\alpha=0,05$. For the assessment of the collected data the statistic method of the quantitative signs dependency pursuant Pearson's chi-squared test was used. Conditions for the use of chi-squared test were met ($n>40$). Results of the questionnaire investigation: H1 – executives are sufficiently informed about their newly regulated liability; H0 – there is no dependency between indicated signs, i.e. executives are not sufficiently informed about their newly regulated liability.

Tab. 1: Contingency table of hypothesis No. 1

	Sufficiently informed	Insufficiently informed	Numbers
LLC with one executive	13	32	45
LLC with more executives	2	3	5
Total	15	35	50

Source: Author's own processing

The value of Pearson's chi-squared test is $X^2 = 0.1057$. The importance level is $\alpha=0,05$ i.e. $X^2_{0,05}(1) = 3,841$. Considering that the value $X^2 < X^2_{0,05}(1)$, H0 – the zero hypothesis is confirmed and thus there is no dependency between indicated signs, i.e. executives are not sufficiently informed about their newly regulated liability. H2 – the newly regulated liability of the executives will have an influence on the status of the already existing executives; H0 – there is no dependency between indicated signs, i.e. the newly regulated liability of the statutory authorities will not have an influence on the status of already existing statutory authorities.

Tab. 2: Contingency table of hypothesis No. 2

	Influence on the status	Without influence on status	Number
Company with one executive	10	35	45
Company with more executives	1	4	5
Total	11	39	50

Source: Author's own processing

The value of Pearson's chi-squared test is $X^2 = 0,0129$. The importance level is $\alpha=0,05$ i.e. $X^2_{0,05}(1) = 3,841$. Considering the value $X^2 < X^2_{0,05}(1)$, H0 – zero hypothesis is

confirmed and so there is no dependency between indicated signs, i.e. the newly regulated liability of the statutory authorities won't influence the status of already existing statutory authorities. Based on the performed questionnaire investigation and its assessment via the methods of dependency quantitative signs of Pearson's chi-squared test, it is possible to conclude that executives are not sufficiently informed about their newly regulated liability according to the BCA. Executives are informed only on a very general level, and they do not possess detailed information about the possibility of a sanction through ordering the return of financial as well as non-financial profits, and the possibility for creditors or the insolvency administrator to file such complaints. Based on the questionnaire investigation, it was seen that the new legal regulation won't have an influence on the status of the already existing executives in re to their newly regulated liability. One way to avoid the newly introduced liability of the executives is the situation when the executive proves that he or she performed individual steps with the care of a careful manager which can be proven especially through the qualified recommendation or pre-approval of these steps by experts specializing in this field. The respondents were informed about this option before the 2nd part. All these executives endorsed it, expressing their intention to actively use it and actively mentioning that they will consider using more "their external lawyers and auditors", i.e. they clearly expressed the preference to hire qualified experts. Experts carrying a special insurance, preferably a lawyer admitted to the Czech Bar or a certified auditor, who will provide them with information about important issues related to the management of a commercial company, thus avoiding the enforcement of claims against them and avoid their liability. Since an hourly fee for this type of service charged by lawyers oscillates around CZK 2 500 and by certified auditors around 1 500 CZK, a heavy use of this mechanism would generate significant costs represented by fees of these experts and it can be speculated whether companies will be economically strong enough so that this new trend does not in and of itself sink them into bankruptcy, which would be ironic. Naturally, it may be that they will try to convince lawyers to agree to work for less than normal and reflecting the Advocate Tariff, which sets a progressive hourly fee based on the value at the stake and already the value CZK 5 001 is assigned an hourly rate CZK 1 500! They may also consider hiring cheaper "other experts". Yet this would lower their security and they could risk totally losing the benefit of the responsibility shifting, if their "expert" is later on not recognized as a relevant expert for the given issue. Regarding other options, like insurance, respondents did not have any notion about it, and thus they could not be reminded of it, like "How can I have more tea when I haven't had ANY tea?" Establishment of a stable praxis will take several years, thereafter it will be possible to confirm or rule out this concern.

4 Legal liability of the executives in LLC in Germany, Austria and France – comparative comments

Czech law shares the continental law tradition based on Roman law and a robust codification and belongs to the same legal family as German, Austrian, and French law. Plus, these continental law countries are members of the EU and their national law observes the supremacy and direct effect of the EU law. The law of England and Wales as well as the USA federal and state laws belong to the common law legal family. Although SMEs via LLC are a popular flexible business form [13] on both sides of the Atlantic and differences in re the legal framework for LLCs and their executives are not widely different according to continental and common law systems, naturally it is more appropriate to compare the Czech legal liability of an executive to the German, Austrian and French regime and their

operation. Considering the observation of the same model, interestingly of a rather common law provenience, the executives of LLCs in Germany, France and Austria are liable for their actions, carry a fiduciary duty, their actions are scrutinized under the Business Judgment Rule and finally lead to a set of private and public law sanctions. There is a well established hypothesis of a similar, if not identical, system of the setting and operation of the legal liability of executives in these countries. Yet, a deeper assessment gives information about changes and a hard and fast observation shows that the practical consequences are strongly different from the results about the Czech Republic.

The German structure of the regulation of LLCs, GmbHs, and their executives Geschäftsführers matches the current Czech structure. Thus, the German Civil Code, Bürgerliches Gesetzbuch, gives a general framework and a more detailed regulation is in in the German Limited Liability Act, RGBl. S. 477 GmbH Gesetz 1892. The duty of loyalty, Treuepflicht, derives from the good faith provision incorporated in BGB, other duties with respect to executives, like the liability per se Geschäftsführer-Haftung, also the Business Judgment Rule are included in the German Limited Liability Act. This regulation is completed by rules set in the German Criminal Code, Strafgesetzbuch, in the Insolvency Order, Insolvenzverordnung, Tax regulation, Cartel regulation, etc. It will be interesting to see how these laws are applied towards the many top-level executives involved in the VW company scandals about emission test rigging, leading to tens of billions of dollars in losses and lawsuits. Violating duties of executives, including acts not in compliance with the Business Judgment Rule, have sanctions in the Czech Republic that are similar to Germany. Plus, like the Czech Republic, the exoneration statement issued by the LLC or the termination of the executive function does not constitute, per se, the liberation of the executive. As established previously in this article, a typical Czech executive has a low awareness about the extent and consequences of his or her legal liability, but once informed, gladly embraces the option to get an official recommendation and thus shifts the responsibility onto third party advisors. On the contrary, the typical German solution is to take a special insurance, namely Directors & Officers Insurance, D&O Versicherung and so address the presumed severity linked to the application of the standard of care and the diligence of a good businessman [1]. Of course, the insurance is not absolute and in the academic, as well as in practical, life there has been developed a strategy to avoid the legal liability of executives, Haftungsvermeidungsstrategien, which includes four pillars Beschränkung der Innenhaftung through contracts entered into by the LLC and the executive, Freistellung von der Außenhaftung, a declaration issued by the LLC for the executive, the establishment and observance of the corporate compliance program plus last, but not least, the insurance, Versicherungsschutz D&O [3]. In Austria, the setting is similar and the lex specialis is the Austrian Limited Liability Act, RGBl. Nr. 58/1906 GmbH Gesetz and of course the lex generalis is the good old Austrian Civil Code, ABGB. If the executive cannot meet the threshold of a good businessman in the performance of its function, the classic sanctions emerge especially if the insolvency of the pertinent LLC occurs. In addition, the Austrian prescription is five, probably very long for the executive, years. Hence, the insurance, Versicherungsschutz D&O is at least worthy of consideration. Executives of LLCs in France, gérants de S.A.R.L., are exposed to legal liability and the breach of their duty, especially during insolvency, can include a negative impact in their personal financial sphere. The principal source of this regime is via provisions of French Commercial Code, namely L223-22 du Code de commerce and the prescription is 3 years, but if a criminal act, 10 years. Interestingly, the Insurance D&O is in France offered, due

to local specificities, often along with the unemployment insurance of the executive, assurance chômage.

In short, D&O Insurance is a part of the plan of addressing executive legal liability across the EU. Thus, there are about 50 insurance companies offering D&O Insurance in Germany, among those offering Managerhaftpflichtversicherungen are Allianz Versicherung AG, Chartis Euroope, Versicherungskammer Bayer, etc. These are serious business rivals so each insurance company tries to get clients via some „specials.“ For illustration, Table III shows the approximate prices for such insurance, but these prices change upon further circumstances related to the LLC and the executives, as well as to the offering insurance company itself.

Tab. 3: Insurance D&O - Data for Germany, Year 2013/2014

	The Annual Turnover of the LLC in EUR				
Insured Amount (Insured Coverage) in EUR	Up to 1 Mio.	Up to 2,5 Mio.	Up to 5 Mio.	Up to 10 Mio.	Up to 50 Mio.
250.000	602	633	666	741	898
500.000	802	845	889	988	1.198
1.000.000	1.124	1.182	1.245	1.383	1.677
1.500.000	1.348	1.419	1.494	1.659	2.012

Source: [14]

The Insurance D&O is not common in the Czech Republic and relevant data is difficult to locate. Nevertheless, the information collected from Websites of Renomia, AIG, AON suggests that e.g. the premium for the annual Insurance D&O A with a CZK 10 million indemnification limit begins around CZK 20 000 annually.

The cost of the D&O Insurance premiums needs to be compared with the hourly fee payable to a legal expert. Table III shows that the premium in Germany is between EUR 600 and EUR 3 783. According to the Juve portal, the average hourly rate charged by an attorney at law is EUR 238, but regarding commercial law lawyers, they seem to charge more, for an associate EUR 256 and a partner EUR 334 [10]. Considering that the expected number of hours to be charged for advising regarding transactions and various LLC issues would exceed ten, the „Czech“ venue for addressing legal liability might appear ineffective and way too expensive as opposed to the German setting. Nevertheless, deeper research should be done to confirm this suggestion and especially the data from all key insurance companies, which is definitely not easy to get, needs to be analyzed. In the EU, the D&O Insurance, to address the issue of legal liability of LLC executives is far more often used than the responsibility shifting mechanism consisting of asking legal experts. To discuss reasons for that is beyond the scope of this paper, yet it can be suggested that the selection of the mechanism is influenced by the national law, its implementation and the use of controlling [13]. With a touch of exaggeration, the ultimate result is anyway similar, as the legal expert then takes the insurance, in this case malpractice insurance. But it looks similar only to unrelated and disinterested parties, i.e. for LLC associate members, and creditors of an LLC, it is who is liable and potentially covered by the insurance and how the insurance premium was paid and who carries the risk of an insufficiency of coverage.

Conclusion

The legislative goal of the Czech re-codification of the Private law was, among other considerations, to establish a modern and liberal form of a company which will reflect current conditions of the global economy and that will facilitate access to business by a larger group of natural persons, i.e., to more people than before. The new statute regulating the liability of executives of an LLC should function as a motivation for executives to act with the care of a reasonable manager and to make the same efforts when making decisions for their LLC as in their own affairs. The old Commercial Code did not deal with this and an intentional breach of payment ethics and behaviour towards creditors often occurred. The business management of LLCs then often led to the bankruptcy of these LLCs without satisfying creditors' receivables. This often caused secondary payment incapacity of the harmed creditors and ultimately negatively impacted the entire society. This was one of the reasons why the Czech legislators decided to change the law. Now, it should be assessed if the Czech newly regulated liability of executives will not have, as a consequence, an exaggerated caution, a dampening effect, in the decision-making and managing of a LLC, which may lead to stagnation and increasing costs. The results of the questionnaire's investigation suggest that Czech executives are not sufficiently informed about their newly regulated liability and they do not perceive their status as changed, but once informed, they are ready to adjust and make changes. The first indices, generated by the investigation inquiries, are that the preferred option for such an adjustment may be an (over)reliance on professional advice, especially as D&O Insurance remains a big unknown in the Czech Republic. The new Czech legislation approximated the Czech LLC regime, including the liability of executives, to regimes in other EU member states. Traditionally and historically, Czech law is very close to the Austrian, German and French law. Reviewing the legal liability of executives in these countries shows much similarity to the new Czech setting. Yet the strategy of how to address the uncertainty and danger of the (mis)employment of the concept of legal liability is very different in these countries from the Czech projected solution. They prefer using D&O Insurance, while the Czech preference is for external professional advice. The future will clarify this unclear and speculative arena, and will help to assess whether Czech significant legislative changes of the liability of executives are efficient and effective, and what practical impact they will generate. For the time being, comparative studies using a scenario method and a monitoring of the case law appears recommendable.

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KOMPARACE ČESKÉHO A ESTONSKÉHO SYSTÉMU (SYSTÉMŮ) ZDRAVOTNÍHO A NEMOCENSKÉHO POJIŠTĚNÍ

COMPARISON OF CZECH AND ESTONIAN SYSTEM(S) OF HEALTH AND SICKNESS INSURANCE

Jan Daler

Abstract: *The paper deals with two systems - health and sickness insurance in two countries. In Czech Republic, where those systems are separated, and in Estonian Republic, where exists only health insurance, where belongs also benefits for temporary incapacity to work (the benefits falling under sickness insurance in Czech Republic). Most features of the systems are similar in both countries (such as solidarity, obligation of insurance, state guarantee), but there are also differences. The main one is that state pays for a small group of people in Estonian Republic, while state insured people cover more than half of the insured people in Czech Republic. Also one benefit is different in each country. People in Czech Republic receive compensatory benefit in pregnancy and maternity, in Estonian Republic adoptive parents receive the benefit called adoption benefit.*

Keywords: *Health insurance, Sickness insurance, Features, Benefits for temporary incapacity to work, Estonian Republic, Czech Republic.*

JEL Classification: *I1, H4.*

Úvod

Zdravotnictví a jeho financování patří ke stále otevřeným tématům odborných i politických debat. Ve vyspělém světě se se zdravotnickým systémem potkal každý. A už jen jeho existence, respektive to, že jej v případě potřeby můžeme využít, představuje jednu ze životních jistot. Podobnou jistotou je pro nás též systém sociálního zabezpečení, kam spadají i dávky vyplácené v nemoci, tzn. v situaci, kdy člověk zároveň využívá zdravotnický systém.

Výsledky zachycené v tomto článku jsou součástí řešení širšího výzkumného úkolu, kdy se autor zabývá potenciálními přínosy nebo naopak nevýhodami propojení systémů nemocenského a zdravotního pojištění. V tomto smyslu je potom otázkou, zda by pro Českou republiku nebylo výhodné systémy propojit.

1 Formulace problematiky

V České republice (ČR) jsou odděleny systémy financování dávek pro osoby, které jsou ze zdravotních důvodů dočasně práce neschopné a financování zdravotnictví, respektive zdravotní péče. První systém označujeme jako nemocenské pojištění. Druhý systém je zdravotní pojištění. V Estonské republice (EST) spadají „nemocenské“ dávky pod pojištění zdravotní. Tento poměrně výrazný rozdíl skýtá možnosti, které mohou být výhodami, ale zároveň nevýhodami. V práci budou porovnány rysy systémů, díky čemuž bude položen základ pro srovnání výhod a nevýhod, jež může přinést jejich propojení.

Cílem práce je určení společných a naopak rozdílných rysů systému (systémů). Pro účely tohoto článku je cíl zúžen na nastavení dotčených systémů v ČR a EST.

2 Metody

Jak bylo psáno výše, EST a ČR mají rozdílné systémy, ale tyto státy byly zvoleny i proto, že v nich převažuje veřejné financování zdravotnictví (jinými slovy soukromé zdroje nehrají na financování zdravotnictví takovou roli).

Pro vznik práce bylo nutné seznámit se se zákony, které v daných zemích nastavují systémy zdravotního a nemocenského pojištění. V ČR to byl především zákon č. 187/2006 Sb., o nemocenském pojištění, a zákon č. 48/1997 Sb., o veřejném zdravotním pojištění. Nejdůležitějším zákonem pro estonskou část práce byl zákon o zdravotním pojištění (RT I 2002, 62, 377).

V literární rešerši byly použity 3 metody: popis, analýza a komparace. Ze stručného popisu zákonných ustanovení vychází jejich hlubší analýza. Na analýzu autor naváže srovnáním. Z dosažených výsledků jsou následně vyvozeny závěry. V části 3.2 je nejvíce využívána metoda komparace. Porovnání bude zaměřeno na rysy systémů, dávky systémů a výpočet těchto dávek.

3 Rozbor problému

Tato kapitola je rozdělena do dvou podkapitol. První z nich bude literární rešerši věnující se rysům zdravotního a nemocenského pojištění v ČR a zdravotního pojištění (zahrnující i pojištění nemocenské) v EST, respektive i nemocenského pojištění v případě ČR. Následně budou popsány dávky při dočasné pracovní neschopnosti, jelikož jsou tyto dávky součástí nemocenského pojištění. Ve druhé podkapitole budou systémy komparovány.

3.1 Literární rešerše

3.1.1 Česká republika

Jak již bylo napsáno v úvodu ČR má oddělené zdravotní a nemocenské pojištění. Kvůli přehlednosti budou rozděleny i v této práci.

Nemocenské pojištění

Krebs [7] tvrdí, že nemocenské pojištění je postaveno na následujících principech:

- Všeobecnost pojištění,
- obligatornost pojištění,
- solidarita,
- obligatornost nároků.

Pod všeobecností pojištění se myslí, že pojištěnou osobou může být kdokoli. Nezáleží na tom, jak osoba pracuje či kolik jí je let. Jak říká Krebs [7, s. 240], „pojištění byli od počátku účastni dělníci a provozní úředníci zaměstnaní prakticky ve všech hospodářských odvětvích.“

Obligatornost pojištění znamená, že pojištění má nucenou povahu [7]. Osoby definované v zákoně jako „pojištěné osoby“ musí platit pojistné. V roce 2015 činí pojistné 2,3 % z vyměřovacího základu a odvádí jej zaměstnavatel a osoba samostatně výdělečně činná (OSVČ). Mezi těmito plátcí je ale ten rozdíl, že zaměstnanci, jejichž mzdy tvoří základ pro výpočet pojistného placeného zaměstnavatelem, jsou dle zákona č. 187/2006 Sb. nemocenského pojištění [17] účastni povinně (§5, písmeno a), zatímco OSVČ a zahraniční zaměstnanci dobrovolně (§5, písmeno b). S povinností (dobrovolností) účasti souvisí nárok

na dávky. Zatímco zaměstnanci mají nárok na všechny benefity, které nabízí nemocenské pojištění, osoby, které se mohou pojistit dobrovolně, mají při pojištění nárok pouze na nemocenské a peněžitou pomoc v mateřství.

Nemocenské pojištění je založeno na solidaritě [9]. Na solidaritě mezi zdravými a nemocnými a zároveň (z finančního pohledu) mezi osobami s nižšími a vyššími příjmy. Solidaritu zajišťují 3 redukční hranice, které ve výpočtu nemocenské redukují denní vyměřovací základ (průměrný denní příjem za posledních 12 měsíců), jehož součin s procentuální sazbou připadající na dávku přinese výši denní dávky. Redukční hranice jsou 3 a s rostoucím příjmem redukční sazba klesá, díky čemuž je do dávky započítáno méně procent z příjmu [9].

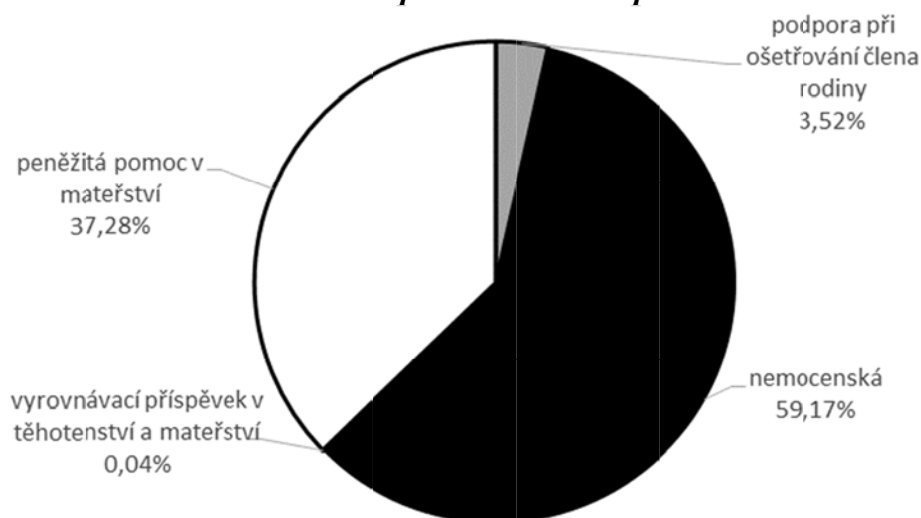
Vedle tří výše uvedených rysů může být vysledován další, který však Krebs neuvádí, jímž může být rozdělení platby „dávek“ nemocným zaměstnanců, mezi zaměstnavatele a stát. Tento rys se vyskytuje od 1. ledna 2009. V prvním období nemoci (v roce 2015 14 kalendářních dnech) platí zaměstnavatel náhradu mzdy (na základě mzdy v předchozích 3 měsících) podle zákona č. 262/2006 Sb., Zákoníku práce [18]. Pokud dočasná pracovní neschopnost trvá déle, platí nemocenskou stát. OSVČ nemají nárok na náhradu mzdy, protože nemají zaměstnavatele, který by jim ji vyplácel. Získávají tedy dávku nemocenské od 15. dne nemoci.

Z nemocenského pojištění jsou v ČR poskytovány 4 dávky (§4 zákona č. 187/2006 Sb. [17]):

- nemocenská,
- peněžitá pomoc v mateřství,
- podpora při ošetřování člena rodiny,
- vyrovnávací příspěvek v těhotenství a mateřství.

Na dávky vzniká při splnění zákonem stanovených povinností nárok přímo ze zákona. Tomuto rysu se říká obligatornost nároků. V roce 2012 byla výše vyplacených dávek 19 377 mil. Kč, z čehož 11 465 mil. Kč připadalo na nemocenskou, 7 224 mil. Kč na peněžitou pomoc v mateřství, 682 mil. Kč na podporu při ošetřování člena rodiny a 7 mil. Kč na vyrovnávací příspěvek v těhotenství a mateřství. [9]

Obr. 1: Struktura dávek dočasné pracovní neschopnosti v ČR v roce 2012



Zdroj: [9]

Výpočet nemocenské, peněžitě pomoci v mateřství a ošetřovného dle Ministerstva práce a sociálních věcí (MPSV) [9] probíhá totožně, tedy výpočtem denního vyměřovacího základu (podíl započitatelného příjmu a počtu dní v rozhodném roce), redukcí denního vyměřovacího základu, určením denní dávky (sazba připadající na dávku násobená redukováným denním vyměřovacím základem) a určením výše dávky (denní dávka krát počet dní pracovní neschopnosti). Jediné dva rozdíly jsou:

- 1) procentuální sazba, která se započítává do první redukční hranice při redukcí denního vyměřovacího základu. Zatímco u nemocenské a podpoře při ošetřování člena rodiny je započítáno 90 %, u peněžitě pomoci v mateřství 100 %.
- 2) procentuální sazba při výpočtu samotné dávky. Nemocenské a ošetřovné je ve výši 60 %, zatímco peněžitá pomoc v mateřství činí 70 % redukováného denního vyměřovacího základu.

Z obrázku 1 je zřejmé, že státní rozpočet nejvíce zatěžujícím benefitem v ČR je nemocenská, následovaná peněžitou pomocí v mateřství (jejíž výše by však v případě zápočtu 90 % místo 100 % klesla). Zbylé dvě dávky se na celkových výdajích podílejí malým podílem, a proto se jimi nebude autor dále zabývat.

Zdravotní pojištění

V zákoně č. 48/1997 Sb., o veřejném zdravotním pojištění [16] nejsou rysy explicitně jmenovány, ale mezi řádky se dají najít následující:

- Obligatornost pojištění,
- státní garance,
- solidarita.

Durdisová [2] vedle výše uvedených rysů přidává dva další:

- Neexistence vazby mezi zdravotním stavem a výškou pojistného,
- čerpání péče nikoli podle rozpočtového omezení, ale dle objektivní potřeby a zdravotního stavu.

První rys Durdisové znamená, že pakliže existují 2 osoby, které vydělávají stejné peníze, a z nichž jedna bude zdravá a druhá dlouhodobě nemocná, budou odvádět stejné pojistné. Významově tedy odlišuje soukromé a veřejné zdravotní pojištění, jelikož u soukromého pojištění je výše pojistného závislá na věku, zdravotním stavu apod. Pokud by se pojišťovali uvedené dvě osoby, druhá by zaplatila větší pojistné.

Druhý rys Durdisové prezentuje zdraví člověka na prvním místě. To, kolik osoba čerpá prostředků, nezávisí na odvedeném pojistném. Pokud je vyžadována péče, pak je čerpána bez existence rozpočtového omezení.

Nyní ale k rysům vyplývajícím ze zákona č. 48/1997 Sb., o veřejném zdravotním pojištění [16]. Obligatornost pojištění znamená, že je povinné se pojištění účastnit. §2 uvádí osoby, které musí být povinně zdravotně pojištěny. Jsou jimi:

1. osoby s trvalým pobytem na území ČR,
2. osoby, které nemají trvalý pobyt na území ČR, ale jsou zaměstnanci zaměstnavatele, který má trvalý pobyt nebo sídlo na území ČR.

O účasti na zdravotním pojištění tak rozhoduje místo trvalého pobytu osoby, respektive místo trvalého pobytu zaměstnavatele. V porovnání s nemocenským pojištěním tedy nezáleží na tom, jestli je osoba zaměstnancem, OSVČ nebo zaměstnavatelem. S výše uvedenými podmínkami účasti souvisí i Durdisovou [2] uváděná zásada o volném přístupu do systému.

Dále je popsán důležitý rys systému českého zdravotního systému, kterým je státní garance. Jinými slovy to znamená, že jedním z plátců zdravotního pojištění je stát. Plátcí pojistného zdravotního pojištění jsou dle §4 zákona č. 48/1997 Sb. [16]:

- pojištěnci uvedení v §5
 - zaměstnanci, kterými zákon myslí fyzické osoby, kterým plynou příjmy ze závislé činnosti),
 - OSVČ,
- zaměstnavatelé,
- stát.

Stát v roce 2011 platil pojistné za více než polovinu pojištěných osob. Státem pojištěných osob, kterými jsou například důchodci, studenti či nezaměstnaní, bylo v roce 2011 58,1 % z celkového počtu pojištěných (do výpočtu nebyla zahrnuta zdravotní pojišťovna Škoda, jelikož nemá dostupnou výroční zprávu).

Na základě statistik Ústavu zdravotnických informací a statistiky ČR (ÚZIS) [14], který eviduje příjmy systému, nejvíce do systému přispívali zaměstnanci, následovaní státem a OSVČ, z čehož stát odvedl necelých 25 % z celkové odvedeného pojistného. Z toho plyne, že za více než polovinu pojištěnců (státní pojištěnci) stát odvádí necelou čtvrtinu celkového pojistného. Tento „schodek“ pokrývají pracující (kteří jsou, jak bude psáno níže, solidární). Existují 4 skupiny pojištěnců, a to zaměstnanci (za které odvádí 2/3 pojistného zaměstnavatel), OSVČ, osoba bez zdanitelných příjmů (OBZP) a státní pojištěnci. Každá skupina má jiný vyměřovací základ, ze kterého se odvádí pojistné. Například státem pojištěné osoby mají vyměřovací základ v nejmenší výši a je stanoven nařízením. Zaměstnanci mají jako vyměřovací základ úhrn příjmů ze závislé činnosti, přičemž nemůže být nižší než minimální mzda [16].

Se státní garancí souvisí i solidarita a proces přerozdělování pojistného. Solidarita je jednou ze základních zásad, na které je zdravotní systém postaven. Ministerstvo zdravotnictví (MZ) [10] vidí solidaritu ve zdravotním pojištění jednak jako solidaritu mezi zdravými a nemocnými, ale také jako solidaritu ekonomicky aktivních a neaktivních lidí, respektive také vysokopříjmových s nízkopříjmovými. Pojištěné osoby (kromě státních) odvádí pojistné na účet zdravotních pojišťoven. Následně je na řadě proces přerozdělení pojistného (detailněji níže). Právě proces přerozdělení odstartuje solidaritu, jelikož díky němu ekonomicky aktivní osoby nepřímo platí zdravotní péči osobám ekonomicky neaktivním, jejichž většinu tvoří pojištěnci státu.

Proces přerozdělování pojistného je popsán v zákoně č. 592/1992 Sb., o pojistném na všeobecné zdravotní pojištění [15]. Pojišťovny mají dle §21 povinnost oznámit počet pojištěnců, za které je plátcem pojistného stát. Na základě této informace stát provede platbu na zvláštní účet Všeobecné zdravotní pojišťovny. Dále musí pojišťovny sdělit, kolik vybraly na pojistném. Částka, která jednotlivým pojišťovnám náleží, je součinem dvou proměnných:

- počtu standardizovaných pojištěnců dané zdravotní pojišťovny, který se vypočítá jako součin součtu pojištěnců v jednotlivých skupinách podle věku a pohlaví a nákladového indexu dané skupiny, a
- podílu na standardizovaného pojištěnce, který je stanoven následovně (§20, odst. 4): „součet pojistného vybraného všemi zdravotními pojišťovnami, celkové platby státu“ za státní pojištěnce, „penále, pokut a jiných plnění“, které jsou příjmem zvláštního účtu, a „úroků vzniklých na zvláštním účtu, snížený o poplatky za účetní operace a za vedení zvláštního účtu, vydělí počtem standardizovaných pojištěnců všech zdravotních pojišťoven.“

Pakliže výsledná částka je nižší než vybrané pojistné, musí pojišťovna odvést přebytečné prostředky na zvláštní účet. Pokud je výsledná částka vyšší než vybrané pojistné, pak správce zvláštního účtu připíše pojišťovně chybějící prostředky.

3.1.2 Estonská republika

Rysy estonského zdravotního pojištění, ve kterém je již obsaženo i pojištění nemocenské, jsou vypsány přímo v §2 zákona o zdravotním pojištění [6] a jsou jimi:

- solidarita,
- sdílení nákladů,
- neexistence omezení poskytovaných služeb (poskytovány dle potřeb pojištěnců),
- rovná dostupnost ve všech regionech.

Zdravotní pojištění v EST je stejně jako v ČR založeno na solidaritě pojištěných osob. Všechny pojištěné osoby mají nárok na stejnou zdravotní péči neohledně na výši odvedeného pojistného, na subjektivní zdravotní rizika nebo věk [12]. Solidaritu je opět možné vnímat jednak jako solidaritu mezi zdravými a nemocnými, ale i jako mezi ekonomicky aktivními a ekonomicky neaktivními osobami, respektive osobami s vysokým příjmem a osobami s nízkým příjmem. Nutnost odvodu pojistného se váže na zaměstnání [7]. Pracující osoby (zaměstnanci pracující pod pracovní smlouvou, ale i OSVČ) odvádí 33% ze zdanitelné částky (u zaměstnance mzda, u OSVČ rozdíl mezi příjmy a výdaji [7]) jako sociální daň, jejíž 13 p.b. přísluší jako pojistné na zdravotní pojištění [13]. Za zaměstnance odvádí zaměstnavatel. OSVČ platí sociální daň jako by byli zaměstnavatelé. [11]

V EST platí, že ke zlepšení zdravotního stavu nesmí být omezovány nabízené služby. Na peníze se při tom nehledí, péče je poskytována dle potřeb nemocné osoby. Dále platí, že péče by měla být stejně dostupná ve všech regionech. Tím se myslí, že pojištěnci musí mít možnost (na základě smluv mezi estonským fondem zdravotního pojištění a poskytovateli zdravotní péče) poptávat zdravotní služby nehledě na to, na kterém místě v EST se nachází.

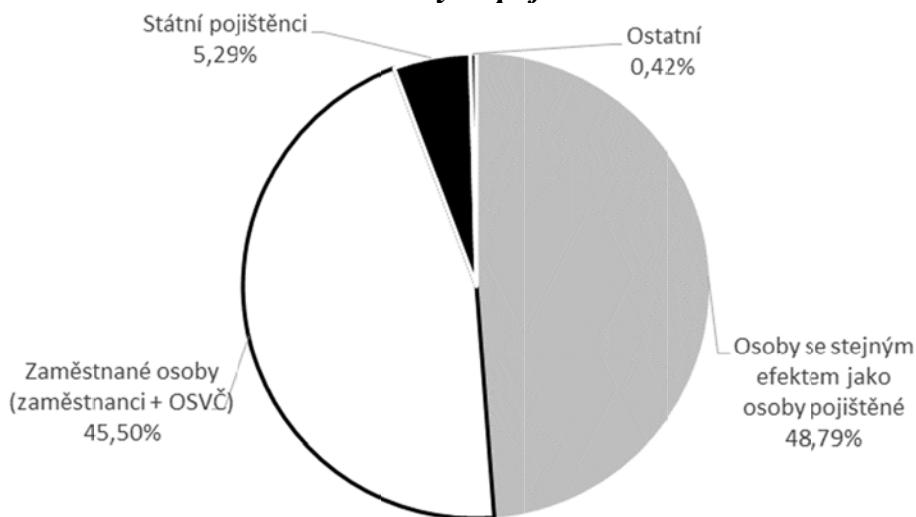
V zákoně může být nalezen i rys spojený se státní garancí. §4 zákona o sociální dani [13] definuje tyto plátce:

- Právnícké osoby – rezidenty, (**legal persons**)
- fyzické osoby, (**natural persons**)
- nerezidenty, kteří mají trvalé bydliště v EST,
- stát.

Rozdíl mezi právníckými osobami a fyzickými osobami spočívá v tom, že právnícké osoby (firmy) odvádí pojistné na základě vyplacených mezd svým zaměstnancům (odvedou 33 % z jejich mezd). Fyzické osoby (podle autora se myslí osoby samostatně výdělečně činné) platí sami za sebe (odvádí 33% z rozdílu mezi příjmy a výdaji), ale pouze tehdy, nejsou-li zaměstnanci nebo pojištěnci státu. [5]

Stejně jako v případě ČR i v EST se stát zaručuje za platbu nákladů na zdravotní péči určitých skupin. Konkrétně se jedná např. o rodiče na mateřské dovolené do 3 let věku dítěte, nezaměstnané a osoby pečující o postižené [7]. Pojistné, které odvádí pouze pracující osoby, však „dotuje“ i zdravotní péči lidí, které zákon označuje jako osoby mající stejný efekt jako osoby pojištěné. Do takové skupiny patří například děti, studenti či důchodci. V roce 2011 byla skladba pojištěnců následující [7]:

Obr. 2: Skladba estonských pojištěnců v roce 2011



Zdroj: [7]

Nejpočetnější skupinou byla skupina osob se stejným efektem jako osoby pojištěné. Tedy osoby, které do zdravotního systému nepřispívají. O 3 procentní body méně má skupina, jež jako jediná naopak ze svých mezd přispívá. Přibližně 5 % platí stát (za osoby uvedené v §6 zákona o sociální dani [13]) a do necelého 0,5 % patří například osoby pojištěné dle mezinárodních dohod.

Estonský systém zdravotního pojištění je financován z dvou třetin ze sociální daně, zhruba z 10 % ze státního rozpočtu a zbytek (cca 24 %) ze soukromých zdrojů [7].

může být deficitní, ale jelikož v EST platí zákon o vyrovnanosti státního rozpočtu, v případě, že by schodek způsobený u zdravotního pojištění měl zapříčinit deficit státního rozpočtu, byl by uhrazen z jiných daní [7].

Dalším rysem, který není zmíněn přímo u rysů v §2 zákona, je obligatornost pojištění. Obyvatelé s trvalým i lidé s přechodným bydlištěm zaplativší sociální daň, nebo za které sociální daň byla zaplacená, se účastní zdravotního pojištění. [6]

Dávky zdravotního pojištění se dělí do dvou kategorií [6]. Jednak do hmatatelných benefitů (**benefits in kind**; např. zdravotní služby, léky, zdravotní zařízení) a dále do peněžních benefitů (**benefits in cash**; např. dávky při dočasné pracovní neschopnosti, náhrada za zubní péči pro dospělé, dodatečná náhrada za léky). První jmenované dávky u peněžitých benefitů jsou dávky „nemocenského pojištění“. Existují 4 dávky, a to:

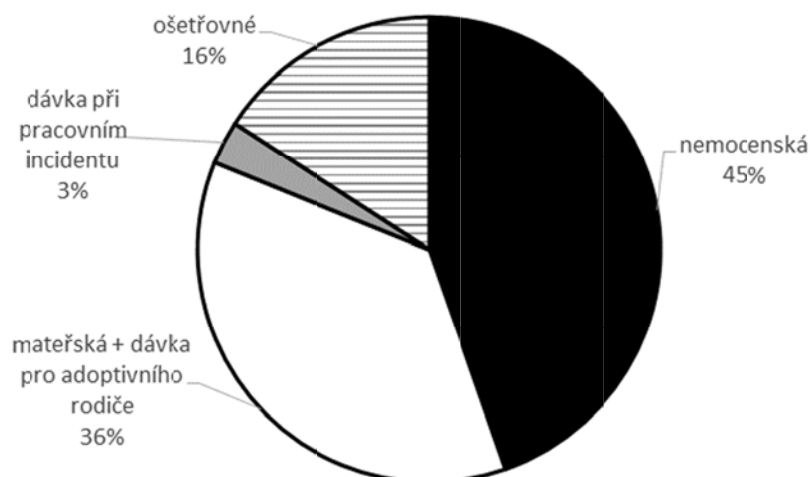
- Nemocenská (sickness benefit),
- ošetrovné (care allowance),
- mateřská (maternity benefit),
- dávka pro adoptivního rodiče (adoption benefit).

Všechny dávky se vypočítají z průměrné mzdy za stanovené období (v případě státem vyplácených dávek se jedná o předcházející rok). K výpočtu výše dávky stačí pouze vynásobit danou procentní sazbou s průměrnou denní mzdou.

Obdobně jako v případě ČR je i u EST platba nemocenské rozdělena mezi zaměstnavatele a stát. Zaměstnavatel platí 70 % zaměstnancova průměrného příjmu (za posledních 6 měsíců) od 4. do 8. kalendářního dne nemoci. Dávku, kterou obdrží, však musí ještě zdanit. Od 9. dne je za financování zodpovědný Estonský fond zdravotního pojištění.

Co se týče výše vyplacených dávek v roce 2014, pak se dle statistické ročenky [4] vyplatilo 46,4 milionů Eur na nemocenskou, 37,9 milionů Eur na mateřskou a dávku pro adoptivního rodiče (tyto dávky jsou ve statistice uvedeny pod mateřskou), 16,5 milionů Eur na ošetrovné a 3,1 milionu Eur bylo vyplaceno jako dávka při pracovním incidentu. Ta by dle názoru autora měla formálně spadat pod nemocenskou, avšak mezi těmito dávkami je rozdíl ve výplatě (v případě pracovního incidentu vyplácí dávky pouze estonský fond zdravotního pojištění a zaměstnavatel se na dávkách nepodílí [3]), a proto je zřejmě evidována zvlášť. Výše uvedená čísla jsou prezentována v následujícím grafu:

Obr. 3: Struktura dávek při dočasné pracovní neschopnosti v EST v roce 2014



Zdroj: [4]

3.2 Komparace

Český a estonský systém, který byl popsán v předešlé podkapitole, se vyznačuje několika stejnými rysy, a to solidaritou, povinností pojištění, neexistencí omezování finančních prostředků sloužících ke zlepšení zdravotního stavu, státní garancí za určité skupiny pojištěnců.

To, že rysy zní stejně, ale neznamená, že znamenají přesně to stejné. Nyní budou porovnány o odstavec výše uvedené rysy.

Solidarita u dávek při dočasné pracovní neschopnosti je patrná, jelikož v obou zemích jsou dávky hrazeny z prostředků, které do rozpočtu plynou od ekonomicky aktivních osob. Je však evidentní i rozdíl ve výpočtu dávek. Zatímco v EST se počítají z průměrného příjmu a ihned se násobí sazbou náležící k určité dávce, v ČR navíc dochází k redukci průměrného příjmu. Dávka se tak v ČR počítá z menšího základu.

V obou zemích je nutné být zdravotně pojištěn a stačí k tomu mít na území daného státu trvalé bydliště. V případě České republiky se ještě musí pojistit osoby nemající trvalé bydliště v ČR, ale které pracují pro zaměstnavatele se sídlem v ČR. V případě EST se pojištění musí účastnit i osoby s přechodným bydlištěm, které zaplatily (za které bylo zapláceno) sociální daň.

Posledním z rozebíraných společných rysů bude státní garance. Jak již bylo řečeno, pod tímto slovním spojením se skrývá to, že stát je plátcem za určité skupiny osob. Nejvíce státem pojištěných osob v České republice pochází ze skupin důchodci, děti a studenti. Stát za ně platí 13,5 % z vyměřovacího základu, který je stanoven nařízením. V roce 2012 tato částka činila 734 Kč měsíčně. V EST jsou tyto osoby považovány za osoby mající stejná práva jako pojištěné osoby a sociální daň za ně není placena. Dochází tedy k tomu rozdílu, že v České republice za tyto osoby platí stát, čímž na zdravotní péči přispívá, zatímco v EST tyto lidi, pakliže neplatí sociální daň (např. při zaměstnání studentů), respektive za tyto lidi není odváděno nic.

V obou státech je za nemocné zaměstnance platba „dávky“ rozdělena mezi stát a zaměstnavatele. Karenční doba (období bez dávky) dosahuje 3 dnů. Rozdíl je v tom, který den začíná platit stát. Zaměstnavatel přestává platit 8. den v případě EST a 14. den v případě ČR.

Rysy, které byly v práci představeny, jsou velmi podobné. Některé dokonce i stejné. Rozdíly ale mohou být nalezeny, pokud jsou porovnány dávky, které jsou poskytovány při dočasné pracovní neschopnosti. V obou zemích jsou poskytovány 4 dávky, z nichž 3 náleží za stejnou událost - mateřská, nemocenská a ošetrovné. Poslední dávky jsou rozdílné. V ČR je poskytován příspěvek, který vyrovná rozdílnou mzdou v období těhotenství a mateřství. V EST je poskytována adoptivní dávka pro rodiče, který se stará o dítě, jehož je adoptivním rodičem. Taková dávka v ČR existuje, nese jméno odměna pěstouna a je definovaná v zákoně č. 359/1999 Sb., o sociálně-právní ochraně dětí, ale nespadá pod zdravotní (nebo nemocenské) pojištění.

Rozdílná je rovněž i struktura dávek, kdy v ČR se nemocenská s mateřskou podílí na celkových dávkách z 96 %. V EST tyto dvě dávky (včetně dávek pro adoptivní rodiče) činí „pouhých“ 81 %. Zbývající část „koláče“ je vyplněna z 16 % ošetrovným, které v ČR činí pouhé 3 %. Je otázkou, zdali rodiče v EST tráví s dětmi více času nebo je tam vyšší nemocnost. Kvůli rozsahu práce se toto téma nestalo ústředním, a proto nebylo z autorovy strany řešeno.

4 Diskuze

Přímo srovnání systému zdravotního (a nemocenského) pojištění ČR a EST není autorovi práce známo, a tak bude kapitola diskuze věnována diskuzi s autory popisujícími rysy systému v ČR. Vzhledem k požadovanému rozsahu práce nebyly vypsány všechny rysy, které citovaní autoři uvádí. Zbývajícím je věnován prostor zde.

Práci šlo samozřejmě pojmout i jako srovnání předností a slabin s větším důrazem na praktická data, jak to dělá například Ed Cooper a Liz Taylor [1], avšak podle autora je nutné nejprve pochopit legislativní základ a teprve na základě jeho znalosti porovnávat praktická data.

MPSV [9] uvádí následující principy nemocenského pojištění: jednotnost (nemocenské pojištění je pro všechny skupiny osob, které jsou výdělečně činné), zásluhovost (dávky závisí na výši příjmu), dynamičnost (změny redukčních hranic), garance (finanční a právní ze strany státu), financování ze státního rozpočtu (dávky jsou čerpány z toho, co se odvede do státního rozpočtu jako pojistné). Autor tohoto článku souhlasí se všemi výše uvedenými rysy kromě jednotnosti a se zásluhovostí souhlasí jen z části. Dovoluje si nesouhlasit s jednotností, jelikož osoba může být výdělečně činná na základě dohody o provedení práce a mít příjem do 10 000 Kč a není účastna nemocenského pojištění. Co se týče zásluhovosti, ta je omezená, jelikož se příjmy dosahující větší hodnoty než činí horní mez 3. redukční hranice nezapočítávají do výše dávky.

Rysům zdravotního pojištění se věnuje Durdisová [2], která navíc uvádí vazbu příjmů a výdajů zdravotních pojišťoven na národohospodářské veličiny. S tímto rysem autor souhlasí, jelikož příjmy zdravotních pojišťoven se odvíjí od vyměřovacích základů, které úzce souvisí například s tím, jak se vyvíjí HDP (při růstu HDP by měly růst mzdy a tím pádem i příjmy zdravotních pojišťoven).

MZ [10] uvádí mimo rysy prezentovaných v článku: vysoký stupeň samosprávy, financování s vysokým podílem veřejného zdravotního pojištění a povinnost očkování proti infekčním nemocím. Dle názoru autora souvisí vysoký stupeň samosprávy s funkcemi a úlohami zdravotních pojišťoven, které mají domluveny kontrakty s poskytovateli a zároveň jsou plátcí zdravotní péče. S financováním převážně z veřejného zdravotního

pojištění autor souhlasí, jelikož takové prostředky představují více než 80 % všech výdajů. Co se týče povinného očkování, nelze nesouhlasit.

Závěr

V práci byly popsány a následně porovnány systémy české a estonské republiky. Tyto státy byly zvoleny ze dvou důvodů: (1) Estonská republika má nemocenské pojištění zahrnuto v pojištění zdravotním, Česká republika má systémy zvlášť, (2) v obou zemích je drtivá převaha veřejných zdrojů financování.

Český systém zdravotního a nemocenského pojištění se vyznačuje těmito rysy: solidarita, obligatornost pojištění (pro určité skupiny; v případě nemocenského pojištění jsou OSVČ a zahraniční zaměstnanci pojištěni dobrovolně), obligatornost nároků, všeobecnost pojištění, rozdělení platby „dávky“ v případě nemoci mezi zaměstnavatele a zaměstnance, státní garance (pro osoby specifikované zákonem), neexistence vazby mezi odvedeným pojistným a čerpáním ze systému, čerpání dle potřeb.

Rysy estonského zdravotního systému jsou následující: solidarita, sdílení nákladů, čerpání dle potřeb, rovná dostupnost, státní garance, obligatornost pojištění.

Systémy obou států jsou velmi podobné. Stojí na solidaritě a povinnosti pojištění pro osoby stanovené zákonem. Významným rysem je státní garance, kdy se stát zavazuje za platbu pojistného (ČR), respektive daně (EST) za určité osoby.

V práci byly představeny i rozdíly mezi státy, které se vyskytují například právě ve státní garanci. Zatímco v ČR stát platí za velmi početné skupiny důchodců či studentů, v EST tyto osoby neplatí sami ani za ně neplatí stát. Jejich náklady na zdravotní péči jsou tak kryty převážně z odvodů zaměstnavatelů, zaměstnanců a OSVČ. Státní pojištěnci v ČR tvoří nadpoloviční většinu z celkového počtu pojištěných osob. V EST platí stát pojištění pouze za přibližně 5 % pojištěných.

Co se týče dávek v případě, že je osoba dočasně práce neschopná, nabízí obě země shodně 4 dávky. Nemocenská, mateřská a ošetrovné je v obou zemích. V ČR je oproti EST navíc vyrovnávací příspěvek v těhotenství a mateřství. Naopak v EST je navíc dávka pro adoptivního rodiče (která je v ČR vyplácena na základě zákona o sociálně-právní ochraně dětí). Co se týče poměrů, v ČR jsou dvě významné dávky, a to nemocenské (59 % z celkových dávek při dočasné pracovní neschopnosti) a mateřská (37 %). V EST tvoří výdaje na dávky při dočasné pracovní neschopnosti ze 45 % nemocenské, z 36 % mateřská (včetně dávky pro adoptivního rodiče) a z 16 % ošetrovné.

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HUMAN RESOURCE MANAGEMENT IN SMALL AND MEDIUM-SIZED ENTERPRISES IN THE CZECH REPUBLIC

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Abstract: *Human resource management is a crucial factor that determines the success of small and medium-sized enterprises in the market and its competitiveness. Small and medium-sized enterprises in the Czech Republic form a significant group of employers in the Czech Republic since they employ two thirds of employees out of the total number of the work force and represent over 99% of the overall number of active business entities. The main objective of the article is to evaluate the level of human resource management in small and medium-sized enterprises in the Czech Republic. Partial objectives of the article are to define a human resource management profile of small and medium-sized enterprises in the Czech Republic and to test dependencies between selected qualitative features. The data ($n = 499$) was collected by means of a questionnaire technique. The results of the survey confirmed important human resource management internal factors (the size of the enterprise, the position of the HR manager in top management and the existence of the HR department) and helped to define the human resource management profile of small and medium-sized enterprises in the Czech Republic.*

Keywords: *Human resource management, HRM activities, Small and medium-sized enterprises, The Czech Republic, Survey.*

JEL Classification: *J24, M12, O15.*

Introduction

In the Czech Republic personnel work has undergone significant changes since the 1990s [8; 37] which were triggered by the increasing importance of the resource approach to achieving a competitive advantage [1; 18] and the transfer from the information to the knowledge society [13; 24]. The changes were connected with the changes from a post-socialistic to capitalistic country. According to Milikic, Janicijevic and Cerovic [22] the main challenge for managers in the post-socialistic countries is to efficiently replicate human resource management (HRM) practices from the Western capitalistic countries. The system of human resource management in enterprises is a crucial factor that determines the success of the enterprise in the market and its competitiveness [33], despite the fact that the success and speed of transition processes in the post-socialist countries produced quite different results regarding their institutional and economic systems [22]. The speed of changes in the external and internal corporate environment and the necessity to promptly respond to them place increased requirements on the quality of human resource management in enterprises. HR department managers and specialists have to search for a new balance between corporate goals, society's requirements and employees' needs. Enterprises that fail to focus on the future and the development of human resources (HR) will stagnate.

The main objective of the article is to evaluate the level of human resource management in small and medium-sized enterprises (SMEs) in the Czech Republic. Partial objectives

of the article are to define a human resource management profile of SMEs in the Czech Republic and to test dependencies between selected qualitative features. The article consists of six logically interlinked parts. The first part concentrates on the importance of human resource management. The second part presents the theoretical framework. The third part describes the methodology of the survey. The results of the primary survey are presented in the fourth part while the fifth part focuses on the evaluation of human resource management in the SMEs in the Czech Republic. The sixth part summarizes the overall conclusions.

1 Statement of a problem

Human resources are a key factor of the enterprise's success [15; 34] and a valuable source to achieve a competitive advantage [4; 11; 28; 31]. Theories of strategic management have historically acknowledged the importance of internal activities, resources or capabilities as prospectively important sources to achieve a competitive advantage [5]. The effective management of the enterprise's human resources is a major source of competitive advantage and may even be the single most important determinant of the enterprise's performance [29].

Human resource management is a conception that often substitutes the traditional approach to personnel management. The management of human resources within enterprises has started to have a more and more important role, due to the fact that their functioning and success are determined by the knowledge, skills and abilities of its employees [28]. Recently the management of human resources has placed emphasis primarily on the strategic aspect of personnel work which determines the efficiency of enterprises and their success in the market [11; 14; 17; 38]. An increasingly greater part of personnel work is delegated to managers at all managerial levels and personnel work thus becomes part of their everyday tasks [16; 28; 30].

Dynamic changes in the external environment, in particular technological advancements and innovations linked therewith, contribute primarily to the higher productivity and speed up changes inside enterprises. For enterprises to succeed, they need to invest in their employees and ensure the maximum use of their work potential [2; 21]. Lasting success of enterprises depends on abilities, knowledge, skills, will to work, dedication and creativity of people that work for them [20]. State-of-the-art technology and proven methods and techniques will fail to work and lack sense if the enterprise is short of capable people [26]. One thing is to find and correctly select capable employees, another thing - often more difficult - is to help them stabilise in the enterprise and identify with their job and the goals of the enterprise [18]. It can be said that the efficiency of each enterprise is directly determined by the performance of employees who work for the enterprise and the key to efficiency lies in people as such [15; 26].

Despite the fact that the global population is growing, in developed economies the number of people in the productive age continues to decrease [10]. Human resources become in very short supply for enterprises [12]. Increasing enterprise competitiveness is a topic of great importance for the majority of enterprises [19; 32; 36]. This may only be achieved by ensuring the right people are in the right place, i.e. by winning and retaining talented employees who are to become potential substitutes of current key employees [3; 18].

2 Methods

The level of human resource management in SMEs was monitored through a three-phase questionnaire survey that was conducted in the period from 2011 to 2014. The survey was focusing on the following main area: (1) the existence of HR department, (2) the evaluation of the implementation of key strategic documents and (3) the main HRM activities ensured. The sample group consisted of 285 small and 214 medium-sized enterprises. The total thus was 499 enterprises. The response rate was 54%. Enterprises were selected randomly. In order to improve the quality of the results of the questionnaire survey and to get a real picture of the current state of human resource management in enterprises in the Czech Republic, it was required that questionnaires were completed by a specialist from the HR department or the owner of the enterprise. In some cases respondents could choose more than one answer for each question. Therefore the sum of all the choices in these questions are not 100%. The structure of enterprises is shown in Tab. 1.

Tab. 1: Structure of enterprises in percentages

Economic sector	Primary	Secondary	Tertiary	Total
Small enterprises	4.9	26	69.1	100
Medium-sized enterprises	7	29.9	63.1	100
Area operated	Private		Public	Total
Small enterprises	82.8		17.2	100
Medium-sized enterprises	67.8		32.2	100
Size of the market	National		International	Total
Small enterprises	76.5		23.5	100
Medium-sized enterprises	57.9		42.1	100

Source: authors' survey

The data have been processed by means of absolute and relative frequencies using the IBM SPSS Statistics 22. Testing was done by Pearson's Chi-Square Test (X^2 test) in association and contingency tables. Five null hypotheses were tested stating the non-existence of dependency between two qualitative features examined:

- Existence of the HR department in SMEs is not dependent on the size of the enterprise.
- Existence of the HR department in SMEs is not dependent on the position of the HR manager in top management.
- Existence of the HR strategy is not dependent on the size of the enterprise.
- Existence of the HR strategy is not dependent on the existence of the HR department.
- Existence of the HR strategy is not dependent on the position of the HR manager in top management.

The level of significance was set at 0.05. To interpret the strength of Cramer's V, a scale according to De Vaus [7] was used.

3 Problem solving

3.1 Small and medium-sized enterprises in the Czech Republic

SMEs play an important role in the economy in Europe [25]. SMEs (up to 250 employees) form a significant group of employers in the Czech Republic because they employ 60.9% of employees out of the total number of the work force and represent 99.83% of the overall number of active business entities in the Czech Republic [23]. According to the Czech Statistical Office [6], the segment of SMEs in the Czech economy is, in the long-term, dominated by very small enterprises (SEs) employing a maximum of nine people, which represents one third of all jobs and one fifth of the overall amount of added value in the economy. These enterprises, however, were the most affected by the 2008 economic crisis. Pursuant to the data from the Small Business Act for Europe [9], the number of SMEs that ceased to exist after more than fifteen years in business continues to grow rapidly.

3.2 HRM organisation in small and medium-sized enterprises in the Czech Republic

3.2.1 HRM profile of small and medium-sized enterprises

The survey results show that only 15.4% of SEs have the HR department, which is a common feature in SEs. SEs ensure the majority of basic HRM activities through their internal resources. This primarily means activities in the area of remuneration (67.4%), employee benefits (73.7%), employee training (52.6%), releasing of employees (81.1%), a human resource information system (HRIS) (57.9%) and employee hiring (89.5%).

The situation in medium-sized enterprises (MEs) is, due to their size and annual turnover, different. 50% of enterprises addressed have the HR department. MEs, more than SEs, undertake a number of HRM activities using their own resources. These activities include: remuneration (74.8%), employee benefits (90.7%), employee training (65.4%), releasing of employees (92.5%), the HRIS (80.8%) and employee hiring (93%).

Within the monitored HRM activities, it was further determined which internal documents the enterprises formulate. The survey results show that 55.4% of SEs have a business strategy; however, the HR strategy is available in only 33% of enterprises. This is despite the fact that HR goals should be linked to the strategic goals of the enterprise. They should also take into account the specific needs of the enterprise and define expected benefits associated with their fulfilment. The survey revealed that MEs adopt a more responsible approach to the development of basic strategic documents. 78.5% of MEs have a business strategy and 68.7% also have the HR strategy.

The development of economy after 2008 also influenced the situation in SMEs in the Czech Republic. In 40.4% of SEs the headcount has not changed, and in 28.1% of enterprises the number of employees has decreased. In 19.2% of MEs the headcount has not changed, and the figure dropped in as much as 47.2% of enterprises. The majority of small (96.5%) and medium-sized (91.1%) enterprises do not ensure outplacement. Job analyses are carried out by solely 28.1% of SEs and 39.3% of MEs.

To hire employees, SMEs most frequently search through their internal resources. Internal resources are exploited by SEs as follows: 68.1% of SEs use them to recruit managers, 49.8% to recruit specialists, 43.9% to recruit administrative staff and only 24.6% to recruit workers. Internal resources are exploited by MEs as follows: 79.9% of MEs use them to recruit managers, 66.4% to recruit specialists, 68.2% to recruit administrative staff and only 30.4% to recruit workers. To hire managers, SMEs use in particular interviews, CVs and references. In case of specialists and administrative staff, qualification tests are

required. Hiring employees from internal resources is closely linked to career management. It also enhances employees' identification with the enterprise and their stabilisation. It is important for SMEs not only to recruit the right employees for the right positions, but also be able to retain them. But only 29.1% of SEs and 57.9% of MEs concentrate on the adaptation process.

Formal employee performance appraisal is a critical HR activity which impacts the performance of both the individual and the enterprise. Formal employee performance appraisal is undertaken by 36.5% of SEs and 63.6% of MEs. SEs often underestimate it; they tend to focus on informal appraisal, in which the role of the evaluator is fulfilled by the enterprise owner or top manager. Employee performance appraisal may only be efficient if it is combined with other HRM activities. SMEs most frequently use employee performance appraisal results for remuneration purposes (SEs 41.4%, MEs 60.7%), employee training (SEs 16.1%, MEs 38.8%), career management (SEs 16.1%, MEs 37.4%) and HR planning (SEs 12.3%, MEs 29.4%).

Employee training represents an integral part of the HRM activities of any enterprise. Without investing in employees' training, no enterprise may achieve long-term success in the market. Although a number of SEs generally underestimate training of their employees due to the lack of financial means, the survey shows that 66.3% of SEs invest in employee training. The figure for MEs amounts to 83.6%. However, the efficiency of made investments is systematically checked by only 21.1% of SEs and 34.1% of MEs. The majority of responding SMEs do not engage in work with talent. What is particularly alarming is that only 3.5% of SEs and 13.6% of MEs have a talent management strategy in place. 31.6% of SEs mentioned that they managed talents intuitively and 64.9% of SEs did not engage in talent management at all. Similar applies to MEs: 35% of them manage talents intuitively and 51.4% do not engage in talent management. The most frequent reasons for this mentioned by SMEs were: the unimportance of this area for the enterprise, increase in costs and the size of the enterprise.

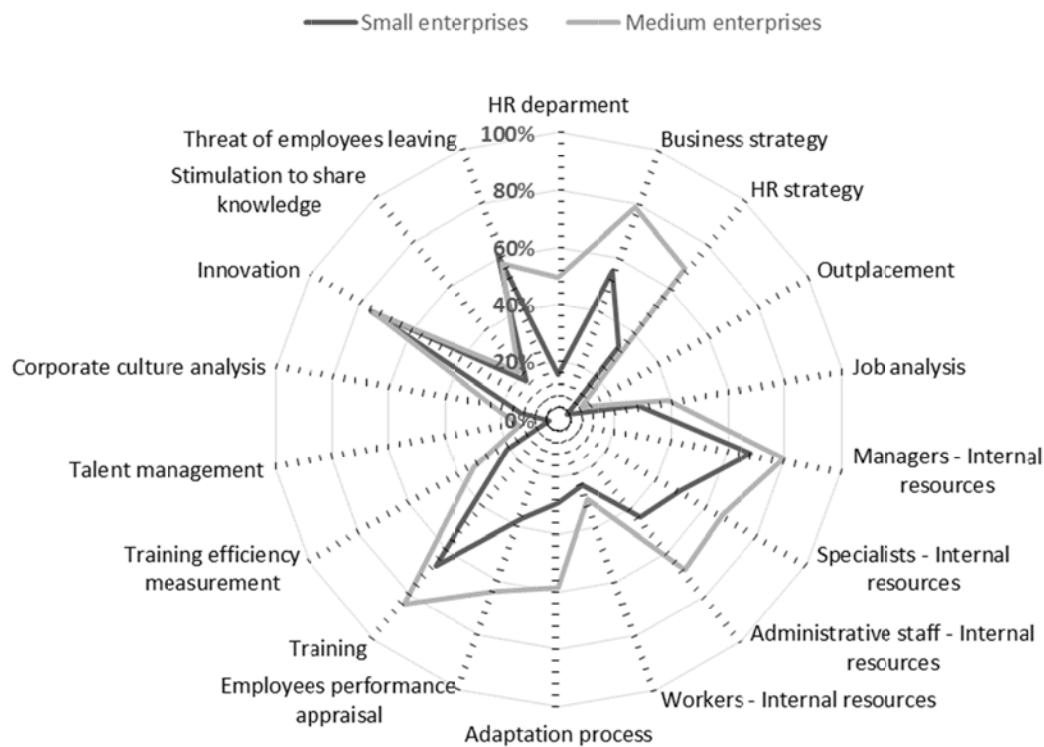
Human resource management is closely linked with corporate values that represent one of the foundation stones of the corporate culture. Although 50.2% of SEs and 66.8% of MEs formulate their corporate culture, only 13.3% of SEs and 22.4% of MEs analyse it. Innovations are a key precondition of the long-term competitiveness of enterprises and the economic performance of the Czech Republic. The results arising from the survey reveal that for 75.4% of SEs and 74.3% of MEs is important to focus on innovation. In the majority of cases they are stimulated by their customers (SEs 51.2%, MEs 45.8%), employees (SEs 50.2%, MEs 51.4%), experts (SEs 35.4%, MEs 41.6%) and competitors (SEs 34.7%, MEs 27.6%). In 10.2% of SEs and 16.8% of MEs the initiative to innovate comes from their R&D department. Only 2.8% of SEs and 8.4% of MEs co-operate with universities. Innovations most often relate to work procedures (SEs 49.1%, MEs 49.1%), quality of work (SEs 46.7%, MEs 44.4%) and work productivity (SEs 31.2%, MEs 23.8%).

The final part of the questionnaire survey was targeted at knowledge continuity ensuring. The survey shows that key employee knowledge and experience are fully recorded by 24.6% of SEs and 18.2% of MEs. 48.8% of SEs and 60.7% of MEs record key employee knowledge and experience only to a limited extent (they focus primarily on critical knowledge) and 26.7% of SEs and 21% of MEs do not record their key employee knowledge and experience at all. Simultaneously, only 17.5% of SEs and 21.5% of MEs stimulate their employees to share, transfer and preserve their knowledge and experience when these employees leave the enterprise. It is quite surprising that in today's turbulent

environment 61.1% of SEs and 57.9% of MEs do not feel jeopardised by the decision of their key employees to leave.

The HRM profile of SMEs in the Czech Republic is displayed in Fig. 1.

Fig. 1: HRM profile of small and medium-sized enterprises



Source: authors' survey

3.2.2 Testing dependencies between selected qualitative features

HRM organisation in SMEs in the Czech Republic is determined by a number of factors, such as the size of the enterprise, its purpose, business strategy, etc. Despite the fact that SMEs usually do not have the HR department established or have a department of a limited size, it is necessary to focus on HRM. Within the frame of the survey conducted, five partial null hypotheses were tested (see Tab. 2). It also shows the Asymp. Sig. or the Pearson Chi-Square Test. In the event of null hypothesis rejection (Asymp. Sig. < 0.05), alternative hypotheses (H_A) were accepted stating the existence of dependency. In this case the dependency was expressed by means of Cramer's V coefficient and a scale according to De Vaus [7] was used.

Tab. 2: Results of the test of qualitative features for hypotheses 1 - 5

No.	Null hypothesis	Asymp. Sig.	Decision	Cramer's V	Strength of the relationship
1	Existence of the HR department in SMEs is not dependent on the size of the enterprise.	0.000	Reject the null hypothesis	0.372	Moderate
2	Existence of the HR department in SMEs is not dependent on the position of the HR manager in top management.	0.000	Reject the null hypothesis	0.256	Moderate
3	Existence of the HR strategy is not dependent on the size of the enterprise.	0.000	Reject the null hypothesis	0.354	Moderate
4	Existence of the HR strategy is not dependent on the existence of the HR department.	0.000	Reject the null hypothesis	0.350	Moderate
5	Existence of the HR strategy is not dependent on the position of the HR manager in top management.	0.084	Do not reject the null hypothesis	-	-

Source: authors' survey

The survey conducted has revealed that only 30.3% of SMEs have the HR department established and in 54.1% of SMEs the person in charge of HRM holds a position in top management. In 73.5% of the SMEs with the HR department the person responsible for HRM holds a position in top management. Despite the fact that some SMEs do not have the HR department established, in 45.7% of them a manager with a position in top management holds responsibility for HRM. The results of the survey have confirmed that this is true primarily of SEs (74.8%), in which the responsibility for HR issues usually lies with the enterprise owner (this is a common trend). In 57.3% of SMEs the person in charge of HRM was hired from internal resources. 65.3% of SMEs addressed have a business strategy and 48.3% of them the HR strategy.

4 Discussion

Human resource management in SMEs takes place under very specific and definite conditions characteristic of the given enterprise and its level is determined by a number of internal and external factors. The results of the survey confirmed that as regards internal factors these refer in particular to: (1) the size of the enterprise, (2) the position of HR manager in top management and (3) the existence of HR department. Other very important factor is the financial situation of the given enterprise. As regards external factors, the level of human resource management is most influenced by the situation on the labour market. These results are confirmed also by Urbano and Yordanova [35], who point out that according them the adoption of HRM practices is positively associated with the presence of the HR department.

Many SMEs encounter serious human resource problems, while in the same time these human resources present a critical factor that determines the success of their competitiveness [4]. According to Poór, Mura and Zsuzsa [27], it is important to note that

many publications on HRM in and outside the CEE region have studied this important management function rather superficially. SMEs in the Czech Republic represent the important group of employers and therefore they need to be taken into account. The conducted survey helped to define the basic characteristics in the area of HRM in SMEs in the Czech Republic, the level of individual HR activity ensuring and the HRM profile of SMEs. The survey has revealed the following conclusions:

- In the course of the last three years we have seen a decrease in the headcount in one third of SEs and half of MEs.
- SMEs undertake the major part of HRM activities.
- The majority of MEs undertake a broader range of HRM activities (e.g. job analysis, adaptation process, employee performance appraisal, training and training efficiency measurement).
- In the hiring process to recruit managers, SMEs usually take advantage of employees from internal resources.

Tab. 3 shows other main survey conclusions.

Tab. 3: Main survey conclusions

HRM activities	S/MEs	%	Conclusion
HR department	SEs	15.4	The majority of SEs have no HR department established. Every second medium-sized enterprise has the HR department.
	MEs	50	
Business strategy	SEs	55.4	One half of SEs formulate their business strategy, yet only one third of SEs formulate the HR strategy. Two thirds of MEs have both business and HR strategies in place.
	MEs	78.5	
HR strategy	SEs	33	
	MEs	68.7	
Outplacement	SEs	3.5	SMEs do not ensure outplacement.
	MEs	8.9	
Talent management	SEs	3.5	The majority of SMEs do not manage their talent.
	MEs	13.6	
Corporate culture analysis	SEs	13.3	SMEs do not carry out corporate culture analyses.
	MEs	22.4	
Innovation	SEs	75.4	Two thirds of SMEs concentrate on innovation. However, their R&D department is rarely involved. The co-operation between SMEs and universities in the area of innovation is quite poor.
	MEs	74.3	
Stimulation to share knowledge	SEs	17.5	The majority of SMEs do not stimulate their employees to share, transfer and preserve knowledge.
	MEs	21.5	
Threat of employees leaving	SEs	61.1	More than a half of SMEs do not feel endangered by the leaving of key employees.
	MEs	57.9	

Source: authors' survey

Conclusion

HRM system is a crucial factor that determines the success of the enterprise in the market and its competitiveness. It is essential to realise that well-organised HR processes contribute to the improvement of the employer brand. The theoretical contribution of the article is the summarisation and comparison of results of survey focusing on HRM and HRM activities with reference to the strategic importance of this area for management that was conducted in the Czech Republic. The practical contribution is to present the latest results of the level of HRM in SMEs in the Czech Republic having in mind its importance in the current competitive environment. The results of the survey confirmed important human resource management internal factors and evaluated HRM activities which are crucial for HR strategy and policy of SMEs. These results may help SMEs set suitable HR strategies and policies and thus respond to the changing conditions and trends in human resource management not only in the Czech Republic.

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USE OF EXTERNAL SOURCES OF FINANCING IN THE CONSTRUCTION INDUSTRY

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Abstract: *This article analyzes the use of external sources of financing in the construction industry. The article responds to the claim that managers of companies in the construction industry prefer bank loans and the fact that a large volume of bank loans failed to their default. The task of this article is to map the current business situation, and the use of external financing types. The survey method chosen was empirical inquiry. It was necessary to determine the size of a representative sample as the entire population was too large. The questionnaire survey revealed that the most frequently used sources of financing include unpaid invoices to suppliers and advances received from customers. Bank loans as initially preferred tool for external financing placed on the third place. Given that the two main sources of financing are short-term nature of resources there are concerns that companies financed with short-term funds also fixed assets and therefore so have solvency problems.*

Keywords: *External sources, Financing, Construction industry, Unpaid invoices, Bank loans.*

JEL Classification: *G00.*

Introduction

The construction sector is an important sector in the national economy. If industry contributes 30 percent to the national economy, the construction sector accounts for nearly a quarter of that of industry. [27]

In general, construction is a mirror of the overall condition of the economy. The main factors influencing this sector include an increase or decrease in the volume of public tenders, business development and consequently the construction of production facilities or non-productive buildings for administration and commerce. Unemployment has a major impact on housing, as does income, population and also the cost and availability of credit. [17]

The construction sector was deeply affected by the ongoing economic crisis in 2009 and 2010, as evidenced by the proportion of failed loans of up to 28%, the highest of all branches of industry. [28]

Prasilova [23] shows the total debt of the construction industry.

Financing has an influence of financial stability of company. [11]

By this time in the Czech Republic, bank credits have been very popular in general as a source of external financing and preferred over other financing instruments. [25]

The task of this article is to map the current business situation, and the use of external financing types.

1 Statement of a problem

1.1 Objectives and Hypotheses

The aim of this article is to analyse the current representation (especially long-term) of external sources of financing in the construction industry, as it is likely that, in response to the enormous failure rate of loans, banks have begun to evaluate loan applications much more carefully. Bank loans thus may have become, particularly for many construction companies, quite inaccessible, and so have been forced to use other means of external financing.

Hypothesis H0 is being tested here, where: “All forms of external financing are used equally the same”, where, in the event of a lack of confirmation, an analysis will be effected which rejects the factors of this hypothesis.

Companies with a legal form of joint stock company will be analysed, as stock companies have the widest selection of instruments for financing, including issuing shares.

1.2 Options of External Financing

A synthesis of knowledge in the field of financial management was determined following eleven forms of external financing: [1, 2, 3, 5, 8, 9, 14, 17, 20, 21, 26, 31]

- Issuing new shares.
- Long-term bank credits and loans.
- Financial leasing.
- Issuing bonds and debentures.
- Short-term liabilities to suppliers.
- Advances received.
- Forfeiting.
- Subsidies and grants.
- Projected financing.
- Options, futures.

External sources are more diverse than internal resources. Their diversity is related to developments and innovations in financial markets. [23]

In addition to traditional forms of financing such as bank loans and financial leasing, research shows the popularity of other financial instruments.

Because it is not the purpose of this paper to specify in detail the various forms of external financing, the following text lists particularly their main advantages or disadvantages.

As mentioned in the introduction, companies in the construction industry could have a difficult time gaining access to bank loans due to issues with repayment.

Among the disadvantages of financial leasing is the fact that the costs of financial leasing may be higher than the expenses for financing investments purchased with equity or other foreign capital. [31] The owner of the leased asset for the duration of the lease agreement is the creditor – the lessor. [13]

Issuing new shares is, in this listing, the sole representative of equity. Issuing shares has a diluting effect on existing owners (shareholders). The process of issuing lays a number of administrative and legislative conditions on a joint stock company; another disadvantage is that it is also time-consuming. [13]

Issuing bonds and debentures is more suitable for large companies due to the issuing costs [31]. An advantage is the tax deductibility of the interest, unlike paid dividends.

For businesses exceeding a certain level of indebtedness, bank loans cease to be suitable and issuing bonds is an alternative with lower costs due to risk diversification among a large number of creditors. [30]

Forfeiting is considered to be an attractive method of financing which allows suppliers (exporters) to receive cash payments on delivery, unconditionally transfer monetary and exchange rate risks to the forfeiter and get rid of the administration associated with the records or recovery of outstanding debts. [7]

Subsidies and grants are generally intended for a specific purpose; they do not belong among general funding sources and are not generally applicable.

Special financial instruments can include derivatives in the form of options and futures. Derivatives are financial instruments that require no initial investment, as it will be settled in the future. Options and futures are different in law as to how these derivatives are used in the future. Unlike futures, which is a fixed term transaction whose value varies depending on the underlying variables, options do not constitute a right (obligation) to carry out this transaction, if the value of the underlying variable changes to a detriment. [6]

Project financing is particularly suitable for financing large projects where there is a financial link between, say, the prime contractor and the bank.

All of these financial instruments entail the cost of capital, as opposed to raising capital through an obligation to business partners. These obligations are advances received from customers and in particular the obligations to suppliers.

2 Source Data and Methods

For the analysis and testing the hypotheses H0, our own data from the questionnaire-based research will be used. This empirical method was chosen for the reason that the businesses monitored were within the Czech Republic. The advantage was thus the ability to directly address a variety of respondents over a wide area and to have sufficient time to come up with responses.

The basic statistical population which meets the conditions for a legal form of joint stock company and with an activity code of NACE 4120 - the construction industry by the Administrative Business Register includes 2207 companies. [22]

Due to its size, it was necessary to select a sample that represents the basic population for the statistical evaluation. The required sample size varies depending mainly on the variability (standard deviation) the occurrence of a character investigated in the basic population, the desired level of precision (error) estimate and the coefficient of reliability. [15]

With a properly established sample size, we will reach a sufficient quality of generalising conclusions. [10]

Because we do not know the distribution of respondents' answers, we will use a formula to calculate the sample size [15]:

$$n \geq \frac{z^2 x p * q}{\Delta^2} \quad (1)$$

where:

n is the minimum number of respondents

z is the reliability coefficient determined by us,

p, q are the numbers of respondents in percent biased towards contradictory variations; if these numbers are not precisely known, a maximum product must be created, i.e., 0.5 x 0.5,

Δ^2 is permissible error estimation.

We do not know if the variance in the population σ^2 , we must be estimated using sample variance. Use the pre-selection, ie. a random selection of small-scale n_1 elements and calculate it the sample variance. The minimum sample size then we get [11]:

$$n \geq \frac{t_{1-\frac{\alpha}{2}}^2 \frac{\alpha}{2} s_x'^2}{\Delta^2} \quad (2)$$

where:

$t_{1-\alpha/2}$ is percentiles division,

Δ is permissible error estimation and

$s_x'^2$ is the sample variance.

If we have doubts about the original shape of the distribution, taking at least $n_1 \geq 30$ percentiles and replace t distribution percentiles of normal distribution. Practically further we proceed so that after the detection of the desired sample size n enter preselection n_1 (when $n > n_1$) of n_2 elements so that $n_1 + n_2 = n$. [11]

In 2013, it was a written questionnaire addressing a total of 314 enterprises. Completed questionnaires were returned 30. This pre-selection was calculated sample variance of 0.04.

Substituting into equation (2) implies that the required number of respondents is 45. It was therefore necessary to obtain a questionnaire from another 15 companies.

$$n \geq \frac{2^2 * 0,2 * 0,2}{0,06^2}$$

$$n \geq 45$$

In the next round they were approached businesses that did not respond to a written questionnaire. Questionnaires were sent this time after a telephone conversation with the manager of the company directly to the addressee's name. This significantly increased the return - of the surveyed 30 questionnaires returned 22 questionnaires. 4 replies were received subsequently from the previous round.

In total, during the pre-selection and the actual survey, we succeeded in getting 56 questionnaires. The condition of representativeness of the sample was thus fulfilled.

As already mentioned, the research was conducted using a written questionnaire. Because of the generally low rate of questionnaires was part of a motivational cover letter.

Of course there was enclosed stamped envelope with a return address. In the cover letter, the respondent was aware of the content and objective research.

The task of respondents was: “Sort in order of 1-11 various forms of external financing, according to their usage in your company. (Utility 11 - the most widely used, 1- least used.)” see Tab. 1.

Tab. 1: Questionnaire

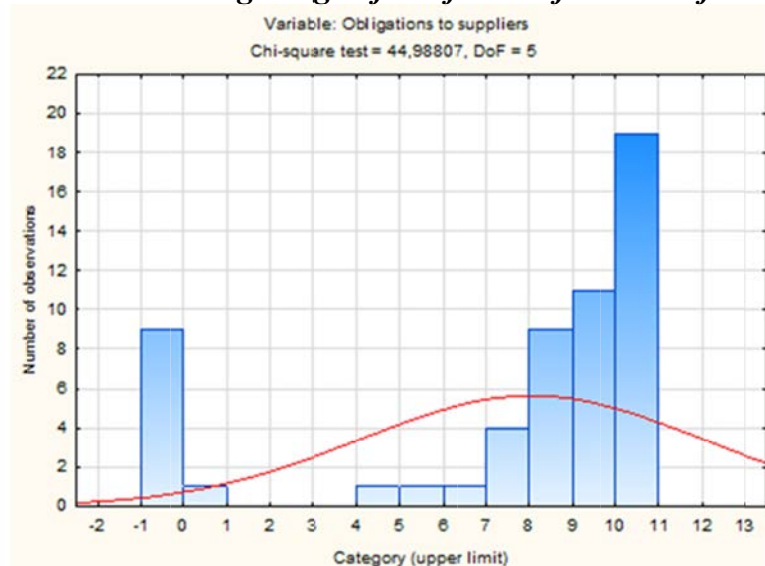
Form of external financing	Order (11 most used, 1 – least used)
Issuing new shares.	
Long-term bank credits and loans.	
Financial leasing.	
Issuing bonds and debentures.	
Short-term liabilities to suppliers.	
Receiving advances.	
Forfaiting.	
Subsidies and grants.	
Projected financing.	
Options, futures	
Other (state which)	

Source: [own]

The analysis of the use of individual sources of external financing is carried out by common descriptive statistical methods, i.e., an arithmetic average, Min and Max methods and calculating the standard deviation.

Data supporting the hypothesis H0 are subjected to testing using the non-parametric Friedman Test, as there were doubts concerning the normality of the distribution, see, e.g. Fig. 1.

Fig. 1: Chart showing usage of the forms of external financing



Source: [own]

The Friedman Test does not assume selections from a normal distribution and compliance of variances in groups. We test that the random variables $Y_{i1}, Y_{i2} \dots Y_{ik}$ are identical. The test criterion is a random variable: [16]

$$Q = \frac{12}{IJ(J+1)} \sum_{j=1}^J (\sum_{i=1}^I R_{ij})^2 - 3I(J+1) \quad (3)$$

where:

I is the number of respondents

J is the number of characters (classes),

R_{ij} is the order.

The critical area is expressed as: $W = \{Q: Q > \chi^2_{J-1, \alpha}\}$

Descriptive statistical methods and the nonparametric Friedman Test were performed with Statistica software (Tab. 2 and Tab. 3).

3 Analysing the Use of External Forms of Financing and Discussion

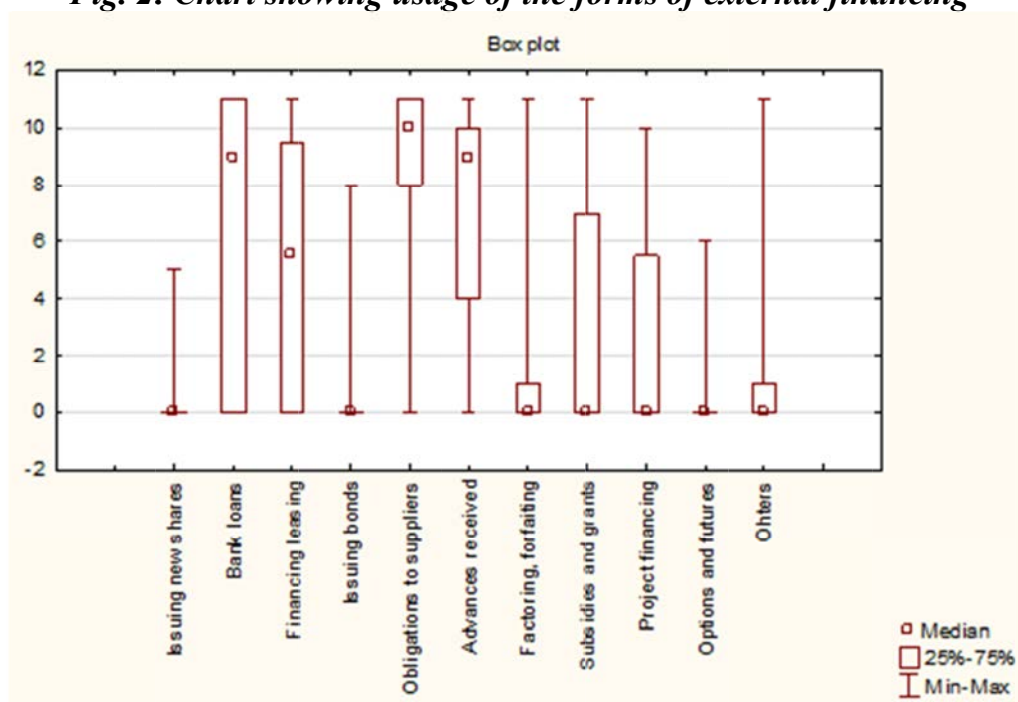
The results of the survey gave interesting results. Tab. 2 shows the average, minimum and maximum number of points for each variant of external financing. Bank loans, the preferred tool of external financing in the period before the economic crisis, fell to third place with an average evaluation of 6.85 points. Before this are advances received from customers and in particular the obligations to suppliers. On the contrary, insignificant tools are those like issuing shares and bonds, factoring and financial derivatives, most likely mainly because of the increased administrative burden. A chart was also created from the data collected (Fig. 2) showing the popularity of the various instruments of external financing.

Tab. 2: Analysis of the usage of forms of external financing

Form of external financing	Descriptive statistical methods				
	Quantity	Average	Min	Max	Standard deviation
Issuing new shares	56	0,55357	0	5	1,27806
Long-term bank credits and loans	56	6,85714	0	11	4,53042
Financial leasing	56	4,73214	0	11	4,52263
Issuing bonds and debentures	56	0,50000	0	8	1,50151
Short-term liabilities to suppliers	56	8,05357	0	11	3,96081
Receiving advances	56	7,00000	0	11	4,06314
Forfeiting	56	1,78181	0	11	3,55221
Subsidies and grants	56	3,08992	0	11	3,90001
Projected financing	56	2,57142	0	10	3,65243
Options, futures	56	0,69642	0	6	1,66154
Other	56	1,43636	0	11	3,07778

Source: [own]

Fig. 2: Chart showing usage of the forms of external financing



Source: [own]

Results of the descriptive statistics (Tab. 2, Fig. 2) basically already gave an answer to the hypothesis H0; the Friedman Test then simply verified the conclusions.

The Friedman Test requires that the individual answers to the questionnaire (Tab. 1) be adjusted to a statistical order. These data were subsequently tested in the Statistica software, see Tab. 3.

Tab. 3: Results of the Friedman Test

Form of external financing	Friedman Test = 0,39547, Chi-square test (N = 56, DoF=10) = 221,4625			
	Average order	Sum of order	Average	Standard deviation
Issuing new shares	7,723214	432,5	7,448214	2,060361
Long-term bank credits and loans	3,991071	223,5	3,892857	2,684491
Financial leasing	5,026786	281,5	4,839286	2,488349
Issuing bonds and debentures	7,892857	442,0	7,723214	1,455146
Short-term liabilities to suppliers	3,133929	175,5	2,991072	2,037135
Receiving advances	3,741071	209,5	3,607143	1,990236
Forfaiting	6,723214	376,5	6,526786	2,355689
Subsidies and grants	6,142857	344,0	5,982143	1,988522
Projected financing	6,562500	367,5	6,357143	1,999351
Options, futures	7,714286	432,0	7,544643	1,121188
Other	7,348214	411,5	7,214286	2,095140

Source: [own]

The Friedman Test confirmed that the differences in the use of various tools of external financing are significant enough that the null hypothesis cannot be confirmed. Businesses do not utilise all sources of external financing the same. The most popular strategic decision-making methods are the strategic scenarios – 50,94 % [17].

The Friedman Test shows the differences in the use of these resources. Of course, it is not only a question of popularity, but also the availability of capital; grants and subsidies for example, would undoubtedly be very popular, if they were widely available.

Most important and most alarming, however, are the first two places in the ranking of outside sources; therefore we will pay attention to them particularly in the conclusion.

Conclusion

The questionnaire survey and subsequent testing did not confirm the hypothesis H0: “All forms of external financing are used equally the same”.

It showed a preference for traditional instruments of external financing, although bank loans placed third in the ranking. It is likely that the large volume of failed loans during the economic crisis is responsible for the reduced state of loans provided, as mentioned in the introduction. However, the dismal financial state of construction companies transferred debts to suppliers and an increase in advances received from customers.

Obligations to suppliers and advances from customers are instruments of external financing which should belong to short-term funding sources [14]. At present, however, the reality is that long-term assets are covered by short-term liabilities (the construction industry has a large proportion of long-term assets to total assets [4]. This violates one of the basic rules for financial management. [18, 19]

If the companies monitored have their funding based mainly on short-term liabilities, it is likely that a large portion of these liabilities is in payment arrears. On the other hand, these companies also have a large proportion of debts [4], so they are probably in secondary insolvency. In any case, it is apparent that the construction industry is not in a good financial situation.

This article shows how the problem of financing is dangerously captivating. A number of companies unfortunately suffer from this fact; companies that move towards the edge of bankruptcy not because they had no orders and thus attain economic losses, but due to financial insolvency.

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HIV/AIDS AND MACROECONOMIC PERFORMANCE: EMPIRICAL EVIDENCE FROM KENYA

Bernhard O. Ishioro

Abstract: *This paper contributes to the investigation and exploration of the impacts of HIV/AIDS on the economic performance of Kenya. It evaluates the HIV/AIDS profile and socio-economic performance of the Kenyan economy before and during the epidemic era. The paper attempted a robust examination of the relationship between HIV/AIDS and major economic, education, demographic and health indicators in Kenya. The paper applied the step by step Wiener-Granger causality tests; and found that HIV/AIDS Granger-causes tuberculosis, life expectancy at birth, population growth, gross primary school enrolment and economic growth while urbanization, proportion of population under 15 years, rural population and gross primary school enrolment were identified as the determinants of the prevalence of HIV/AIDS in Kenya. The paper recommends a combined HIV mitigation surveillance approach and a post epidemic reconstruction of both human and social capital.*

Keywords: *HIV/AIDS Epidemic, Economic growth, Kenya, Wiener-Granger Causality.*

JEL Classification: *O15, J11, C18.*

Introduction

Sub-Saharan Africa has been described as the epicenter of the prevalence of HIV/AIDS over the past decades [29]. It is however argued that, the degree of prevalence of the HIV epidemic was not correlatively distributed among the countries in the region [20], since some countries in Africa are believed to belong to the high HIV prevalence group while others are described as the low HIV prevalence countries. Countries with high HIV/AIDS prevalence were further categorized by [20] as very high HIV prevalence countries, moderately high HIV prevalence countries and low high HIV prevalence countries. Kenya once belonged to the middle high HIV prevalence countries category but has experienced a dramatic reversal of the incidence and severity of the epidemic.

1 Problem Statement

Although Kenya has experienced a somewhat dramatic reversal of the epidemic: its impact on the economic performance of Kenya has been an issue of serious controversy. Some studies have argued that although Kenya is one of the first countries in Sub-Saharan Africa to experience the disease, its impacts on economic performance is only in the short-run. Other studies argued that the impact of the epidemic in Kenya was not widespread in terms of its sectoral coverage and dimension. Yet there are other studies who believe that the effects of the epidemic are not phenomenal in the affected economies.[32] observed that this explains why there is paucity of empirical studies on the impact of HIV/AIDS on economic performance in Kenya. However, no doubt HIV/AIDS has affected Kenya's economic development and is bound to inhibit future significant economic progress because compared to other diseases HIV/AIDS is a more recent epidemic in Kenya.

Therefore, the main objective of this paper is to examine the impact of the HIV epidemic on economic performance in Kenya since the early 1990s. The paper also evaluates its impact on population growth; population under 15, rural population and urbanization, and other selected macroeconomic indicators (such as per capita GDP, economy-wide savings, school enrolment, under-five mortality, life expectancy at birth, and the incidence of tuberculosis). Finally, the paper presents the methodological elucidation of the simplified (step by step) method of implementing the Wiener-Granger causality test using both HIV prevalence and selected indicators' data from Kenya. This is a major contribution to knowledge.

The rest of the paper is structured as follows: section two focuses on a review of Kenya's socio-economic performance in the era of the epidemic. It also examines some epidemiological characteristics of the HIV disease in Kenya. Section three describes the methodology of the research: Section four discusses the results and section five concludes the paper with recommendations and empirically-induced policy implications.

1.1 Kenya: HIV/AIDS Profile

The HIV/AIDS epidemic in Kenya started in the early 1980s (precisely in 1984) among the sex hawkers' population [29]. Since then it has spread to the proportion of the population in their most productive/reproductive ages and to most areas of the country [32]. In 1999, the Kenyan government declared AIDS a national disaster. However, in the past few years, declines in HIV prevalence were observed in both high risk and low risk population groups as well as in urban and rural areas. Population-based HIV testing further confirms the decline in levels among the general population.

From the early 1990s to 2000, HIV sero-prevalence levels stabilized at around 16 percent among pregnant women tested in all four city council clinics in Nairobi (the capital city). By 2004, the rate declined to 10 percent. This decreased to 5 percent in 2008. HIV levels rose rapidly among sex "hawkers" in Nairobi between the mid-1980s and 1992 from 7 percent to nearly 86 percent. But it has dropped to less than 27 percent as at 2008. A similar trend was noticed in *Mombassa*, where over half of sex hawkers tested were HIV positive between 1993 and 1997. In 2000, the rate dropped to about 30 percent. For more information on Kenya's current HIV profile see [29].

1.2 Kenya Socio-Economic and Demographic Performance

Since the epidemic started in Kenya, serious demographic changes specifically in terms of rising mortality rates and declining population growth have been experienced. Between 1960 and 1990, life expectancy at birth in Kenya rose steadily.

With respect to health human capital, life expectancy in Kenya started declining specifically few years after the HIV/AIDS epidemic started and is currently more than 10 years lower than the pre-HIV/AIDS era. The male life expectancy experienced 12% changes between 1990 and 2000; and a 11% change between 2000 and 2005 [36].

Tab. 1: HIV/AIDS-Induced Life Expectancy Changes in Kenya (1980 – 2013)

	1980	1990	2000	2005	2008	2010	2013	% Change 1990- 2000	% Change 1990- 2005	% Change 2010- 2013
Male	56	57	50	51	54	58	60	-12%	-11%	3.45%
Female	60	61	53	53	55	61	64	-13%	-13%	4.92%
Total	59	59	50	52	54	60	62	-15%	-12%	3.33%

Source: Author's Computation using WDI(2015)

From Table 1 above, it can be inferred that in Kenya, female life expectancy experienced an HIV/AIDS-induced change of -13% between 1990 and 2000; and between 2000 and 2005 respectively. Total life expectancy in Kenya experienced a -15% change between 1990 and 2000; and a -12% percentage change between 2000 and 2005. However, total life expectancy at birth experienced a 3.33% change during the 2010/2013 period. The statistical observations shown in Table 1 is in consonance with [2].

Tab. 2: The Growth Rate of Population in Kenya (1960-2005)

	YEARS					Percentage (%) Change			
Population	1980	1990	2000	2010	2013	80-90	90-00	00-10	00-13
(Annual Growth %)	3.78	3.36	2.58	2.70	2.70	-11%	-23%	4.65%	4.65%

Source: Author's Computation using WDI(2015)

The evaluation of the annual growth rate of population in Kenya shows that the pre-HIV growth rates of 1980 was above 3 percent per annum. However; from 1990 to 2000 it started declining. The HIV-induced percentage changes in population growth between 1980 and 1990, and 1990 to 2000 in Kenya experienced negative growth rates of -11% and -23% respectively. This means that HIV/AIDS has had a negative impact on Kenyan population growth during these periods ([33],[23],[2]. For instance, [23] concluded that Kenya had experienced serious demographic changes during the epidemic era through the decline in population growth rates as a result of rising death rates (for both adults and children).

1.3 Review of Related Literature

Among the earliest studies on HIV/AIDS in Sub-Saharan is [4],[5] and [6]. They used a one sector and two factor neoclassical growth model to predict the economic impact of HIV on growth in Malawi and Tanzania. They found that over the period 1985-2010, GDP growth would be reduced by about 1.5 percentage points in Malawi and 11 percentage points in Tanzania: [22] applying an eleven sector computable general equilibrium (CGE) to evaluate the impact of HIV in Cameroon. The study found that over a period of five years, the loss of an urban worker had seven times the negative impact on production as would the loss of a rural worker. The negative impact would be 100 times more when the lost workers were skilled and urban. [26] distinguished between three categories of workers and between urban and rural production in his model.

[1] used cross-national regressions to estimate relationships among economic growth and other parameters of interest such as policy, institutional variables and HIV prevalence [16], [17] and [18].

The impact of the HIV pandemic on the economy of Kenya has been an issue of serious debate and research interest since the epidemic began in the 1980s. Hence, apart from the region-wide or African-wide studies of the economic/macroeconomic impacts of HIV/AIDS on economic growth and other macroeconomic variables, there are country-specific studies. Regrettably, very few of these studies focus on the Kenyan epidemic scenario. For instance, [28] used a stochastic model of growth to assess the impact of the risks of an HIV epidemic on economic growth in Kenya [21].

[24] explored the geographical characteristics of HIV/AIDS in Kenya; and identified gender, age, marital status, education level, income, occupation, number of sexual partners, urbanization, demographic structure and migration as the major determinants of the prevalence of the disease in Kenya. The study adopted a qualitative method of estimation and found that: HIV/AIDS epidemic affected all the provinces as at 1990 (the period when the systematic surveillance started in Kenya) with the epidemic progressing at almost similar rates; HIV/AIDS epidemic has a positive relationship with income, urbanization, migration and poverty; religion has a reducing impact on HIV/AIDS prevalence, and densely populated regions had the highest prevalence of the disease.

[2] conducted a theoretical appraisal of the potential impact of AIDS on population and economic growth rates in Kenya and other countries and concluded that AIDS is likely to reduce the growth of the population of Kenya and other countries globally. The study also concluded that the impact of HIV/AIDS on economic growth is expected to manifest in many ways and dimensions (either directly or indirectly). Also, the study found that food security was threatened by the high prevalence of the pandemic in Kenya.

[1] explored the economic implications of HIV/AIDS in Kenya. The study focused on the impacts of the epidemic on economic agents (households and selected firms), and some selected sectors (agriculture) of the economy including the macro economy. It reviewed studies on HIV/AIDS as it relates to the Kenyan economy. The study found that the impact of the epidemic on economic agents and specific sectors of the economy was unexaggeratingly profound. It recommends treatment of the disease as a national priority; and it emphasizes the indispensability of government commitment in mitigating the HIV epidemic.

[7] used a retrospective cohort study design to investigate the productivity and work attendance of tea estate workers in Kenya. Out of the 271 tea pluckers studied between 1997 and 2002, 54 died of HIV/AIDS. The study used longitudinal regression and found that HIV infection reduces the productivity rate and income earned by such tea pluckers.

[25] obtained results that are similar to [7]. The study assessed the impact of HIV/AIDS on the development of micro-enterprises in Kenya. The Obunga slum in *Kisumu* used as the case study is one of the most populated slums in Kisumu. A total of 50 micro-enterprises were randomly selected out of 250. The study found that apart from HIV/AIDS, other opportunistic diseases such as malaria, tuberculosis affect micro-enterprises in Kisumu, Kenya. However; the sample sizes of these studies are not large enough to inform policy conclusions for country like Kenya.

[4] assessed the long-run economic impacts of HIV/AIDS in Kenya with focus on fertility, education and child labor. Human capital accumulation was treated as input into the production process. The study used a calibrated model in analysing data for the period 1920 to 2000. The long-run impact of the epidemic was estimated for the period spanning

from 2000 to 2040. The study concludes that the impact of the HIV epidemic in Kenya (economy and people) is unarguably substantial and monumental.

2 Material and Methods

2.1 Source and Description of Data

The data used for this study were mainly drawn from the World Development Indicators (WDI) and the African Development Indicators (ADI) of the World Bank for various years. But the data on HIV prevalence were drawn from both UNAIDS and the US Census Bureau. The study covered the period 1990-2013. The series are grouped into economic, demographic, education and health indicators.

2.2 Estimation Technique

2.2.1 Wiener-Granger Causality Tests.

[8],[9],[10] and [11] have assumed that, in causal test like the Wiener-Granger, there are two series X_t and Y_t (X_t represents the vector for HIV/AIDS and Y_t is the vector of the other indicators selected for this study). X_t fails to (successfully) Granger-cause Y_t if the conditional expectation of equality holds (does not hold).

$$E(Y_t | Y_{t-1}, X_{t-1}, X_{t-2}, \dots, X_{t-n}) = E(Y_t | Y_{t-1}) \quad (1)$$

According to [14], apart from the step by step implementation and application of the Wiener-Granger causality test, the following conditions must be satisfied:

Condition one:

The variables included in the bivariate model must be stationary or integrated of order zero or one (i.e. must be integrated of the same order).

Condition two:

The null hypothesis of the Wiener-Granger causality test must be stated and tested.

Condition three:

The number of lagged terms must be accurately determined as the direction of causality may depend on the appropriate selection of lag lengths.

Condition four:

The error terms entering the Wiener-Granger causality model must be uncorrelated ([13],[8],[9],[10],[11]). These conditions are implemented step-by-step below:

Step One: Determine the stationarity or order of integration of the variables included in the Wiener-Granger causality model. The stationarity test is a necessary condition for the implementation of the Wiener-Granger causality test; as such it is expected to precede the Wiener-Granger causality test. One of the most prominently applied stationarity tests in the econometric literature is the unit root test. The unit root test adopted in this study is the Augmented Dickey Fuller (ADF) test. [20] in line with [14] opined that a Standard implementation of the ADF unit root test is done in stages with relevant and suitably adequate hypotheses stated. The ADF unit root test models are stated as:

$$\Delta Y_t = \phi Y_{t-1} + u_t \quad (2)$$

$$\Delta Y_t = \alpha_1 + \phi Y_{t-1} + u_t \quad (3)$$

$$\Delta Y_t = \alpha_1 + \alpha_2 t + \phi Y_{t-1} + u_t \quad (4)$$

The hypothesis of each case of the stationarity test includes:

Null hypothesis: $H_0 : \phi = 0$:

The null hypothesis states that there is a unit root or the series is not stationary.

Alternative hypothesis: $H_A : \phi < 0$:

The alternative hypothesis states that the time series is stationary around a deterministic trend or there is no unit root. But if the assumption of uncorrelated error terms is violated, the ADF extends the above Dickey and Fuller unit root models as shown below:

$$\Delta Y_t = \alpha_1 + \alpha_2 t + \phi Y_{t-1} + \sum_{i=1}^n \beta_i \Delta Y_{t-i} + u_t \quad (5)$$

Where u_i represents pure white noise error term.

$$\begin{aligned} \Delta Y_{t-1} &= (Y_{t-1} - Y_{t-2}), \text{ and} \\ \Delta Y_{t-1} &= (Y_{t-2} - Y_{t-3}) \dots \end{aligned} \quad (6)$$

The rule of thumb for the determination of stationarity (or non-stationarity) is that, if the ADF statistic is smaller than the McKinnon critical values or if the ADF statistic is negative and has smaller value than the McKinnon critical values that are negative, then we reject the null hypothesis of the presence of unit root.

Step Two: State the null hypothesis of the Wiener-Granger causality test. The general null hypothesis is stated as:

$$H_0 : \alpha_i = 0 \forall i = 1, 2, 3, \dots, n$$

The general null hypothesis which represents equations(9),(12),(14),(16),(18),(20),(22),(24),(26),(28),(30) and (32) states that the lagged values of HIV prevalence do not belong to the regression.

Step Three: Determine the appropriate lag length. Eviews 8 provides automatic lag selection method and as such, only a complementary effort is needed.

Step Four: Determine the nature of correlation (non-correlation) between the error terms. In line with [12]; we assume that the error terms are uncorrelated; each error term has the classical structure(satisfied the assumption of absence of autocorrelation and of the presence of homoskedasticity). The VAR system covariance matrix is stated as:

$$\Omega = \begin{pmatrix} \alpha_{11} & \alpha_{12} \\ \alpha_{21} & \alpha_{22} \end{pmatrix} \otimes I = \sum \otimes I \quad (7)$$

where the covariance matrix connotes that there is within system of equation correlation.

Step Five: Specify the Bivariate or Bilateral Wiener-Granger causality models. Generally, the Wiener-Granger bivariate causality regression equations are stated as:

$$X_t = \phi_1 + \gamma_t X_{t-1} + \sigma_1 Y_{t-1} + u_{1t} \quad (8a)$$

$$Y_t = \phi_2 + \Theta_t Y_{t-1} + \alpha_1 X_{t-1} + u_{2t} \quad (8b)$$

But in this study, the bivariate models are specified according to the following categories: economic, education, demographic and health categories.

2.2.2 Granger causality of HIV prevalence and economic indicators

Bivariate Model of HIV prevalence and Income:

$$HIV_t = \sum_{i=1}^l \sigma_i PGDP_{t-i} + \sum_{j=1}^l \Phi_j HIV_{t-j} + u_{1t} \quad (9)$$

$$PGDP_t = \sum_{i=1}^l \psi_i PGDP_{t-i} + \sum_{j=1}^l \delta_j HIV_{t-j} + u_{2t} \quad (10)$$

where HIV_t represents current HIV prevalence rate. $PGDP_t$ is current real per capita income (a proxy for income).

Equation(9) implies that the current HIV prevalence (HIV_t) is related to the previous values of HIV prevalence (HIV_{t-i}) and the past values of real GDP per capita ($PGDP_{t-i}$). Equation(10) posits that the current real GDP per capita ($PGDP_t$) is related to the past values of both real GDP per capita ($PGDP_{t-i}$) and HIV prevalence (HIV_{t-i}). Equations (9) and (10) implies that sex is a normal good with own price, and the income of the demanders as major determinants of its demand. The higher the income of the demander, the more the sex demanded (perhaps including risky sex). Therefore, as income increases, the demand for risky sex is expected to increase including the ability to keep "pockets of concubines" and sex partners. On the other hand, [1] has noted that HIV/AIDS can facilitate the increase in income through increased mortality and its impact on the denominator factor of GDP per capita.

Bivariate Model of HIV prevalence and economic growth:

$$GDPC_t = \sum_{i=1}^l \alpha_i GDPC_{t-i} + \sum_{j=1}^l \beta_j HIV_{t-j} + u_{1t} \quad (11)$$

$$HIV_t = \sum_{i=1}^l \phi_i GDPC_{t-i} + \sum_{j=1}^l \eta_j HIV_{t-j} + u_{2t} \quad (12)$$

where GDPC represents economic growth (this is defined as the growth rate of per capita). Equation(11) postulates that in the era of HIV prevalence, current performance of economic growth ($GDPC_t$) is related to the past values of economic growth ($GDPC_{t-i}$) and the previous prevalence rates of HIV (HIV_{t-i}). It has been hypothesized that previous prevalence rates of HIV can act as distortion or inhibition to current economic performance i.e. inhibiting and depleting the numerator component of GDP per capita. Also, previous prevalence rate of HIV can affect current economic performance through its effects on the denominator factor of GDP per capita (through HIV-induced mortality and morbidity). Equation(12) hypothesizes that the current prevalence rate of HIV (HIV_t) is a function of the previous performance of economic growth ($GDPC_{t-i}$) and the past prevalence rates of HIV (HIV_{t-i}). This means that those who are currently infected were infected by those who were previously infected, that is, current HIV prevalence rates are the multiplier effects of previous HIV prevalence rates. Indeed, equation(12) connotes that current HIV prevalence rates are linked to either the worsening economic performance

of previous periods(GDP_{t-i}),that is, poverty-induced supply of risky sex or the economic prosperity of previous periods, that is, prosperity-induced demand for risky sex.

Bivariate Model of HIV prevalence and economy-wide savings:

$$GDS_t = \sum_{i=1}^l \alpha_i GDS_{t-i} + \sum_{j=1}^l \beta_j HIV_{t-j} + u_{1t} \quad (13)$$

$$HIV_t = \sum_{i=1}^l \phi_i GDS_{t-i} + \sum_{j=1}^l \eta_j HIV_{t-j} + u_{2t} \quad (14)$$

where GDS is Gross Domestic Savings (defined as economy-wide savings).

Equation(13) and (14) posits that in the era of HIV prevalence(epidemic),current economy-wide savings (GDS_t) is related to the previous values of economy-wide savings(GDS_{t-i}) and the past values of HIV prevalence rates (HIV_{t-i}).This means that previous HIV prevalence lead to current dis-accumulation of capital(savings).Equations (13) and (14) hypothesize the link between HIV prevalence and savings. Although, the link between HIV/AIDS and savings is controversial. Most studies including [2] and [23] found a negative causal link between HIV/AIDS and savings. But other studies argued that, the relationship between HIV/AIDS and savings is determined by the theoretical perspective adopted [20].

The bivariate Model of HIV prevalence and the growth of export:

$$GEXP_t = \sum_{i=1}^l \Omega_i GEXP_{t-i} + \sum_{j=1}^l \Theta_j HIV_{t-j} + u_{1t} \quad (15)$$

$$HIV_t = \sum_{i=1}^l \nu_i GEXP_{t-i} + \sum_{j=1}^l \delta_j HIV_{t-j} + u_{2t} \quad (16)$$

$GEXP_t$ represents the current growth of export. Equation(15) posits that the current growth of export ($GEXP_t$) is related to the past values of both growth of export ($GEXP_{t-i}$) and HIV prevalence(HIV_{t-i}).Equation(16) implies that the current HIV prevalence (HIV_t) is related to the previous values of HIV prevalence (HIV_{t-i}) and the growth of export ($GEXP_{t-i}$).

2.2.3 HIV and Education Human Capital

The bivariate model of HIV prevalence and gross primary education.

$$GPRS_t = \sum_{i=1}^l \mu_i GPRS_{t-i} + \sum_{j=1}^l \varpi_j HIV_{t-j} + u_{1t} \quad (17)$$

$$HIV_t = \sum_{i=1}^l \phi_i GPRS_{t-i} + \sum_{j=1}^l \chi_j HIV_{t-j} + u_{2t} \quad (18)$$

$GPRS_t$ represents Gross Primary School Enrolment rates. Equation(17) posits that the current Gross Primary School Enrolment rates ($GPRS_t$) is related to the past values of both Gross Primary School Enrolment rates ($GPRS_{t-i}$) and HIV prevalence(HIV_{t-i}).Equation(18) implies that the current HIV prevalence (HIV_t) is related to the previous values of HIV prevalence (HIV_{t-i}) and the past values Gross Primary School Enrolment rates ($GPRS_{t-i}$).

2.2.4 HIV and Demographic Indicators in Kenya

Bivariate Model of HIV prevalence and population growth

$$PPG_t = \sum_{i=1}^l \phi_i PPG_{t-i} + \sum_{j=1}^l \varpi_j HIV_{t-j} + u_{1t} \quad (19)$$

$$HIV_t = \sum_{i=1}^l \theta_i PPG_{t-i} + \sum_{j=1}^l \rho_j HIV_{t-j} + u_{2t} \quad (20)$$

PPG represents population growth.

Equation(19) posits that the current population growth rates (PPG_t) is related to the past values of both population growth (PPG_{t-i}) and HIV prevalence rates(HIV_{t-i}).Equation(20) implies that the current HIV prevalence (HIV_t) is related to the previous values of HIV prevalence (HIV_{t-i}) and the past values of population growth rates (PPG_{t-i}).Equations (19) and (20) explain the causal linkage between HIV/AIDS and population growth. This relationship has been hypothesized to be negative with causality running from HIV/AIDS to population growth. On the other hand, positive causation is expected from population growth (birth and migration) to HIV/AIDS ([24]; [2]).

Bivariate Model of HIV prevalence and Urbanization:

$$UPP_t = \sum_{i=1}^l \gamma_i UPP_{t-i} + \sum_{j=1}^l \varpi_j HIV_{t-j} + u_{1t} \quad (21)$$

$$HIV_t = \sum_{i=1}^l \partial_i UPP_{t-i} + \sum_{j=1}^l \ell_j HIV_{t-j} + u_{2t} \quad (22)$$

UPP is urbanization (this is defined as the proportion of the population that is urban).

It has been hypothesized that urbanization causes HIV/AIDS and vice versa; [24] observed that there is a higher concentration of HIV infected persons in the urban areas than in the rural areas of Kenya. This is the theoretical basis of the bivariate regression models specified as equation (21) and (22) respectively.

Bivariate Model of HIV prevalence and the proportion of population that is rural:

$$RRP_t = \sum_{i=1}^l \alpha_i RRP_{t-i} + \sum_{j=1}^l \varpi_j HIV_{t-j} + u_{1t} \quad (23)$$

$$HIV_t = \sum_{i=1}^l \delta_i RRP_{t-i} + \sum_{j=1}^l \ell_j HIV_{t-j} + u_{2t} \quad (24)$$

RRP_t represents the proportion of the population that is rural. Equation(23) postulates that the current value of the proportion of the population that is rural (RRP_t) is related to the past values of both proportion of the population that is rural (RRP_{t-i}) and HIV prevalence (HIV_{t-i}).Equation(24) posits that the current HIV prevalence rate (HIV_t) is related to the previous values of HIV prevalence (HIV_{t-i}) and proportion of the population that is rural (RRP_{t-i}).

Bivariate Model of HIV prevalence and the proportion of population that is under 15:

$$P15_t = \sum_{i=1}^l \omega_i P15_{t-i} + \sum_{j=1}^l \kappa_j HIV_{t-j} + u_{1t} \quad (25)$$

$$HIV_t = \sum_{i=1}^l \phi_i P15_{t-i} + \sum_{j=1}^l \varsigma_j HIV_{t-j} + u_{2t} \quad (26)$$

$P15_t$ is the proportion of the population that is under the age of 15. Equations (25) and (26) hypothesize that early sexual debut of the Young persons in Kenya and in most African countries is a major determinant of the spread of HIV/AIDS and rapid infection of the proportion of the population under the age of 15. Also, through the morbidity and eventual mortality, HIV/AIDS acts as a determinant of the performance in terms of longevity and mortality) of the proportion of population that is under 15 years in Kenya. [24] argued that the HIV pandemic is mostly affecting the younger generation with younger women more vulnerable because they are more sexually active at that age.

2.2.5 HIV prevalence and Health indicators in Kenya

Bivariate Model of HIV prevalence and Tuberculosis:

$$TBC_t = \sum_{i=1}^l \xi_i TBC_{t-i} + \sum_{j=1}^l \pi_j HIV_{t-j} + u_{1t} \quad (27)$$

$$HIV_t = \sum_{i=1}^l \wp_i TBC_{t-i} + \sum_{j=1}^l \beta_j HIV_{t-j} + u_{2t} \quad (28)$$

TBC_t is tuberculosis (defined as the current incidence of tuberculosis). Equation (27) posits that the current incidence of tuberculosis (TBC_t) is related to the past values of both incidence of tuberculosis (TBC_{t-1}) and HIV prevalence (HIV_{t-i}). Equation (28) implies that the current rates of HIV prevalence (HIV_t) is related to the previous own values (HIV_{t-i}) and incidence of tuberculosis (TBC_{t-1}).

Bivariate Model of HIV prevalence and life expectancy at birth:

$$LEP_t = \sum_{i=1}^l \eta_i LEP_{t-i} + \sum_{j=1}^l \omega_j HIV_{t-j} + u_{1t} \quad (29)$$

$$HIV_t = \sum_{i=1}^l \varsigma_i LEP_{t-i} + \sum_{j=1}^l \vartheta_j HIV_{t-j} + u_{2t} \quad (30)$$

LEP_t represents current life Expectancy at Birth. Equation (29) surmises that the current performance life expectancy at birth (LEP_t) is related to the past values of both life expectancy (LEP_{t-1}) and HIV prevalence (HIV_{t-i}). Equation (30) surmises that the current rate of HIV prevalence (HIV_t) is related to the previous values of HIV prevalence (HIV_{t-i}) and under-five mortality (LEP_{t-1}).

Bivariate Model of HIV prevalence and under-five mortality rate

$$UFM_t = \sum_{i=1}^l \alpha_i UFM_{t-i} + \sum_{j=1}^l \psi_j HIV_{t-j} + u_{1t} \quad (31)$$

$$HIV_t = \sum_{i=1}^l \lambda_i UFM_{t-i} + \sum_{j=1}^l \Phi_j HIV_{t-j} + u_{2t} \quad (32)$$

UFM represents under-five mortality rates.

Equation(31) presupposes that the current rate under-five mortality (UFM_t) is related to the past rates of both under-five mortality (UFM_{t-1}) and HIV prevalence(HIV_{t-1}).Equation(32) presupposes that the current HIV prevalence (HIV_t) is related to the previous periods rates of HIV prevalence (HIV_{t-1}) and under-five mortality(UFM_{t-1}).

3 Problem Solving/Discussion

This section is mainly focused on the empirical results of the Augmented Dickey Fuller unit root test and the Wiener-Granger causality test. The ADF results are presented in Table 3 below.

Tab. 3: Results of the Augmented Dickey Fuller Unit Root Test

INDICATOR	VARIABLE	LEVEL		FIRST DIFFERENCE		DECISION
		Intercept	Intercept/Trend	Intercept	Intercept/Trend	
ECONOMIC	GDPC	-1.979	-3.157	-5.414*	-4.452**	GDPC has unit root at level
	GEXP	-1.2604	-1.254	-8.055*	-7.733*	GEXP has unit root at level
	PGDP	-2.204	-1.074	-2.393	-3.947**	PGDP has unit root at level
	GDS	-1.623	-2.293	-4.971*	-4.871**	GDS has unit root at level
EDUCATION	GPRS	-1.7887	-4.480	-6.370*	-6.108*	GPRS has unit root at level
DEMOGRAPHIC	PPG	-2.753	-0.175	-2.709	-4.308**	PPG has unit root at level
	P15	-1.039	-0.156	-2.006	-3.914**	P15 has unit root at level
	RRP	-2.207	-0.168	-1.279	-4.662**	RRP has unit root at level
	UPP	-2.114	-1.372	-3.416**	-5.729*	UPP has unit root at level
HEALTH	HIV	-2.244	-1.531	-4.872*	-5.727*	HIV has unit root at level
	TBC	-2.271	-1.604	-4.727*	-3.482**	TBC has unit root at level
	UFM	-3.018	-3.200	-4.968*	-4.460*	UFM has unit root at level
	LEP	-1.075	-2.822	-7.031*	-6.957*	LEP has unit root at level

Source: Author

NOTE: * denotes significance at 1% and ** denotes significance at 5%.

For all the series shown in Table 3 above, the results indicated that the series are non-stationary at level(but are stationary at first difference either with intercept or with intercept and trend).Hence, we do not reject the null hypothesis that unit root is present in each of our series. Since all the series are stationary at first difference (integrated of order one); the first condition for the implementation of the Wiener-Granger causality test has been satisfied. Therefore, we implement the Wiener-Granger causality test as reported below.

3.1 Results of the Bivariate Wiener-Granger Causality Tests

The results of the Wiener-Granger causality test are presented in Table 4 below. The discussions are succinctly presented in the ensuing section.

Tab. 4: The Results of the Bivariate Wiener-Granger Causality Tests

HIV PREVALENCE VERSUS ECONOMIC INDICATORS			
Null Hypothesis	F-Statistics	Direction of causality	Decision
HIV Does not Granger cause GDPC	0.36	-	Do not Reject
GDPC Does not Granger cause HIV	0.19	-	Do not Reject
HIV Does not Granger cause GEXP	0.822	-	Do not Reject
GEXP Does not Granger cause HIV	16.53*	GEXP→HIV	Reject
HIV Does not Granger cause GDS	0.69	-	Do not Reject
GDS Does not Granger cause HIV	1.90	-	Do not Reject
PGDP Does not Granger cause HIV	20.46*	PGDP→HIV	Reject
HIV Does not Granger cause PGDP	0.51	-	Do not Reject
HIV PREVALENCE VERSUS EDUCATION INDICATOR			
Null Hypothesis	F-Statistics	Direction of causality	Decision
HIV Does not Granger cause GPRS	3.46***	HIV→ GPRS	Reject
GPRS Does not Granger cause HIV	0.299	-	Do not Reject
HIV PREVALENCE VERSUS DEMOGRAPHIC INDICATORS			
Null Hypothesis	F-Statistics	Direction of causality	Decision
PPG Does not Granger cause HIV	0.30	-	Do not Reject
HIV Does not Granger cause PPG	8.79*	HIV→PPG	Reject
HIV Does not Granger cause P15	18.37*	HIV→P15	Reject
P15 Does not Granger cause HIV	0.77	-	Do not Reject
HIV Does not Granger cause RRP	16.72*	HIV→RRP	Reject
RRP Does not Granger cause HIV	0.344	-	Do not Reject
HIV Does not Granger cause UPP	36.36*	UPP→HIV	Reject
UPP Does not Granger cause HIV	10.64*	HIV→UPP	Reject
HIV PREVALENCE VERSUS HEALTH INDICATORS			
Null Hypothesis	F-Statistics	Direction of causality	Decision
HIV Does not Granger cause TBC	3.76***	TBC→HIV	Reject
TBC Does not Granger cause HIV	9.50**	HIV→TBC	Reject
HIV Does not Granger cause LEP	11.12*	HIV→ LEP	Reject
LEP Does not Granger cause HIV	0.32	-	Do not Reject
HIV Does not Granger cause UFM	12.71*	HIV→U5M	Reject
UFM Does not Granger cause HIV	0.54	-	Do not Reject

Source: Author's computation using Eviews 8.

NOTE: * denotes significance at the 1% level, ** at the 5% level and *** at the 10% level. All the variables are as previously defined. Where \rightarrow denotes one-way causation.

The results of the Wiener-Granger causality test shown above suggest that there exists a two-way statistically insignificant causality between HIV prevalence and GDPC and GDS, that is, HIV/AIDS does not “Granger cause” economic growth(GDPC) and gross domestic savings(GDS); neither are these indicators determinants of the spread of HIV/AIDS in Kenya. The results prognosticate that the causal relationship between HIV prevalence and either GDPC or GDS is both statistically insignificant and empirically picayune. Therefore, we do not reject the null hypotheses that HIV prevalence does not Granger-cause economic growth and gross domestic savings in Kenya during the period under consideration. When our results were compared to the findings of [23] that found a negative relationship between HIV/AIDS and economic growth; they seem to suggest that the negative impact of the epidemic on economic growth in Kenya has reached its peak and is undergoing a downward trajectory. It also suggests that the mitigation steps taken so far have been efficient and effective. Furthermore, our results empirically suggest that the grueling consequences of the HIV epidemic on gross domestic savings have been reasonably inundated in Kenya.

Amazingly, there is a unidirectional causality flowing from the growth of export (GEXP) and income (PGDP) to HIV prevalence. Thus, reject the null hypothesis. This means that the growth of export in Kenya is a determinant of the prevalence of the HIV disease. This is a major contribution of this study to knowledge. Income (PGDP) “Granger-causes” HIV/AIDS. This result supports the income-led HIV prevalence hypothesis. Also, the results seem to support the theoretical premise that sex is a normal good whose demand is determined by the income of the demander and its own price. The higher the income of the demander, the higher the risky sex demanded through the keeping of “pockets of sex partners”. From the supply nexus, income also drives the supply of risky sex; this in turn facilitates the spread of the disease. This has serious policy implications. This suggests that economic prosperity boost the demand for risky sex while poverty drives the supply of risky sex. There is no reverse causality from HIV prevalence to income (PGDP).

There is also a statistically significant unidirectional causality flowing from HIV prevalence to the education capital variable (GPRS). This is not surprising because during the epidemic, Kenya was one of the first countries that made primary education compulsory and with incentives. Therefore, as the epidemic ascends the upward trajectory, primary school enrolment was also increasing.

HIV prevalence “Granger” causes life expectancy but life expectancy (LEP) does not “Granger” cause HIV prevalence. This means that HIV prevalence has sinister impacts on the life expectancy of the population in Kenya (See [31] for details). This might be the reason why our results indicate a significant impact at the 1% level.

There is no causality from population growth (PPG) to HIV prevalence but causality runs from HIV prevalence to PPG in Kenya. Population growth (PPG) consists of mortality, fertility and migration. This implies that as the tempo of the epidemic heightens in Kenya, population growth dynamics are severely impacted upon through its impact on mortality, fertility and migration. The empirical evidences on this are overwhelming in both the economic and public health literatures [2, 24 and 32].

In Kenya, HIV prevalence “Granger causes” P15 at 1% level of significance which connotes that HIV prevalence depletes the young people in the population. A corollary explanation to this is that HIV prevalence has impacted severely and negatively on the proportion of the population that is in their “prime age”. Hence, the results further suggest that as HIV/AIDS escalates into widespread epidemic, the proportion of the population under 15 (P15) is depleted.

There exists a bidirectional causality between the incidence of tuberculosis and HIV prevalence. This validates the empirical findings in the health literature that both tuberculosis and HIV prevalence are opportunistic diseases for the incidence and prevalence of each other. Equation (27) and (28) are corroborated by our findings.

Conclusion and Recommendations

This study investigated the multi-dimensional impacts of the HIV/AIDS epidemic on the growth and performance of the Kenyan economy for the period 1990 to 2013. The main objective of the study is to evaluate the type and direction of the relationship existing between HIV prevalence and selected indicators. The Wiener-Granger causality test was applied as the estimation technique in the determination of the causal linkages among the selected series. The selected indicators were categorized into demographic, economic, education and health series.

The principal results obtained from the study include the followings: First, there is bidirectional (two-way statistically significant) causality existing between HIV prevalence and the following indicators (urbanization and tuberculosis). Second, there is a one-way statistically significant causality from HIV prevalence to gross primary school enrolment, population growth, proportion of the population under the age of 15 years, proportion of the population that is rural, life expectancy at birth and under-five mortality. Hence, the study concludes that HIV prevalence Granger-causes gross primary school enrolment, life expectancy at birth, population growth, proportion of the population under the age of 15 years and proportion of the population that is rural. Also, the HIV epidemic "Granger-causes" the incidence of tuberculosis (tuberculosis meningitis, intracerebral and Mycobacterium tuberculosis), and urbanization. Third, there is a one-way causal linkage flowing from the growth of export and income to HIV prevalence. This implies that these indicators are among the determinants of the prevalence of the disease in Kenya. But there is no causality between HIV prevalence and gross domestic savings rate and economic growth in Kenya. This means that HIV epidemic has not assumed a sinister dimension in Kenya. The study recommends that in order to obtain sustainable results, government, non-governmental organizations and donor agencies should committedly and consistently intervene in the mitigation of the epidemic.

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IDENTIFICATION OF SUITABLE PARAMETERS OF RESEARCH IN THE CZECH E-COMMERCE ENVIRONMENT

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Abstract: *The aim of this paper is to formulate recommendations for successful conduction of a questionnaire survey in field of the Czech e-commerce based on in-depth interviews performed with representatives of ten companies. The paper concludes that a questionnaire survey with estimated response rate of 15-30 % is feasible under certain conditions and outlines a specific procedure of how to achieve that. The key of successful conduction of a survey was identified to be winning the trust of respondents (e.g. auspices of a professional association in the field) and appropriate way of addressing respondents (via the professional network LinkedIn, email and phone). Due to unpopularity of questionnaires, personal interviews seem to lead to a higher response rate. Offering the final results of intended research can be an appropriate motivational element for respondents. Based on the previous research, the paper also identifies optimal time of invitation of respondents for participation in a survey (between 16:01 and 20:00 on Fridays). Appropriate formulation of questions and answer options is also important, as well as anonymousness of gathered data.*

Keywords: *E-commerce, Strategic management, Qualitative research, Grounded theory.*

JEL Classification: *M19, B49.*

1 Introduction

This paper deals with a qualitative research conducted in order to fulfill aims and goals of a dissertation of the first author of the paper. The topic of the dissertation is Strategic management in dynamic environment of the Czech e-commerce. The term “Czech e-commerce” represents Czech-based companies achieving majority of sales using instruments of electronic communication in the territory of the Czech Republic. There are approximately 37,000 companies⁵ on the Czech e-commerce market. These companies are virtually impossible to reach in a systematic way. There is no common database. In the Czech Republic, however, there is a branch association called Association for Electronic Commerce (hereinafter “APEK”) associating more than 340 companies with a total market share of 65–70 %.⁶

Companies in the field of e-commerce differ from other companies by a specific character of the environment in terms of its development dynamics. There is no particular specification of the term “dynamic environment”, but most authors using this term are referring to the field of technological companies and especially to companies operating in the field of e-commerce (e.g. [16, 19, 12, 10]). The dynamics of development of the environment manifests especially in high intensity of rivalry. Companies (respondents) are mistrustful and uncommunicative. These aspects make the field of the Czech e-commerce specific in terms of research of any kind.

⁵ Qualified estimation by APEK.

⁶ Qualified estimation by APEK.

2 Statement of a problem

Lack of general knowledge and recommendations regarding a research in the environment of e-commerce was the reason for conducting a survey that would yield information serving as a basis for formulation of recommendations for further research in this environment.

In general, there are two basic methods of conducting a survey in order to obtain primary data. These methods differ based on the role of the researcher [32], who is either present (personal interviewing) or distant (questionnaire survey).

The forms of surveys have changed in connection with a massive spread of the internet. In the past, surveys were conducted mainly via a post mail [25] but also using the PAPI (pen and paper interview) and the CATI (computer aided telephone interviews) forms. Nowadays, the most commonly used method is the CAWI (computer aided web interviews) [2].

New electronic instruments of communication among researchers and respondents have also raised the question of the form of questionnaires. Electronic instruments offer wider range of survey modes including email, online tools (web-based), SMS-based and even mobile-app-based surveys [1].

Dommeyer and Moriarty [5] claim that web-based questionnaires (they call them *embedded*) have almost five times higher response rate than questionnaires attached to an email.

According to Keusch [15], the rising popularity of online surveys in marketing research precipitates a flood of email invitations requesting participation from potential respondents. As a result, response rates are diminishing.

Design of questionnaire surveys is also important. Puleston [24] claims that the most common reason cited by respondents for no longer taking surveys is that they find them boring.

3 Methods

The aim of this paper is to validate feasibility of a survey and formulate recommendations for successful conduction of both questionnaire surveys and in-depth interviews. Objectives of the research are:

1. To validate feasibility of a successful survey on a limited sample of respondents from the specific environment of the Czech e-commerce.
2. To identify the best way of conducting both, in-depth interviews and questionnaire surveys.

Research questions related to these objectives are:

1. Is a survey in field of the Czech e-commerce feasible considering its specifics? And if so, under what circumstances?
2. How to win the trust of respondents, who are inherently distrustful and uncommunicative?
3. What are the motivators increasing willingness to participate in a survey?

The research was conducted using qualitative endogenous research method - personal interviewing. The technique of the research was in-depth, semi-structured interviews, in which the interviewer led the conversation partly according to a script and added other questions when appropriate or necessary [17]. Cognitive Aspects of Survey Methodology (CASM), as characterized by Schwarz [28] or Vinopal [31], were also taken into consideration.

Respondents were selected through a purposeful, deliberate choice, meeting certain predefined criteria – in this case being members of the branch organization APEK. Thus, according to Miovský [18], it was an incomplete, unrepresentative, non-probabilistic survey, in which the method of purposeful selection is the most common method used in the application of a qualitative research. Respondents represented both owners and top managers responsible for strategic management in their companies. The number of interviewed companies was derived based on the extent to which the research succeeded in fulfilling defined objectives. Respondents were contacted via email, LinkedIn and phone (cold calling). The research was conducted in locations that were determined by respondents. It was the company headquarters in all cases.

Scenario of the in-depth interviews was designed in such a manner that the total time of one interview ranged from 30 to 45 minutes. During the interviews there were acquired voice recordings. Recording audio tracks was done using a software tool called Voice Recording through a phone LG G2. For transcriptions of the audio tracks there was utilized a software called Transcribe. Transcriptions were reduced using the first order reduction method as defined by Miovský [18], omitting those parts of interviews that were unrelated to the subject of the research, so that they do not disclose certain identifiable, explicit information, or could lead to the identification of particular respondents.

Subsequently, evaluation of transcriptions was performed based on the Grounded Theory [29]. Transcriptions were analyzed by means of open coding, during which the data was divided into certain segments forming logical units (meaning units), which were variously comprehensive. Under the open coding these semantic units are marked by terms (codes) that already contain a certain level of conceptualization, therefore apt capturing of the essence of the marked phenomenon [7].

Transcriptions were dismembered on parts of meaning and terms were subsequently grouped in categories. Categories were further developed by seeking their properties that were placed on dimensional scales [7]. Dimensions are based on categories. They are always individually formulated with regards to the character of categories in order to create a complementary semantic unit. Creation and specification of categories (and their dimensions) helps the subsequent abstraction within the emerging theory [9].

4 Problem solving

Results of the research outlined the optimal way of conducting a questionnaire survey and also yielded knowledge regarding conduction of a qualitative research through personal interviewing. The “acceptance rate” (acceptance of invitation by respondents) was 33 %.

4.1 Preferred form of a research in general

Questionnaire surveys in general are not popular among respondents. Their attitude to questionnaires is indifferent at best; they do not care about them. In most cases, the attitude of respondents is even negative. The main reason is the lack of motivation of respondents to participate in a survey. They do not see an added value for themselves.

Filling out a questionnaire does not represent effectively spent time because most researchers fail in explanation of the reason for which the survey is conducted; participation does not make any sense for respondents.

Tab. 1: Preferred form of a research in general

	Terms	Preference
1.	Preference of an interview over a questionnaire survey	Interview
2.	An interview is more pleasant than a questionnaire survey	Interview
3.	Aversion to filling-in questionnaires	Interview
4.	An interview brings spontaneous answers	Interview
5.	A questionnaire survey brings thought-out answers	Interview
6.	Scales in a questionnaire survey force respondents to think and thus are difficult for them	Interview
7.	Answers in the form of scales are influenced by respondents' ability not to see the world in black and white	Interview

Source: Survey results

Other reasons are rather practical. Respondents are of the opinion that a questionnaire survey is more difficult than an interview because it requires a greater effort on their part. Scales in answers force them to think more precisely whilst during an interview they can let ideas flow freely. They feel their answers in a questionnaire are schematic and inaccurate due to preset scales. Answers are also influenced by personal characteristics in the sense that respondents prone to a black and white vision of the world, tend to choose extreme options, while the others in the same situation choose an answer closer to the center of the scale. Some respondents are aware that this leads to a certain distortion of results, which in their eyes also questions the meaningfulness of filling out questionnaires in general.

So, even though the personal interviewing is more demanding for respondents in terms of its duration and scheduling the interview, it is preferred over a questionnaire survey.

4.2 Impact on gaining trust of respondents

The research was conducted under the auspices of the APEK, which virtually all respondents (who were members of this association) reported as critical, the most important aspect for winning their agreement to participate. Appropriate way of addressing respondents and description of the purpose of the research is also critical. Appropriate way of addressing does not only mean a formulation of words, but also a form of invitation. Distribution of questionnaire surveys via e-mail is perceived as strongly negative; it is too impersonal which together with an unknown person of the sender reduces their willingness to participate in the survey to zero.

Tab. 2: Impact on gaining trust of respondents

	Terms	Impact
1.	A questionnaire should not go into details, it would discourage respondents	Medium
2.	A questionnaire should not check information that may be embarrassing or secret	Medium
3.	Anonymity of a questionnaire	Medium
4.	Auspices of the research by the branch organization APEK	Strongly positive
5.	Suitable way of addressing respondents, description of the purpose of the survey	Positive
6.	Selecting the appropriate communication channel for reaching respondents	Positive
7.	Unknown researcher and a mass distribution of questionnaires (via email)	Strongly negative

Source: Survey results

On the contrary, invitation via professional network LinkedIn was rated very positively; respondents had the possibility of immediate verification of identity of the researcher. Their willingness to participate in the survey also increased by phone contacting, which has, by its nature, higher urgency than an email communication. Contacting respondents via telephone underlined the importance of individual respondents (direct invitation), and from the psychological point of view it was more difficult for respondents to refuse the researcher.

In terms of gaining the trust of respondents in the context of the presented questionnaire, it was positively perceived that questions do not go into details, which would discourage respondents. Questions in the questionnaire are directed towards the strategic management level, which is not perceived as too sensitive by respondents. There is no question in the questionnaire that would be identified as unpleasant or otherwise discouraging respondents from filling out the questionnaire. Despite the fact that questions do not go into details, anonymity of the questionnaire was positively perceived by respondents.

4.3 Motivation of respondents to participate in a survey

With regard to the fact that respondents are business owners or top managers, a material motivation for participation in the survey is virtually impossible. This applies to any type of research; a questionnaire survey conducted via electronic instruments is also limited in the way of its distribution, which does not allow the transfer of small gifts etc. Most respondents stated that there is generally nothing that could motivate them to fill out a questionnaire, because they see no added value for themselves in it. Most respondents, however, admit that offering results may represent a good motivation, specifically in connection with the final results of the dissertation for which the research will be conducted. That could be the missing added value. Some respondents are motivated by the possibility of contribution to the “collective knowledge” within the association (APEK), which respondents are members of.

Tab. 3: Motivation of respondents to participate in a survey

	Terms	Influence on motivation
1.	There is a problem in motivation of respondents	Low
2.	The difficulty of a material motivation grows with respondents' social status	Low
3.	Respondents do not see an added value for themselves in filling out questionnaires	None
4.	Respondents are receiving questionnaires too often	None
5.	A possibility of contributing to the "collective knowledge" within the association, which respondents are members of	Medium
6.	The importance of a cover letter	Higher
7.	Appropriately formulated questions and answers (reasonable scaling of responses)	Medium
8.	Reluctance to be another in a series of respondents	None
9.	Good motivation in the form of results of the dissertation (a new methodology of strategic management)	Higher
10.	Interest in results of a survey to compare with other companies	Medium
11.	Good motivation is in the form of something that can potentially "push forward" respondents	Higher

Source: Survey results

For the primary decision whether to start filling out a questionnaire, an invitation letter explaining the meaning of the research is important according to respondents. They receive too many requests to participate in questionnaire surveys. It is necessary for a researcher to stand out.

In terms of retention of respondents (i.e. minimization of incompletely filled-in questionnaires) an appropriate formulation of questions and answers is important. Questions should be clearly formulated and scales of answers should be constructed in a way that does not force respondents to deeper analyzing. A scale of ten values was presented as an example of unpleasant scaling. It is hard to identify an apt answer on such a wide scale, which is discouraging for accurately thinking respondents. Rather than choosing an inaccurate answer, they will not fill out the questionnaire at all, or they will not finish it. A scale of five values was identified as optimal by respondents.

5 Discussion

Based on the analysis of transcriptions of conducted interviews there were found answers that are presented in the context of the original questions and discussed with results of other studies:

Is a survey in field of the Czech e-commerce feasible considering its specifics, and if so, under what circumstances?

A survey in field of the Czech e-commerce is feasible under certain conditions. A questionnaire survey is problematic to a certain extent, but not to a greater extent than in any other environment. Even though a personal interviewing is more demanding for respondents in terms of its duration and scheduling the interview, it is preferred over a questionnaire survey. It should be pointed out that this conclusion may be limited by the fact that it is based on opinions of respondents who agreed with the interview. The key role

in successful conduction of a survey in the environment of the Czech e-commerce plays winning the trust of respondents.

How to win trust of respondents, who are inherently mistrustful and uncommunicative (legal protection of information, data anonymization etc.)?

For gaining the trust of respondents, the auspices of the APEK is essential. This conclusion is in accordance with results of a survey conducted by Parkinson et al. [22], who claim that using a known and trusted network of professionals to endorse a survey significantly enhances response rates. However, it must be emphasized that the APEK is a private organization serving its own interests and interests of its members. A researcher with the intention of conducting a survey in the field of the Czech e-commerce should contact the APEK, explain his/her motivation as well as aims and goals of intended survey and try to find a common interest in its results. If the results are potentially interesting for the APEK, it will likely patronize the survey. Of course, it assumes willingness of the researcher to share the results in the first place.

Appropriate way of approaching respondents is also important; it should be direct and personalized, not through a mass distribution list. The best way of addressing seems to be via the professional network LinkedIn, as well as personal email to particular respondents. If low response rates are expected or if – like in the case of the Czech e-commerce – the basic sample of respondents is limited, personalization may be an important strategy to apply [26]. This conclusion is also supported with the results of a study on parameters that can influence responses to web-based surveys conducted by Sánchez-Fernández et al. [27].

Inviting respondents via email should be complemented with an invitation letter (text within the email) explaining the meaning of the research. In some cases, the choice of invitation format can have a significant impact on the response rate [30]. The invitation letter should contain a plea for help. Petrovčič et al. [23] proved the hypothesis that a plea for help is an effective response inducing element in email invitations. This conclusion is in accordance with results of a survey conducted by Felix et al. [6] who claim that the use of a “pleading” tone to email invitations may increase response to a web-based survey.

In order to maximize the response rate of a questionnaire survey, it is appropriate to complement the invitation for participation with a phone call. According to Jolson [14], this pre-notification may lead to a significant increase of the response rate, which may exceed 50 %. Even though Jolson’s conclusions are based on a research regarding questionnaire surveys conducted via a post mail, there is no apparent reason why it should not be applicable for surveys nowadays.

Another important aspect influencing response rate represents an appropriate timing. Paraschiv [21] identified a time interval from 16:01 to 20:00 as the most proper for inviting respondents to participate in an online survey with 24.4 % of total number of clicks. Between 12:01 and 16:00, there were 23.7 % of respondents who clicked to access the survey. On the other hand, the time interval with the least invitation accesses was between 4:01 and 8:00, where there were only 3.4 % of clicks. From the day of the week point of view, it was noticed that respondents are most probable to accept the email invitation on Fridays – there were 24.5 % of respondents who entered the survey on Fridays. The next two week days, from the response rate point of view, are Thursdays and Saturdays with 15.3 % resp. 15.2 % of clicks.

Not only the initial motivation but also retaining respondents during a questionnaire survey is critical. Questions should be clearly formulated and scales of answers should be constructed in a way that does not force respondents to deeper analysis. According to a research conducted by Dillman et al. [4], shorter and respondent-friendly forms increase completion rate by about 11.9 %. A scale of five values (either a semantic differential or a Likert scale) was identified as optimum. Order and overall system of questions also impacts the completion rate. Hansen et al. [8] tested how a two-staged question (first question is at the beginning of a questionnaire and refers to additional question on the same matter at the end of the questionnaire), which is, at the same time, supposedly highly interesting to respondents, impacts a survey completion. According to their conclusions, it produces an 8% higher survey completion rate.

A survey length also influences respondents' willingness to participate in a future survey. Respondents who took longer surveys were more likely to accept an invitation to participate in a future survey [13]. However, longer surveys may cause reduction of the completion rate, so it should be well-balanced.

Data anonymization is perceived as a plus. So, if possible, it is advisable to anonymize intended survey, and also declare its anonymity. This conclusion slightly differs from result of a research conducted by Murdoch et al. [20] on general population. According to their conclusion, greater privacy and larger incentives do not necessarily result in higher disclosure rates of sensitive information than lesser privacy and lower incentives. As to in-depth interviews, a non-disclosure agreement should be offered to respondents in case of intention to gain potentially sensitive information.

A rational expectation of achievable response rate of a questionnaire survey, based on acquired information and experience from conducted survey, could range between 15-30 % in case of following all recommended procedures.

What are motivators increasing willingness of participation in a survey?

Promise of providing respondents with results turned out to be one of the few effective motivational elements. It depends on objectives of particular survey (researcher may be looking for information that is potentially not interesting for respondents) and related sample of respondents.

Cottrell et al. [3] conducted a research on maximizing the response rate from general population to questionnaire surveys, testing an assumption that reducing the length of a questionnaire and offering an incentive may lead to higher response rate. They made two versions of the same questionnaire (standard and abbreviated) and tested it on four groups containing 200 respondents each (standard version, abbreviated version, without an incentive and with an incentive in form of a prize draw entry for a £100 voucher). There were no significant differences in response rates between the four groups ($p = 0.447$). In contrast to this conclusion, Sahlqvist et al. [26] found that shortening a relatively lengthy questionnaire significantly increased the response rate.

Conclusion

Results of the research outlined the optimal way of conduction of a survey (both a questionnaire survey and a qualitative research through personal interviewing) in the specific environment of the Czech e-commerce. Key motivators for participation in a survey were identified along with specific procedures of approaching respondents using new instruments of addressing respondents.

A survey in field of the Czech e-commerce is feasible under certain conditions. The key role in successful conduction of a survey plays winning the trust of respondents. For gaining the trust of respondents, the auspices of the APEK is essential. Addressing respondents should be direct and personalized, not through a mass distribution list. The best way of addressing seems to be via the professional network LinkedIn, as well as personal email to particular respondents. Approaching respondents via email should be complemented with an invitation letter explaining the objectives of the research. In order to maximize the response rate of a questionnaire survey, it is appropriate to complement the invitation for participation with a phone call. The most proper time for inviting respondents from general population to participate in an online survey is between 16:01 and 20:00 on Fridays. Questions should be clearly formulated and scales of answers should be constructed in a way that does not force respondents to deeper analyses. Applying a two-staged question should be considered. It is advisable to anonymize an intended survey, and to declare its anonymity. As to in-depth interviews, a non-disclosure agreement should be offered to respondents in case of intention to gain potentially sensitive information. If possible, respondents should be offered results of intended survey – level of motivation depends on potential usefulness of those results.

A rational expectation of achievable response rate of a questionnaire survey, based on acquired information and experience from conducted interviews, could range between 15-30 % in case of following all recommended procedures.

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EVALUATING THE EFFECT OF IFRS ADOPTION ON THE FINANCIAL POSITION OF COMMERCIAL BANKS IN NIGERIA

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Abstract: *This study is designed to evaluate the effect of the adoption of the International Financial Reporting Standards (IFRS) on the financial position of banks in Nigeria. In order to achieve this, we adopted a quantitative research design that primarily focused on the construction of quantitative data by obtaining the required information on Total Assets, Liabilities and Equities needed for the purpose of data analysis from the annual reports and accounts of three sampled banks in Nigeria. Analysis was based on periods before and after IFRS adoption and was done using the Ordinary Least Square technique. Findings from this study show among others that IFRS adoption significantly and positively affected the financial position of the sample banks in Nigeria. On the basis of our findings, we recommend that all organizations, as a matter of urgency, should be made by law to comply with the provisions of IFRS, and the continuous training and retraining of accountants, preparers of financial statements and all stakeholders must remain a re-occurring decimal generally in corporate entities, and in banks (in particular) in Nigeria.*

Keywords: *IFRS, Corporate Financial Reporting, IAS, NGAAP, Assets, Liability, Equity.*

JEL Classification: *M41, M49, G21.*

Introduction

Accounting has severally been described as the language of business. This is simply because accounting focuses on identifying, classifying, summarizing and interpreting economic and other relevant information about reporting entities such that intended users of such information can make informed judgments. No doubt, through financial statements, the overall well being as well as the state of affairs of organizations is communicated to stakeholders of all manners and kinds. Thus, with accounting, one is expected to have the required and relevant information that would enable one to understand organizations better and be able to make comparison between and among firms, industries etc.

According to [26], investors rely on the information content of financial statements which usually is supplied by management. The implication of the above is that investors' decisions on whether or not to invest on a firm or group of firms are basically based on the available information at their disposal. This again seemed to be a function of what may have been reported by management (regarding assets and liabilities) in the annual reports and accounts of organizations. Although, there seems to be a general view that regulatory provisions (IFRS) have the tendency to positively affect financial positions of an organization [21 and 27], contrarily, there are claims that regulatory provisions may still have negative effect on the financial positions of organizations due to cross-country differentials in the implementation of such regulatory provisions. Thus, this study is designed to evaluate whether or not the adoption of International Financial Reporting Standards (IFRS) has negative or positive effect on the financial position of banks in Nigeria.

1 Problem Statement and Research Questions

For the purpose of uniformity and reliability, financial statements are usually prepared on the basis of certain provisions/regulatory standards and conventions in accounting. Such standards are sets of information system prepared by appropriate regulatory bodies through which monetized and financial information are generated for economic, social and political decisions [10, and 12]. Before now, most countries have their local or national standards designed to cater for the immediate and domestic transactions peculiar to different specific nations. Thus, in Nigeria for instance, before the adoption of the International Financial reporting Standards (IFRS), the country had in place, the Statements of Accounting Standards (SAS) which was developed and issued by the Nigerian Accounting Standards Boards (NASB) [20 and 26] and designed for use by reporting entities in Nigeria, such that a financial statement prepared in Nigeria tend to be different in terms of treatments of transactions and disclosures with those prepared under different standards in other countries of the world. It was in view of the above that [16] maintained that due to nationalistic approaches to accounting standard setting, financial statements issued in Japan under the provisions of the Japanese Accounting Standards for instance tended to be entirely different from what was obtainable in Germany especially in the area of accounting treatments to transactions and disclosure requirements.

However, owing to globalization and the attendant integration of capital markets across the globe [25 and 22], the main objectives of understandability, reliability, relevance and comparability [16] which financial statements were originally designed to achieve seemed to have been threatened. This is because in situations where various countries prepare financial statements following the requirements/provisions of different accounting standards (local GAAPs), the fact that users may be making wrong comparisons could no longer be overemphasized. Thus, with the application of different standards in various countries, accounting started communicating in different languages; thereby creating problems of understanding. This to a large extent affected the type of comparison made by investors and analysts across countries and jurisdictions. This also affected the level of reliance on the information content of financial statements. Supporting the views of [13], [27] opined that variations in the pattern of financial reporting among countries and regions stood in the way of financial reporting comparability among nations, thereby making the necessity of harmonization and standardization to be felt globally.

With the above in mind, the growing technological transformations worldwide along with the continuous calls for a set of global accounting standards that would guarantee a common language of business across the globe through what [16] described as a single set of accounting and financial reporting standards, led to the development of the International Financial Reporting Standards (IFRS) which is expected to be used by virtually most countries across the globe. It is in view of this that [20] opined that IFRS adoption has become a global issue resulting from the desire for companies financial statements to be uniformed, reliable and comparable.

Through financial statements, the assets, liabilities, value added, cash flows as well as changes in the equity positions of organizations could be ascertained [9]. This information according to [20] tends to be useful to a wide range of users in the area of informed judgment and economic decision making. Since there is this argument that the availability of accounting information in the financial reports and accounts of firms

to a large extent reduces dissemination of information asymmetry in addition to improving pricing of securities thereby guaranteeing efficiency in the allocation of the scarce resources of investors firms and others [24, 20, and 27], the adoption and implementation of IFRS is therefore believed to have the capacity of reducing moral hazards in financial statements which according to [3] results from earnings management through accrual policy.

Inherent in IFRS adoption is the implementation of the principles of fair value accounting [18], a topic that has also attracted series of academic debates over the years [15]. By fair value accounting, transactions with respect to assets and liabilities according to [19] are assumed to have taken place in the principal or most advantageous market. Thus, fair values reflect the most current and complete expectations and estimations of the values of assets or obligations for entities at a given point in time [8].

It is therefore expected that with the move by Nigeria and other countries of the world to adopt IFRS, issues on accounting treatments and disclosures needed to be closely and empirically evaluated to ascertain the extent to which IFRS adoption had affected the fair values of assets or liabilities recorded in the accounts of quoted firms in Nigeria. It is on this ground that this study is designed to evaluate the effect of the adoption of IFRS on the financial position of reporting entities in Nigeria. This is because with this, one could empirically ascertain whether or not the adoption of IFRS would have any impact on the fair values of assets, liabilities and equities of Nigerian banks – the major items disclosed in the statement of financial positions of reporting entities. Our focus in this study as mentioned above is on banks since this sector constitute the first set of reporting entities that complied with the provisions of IFRS in Nigeria.

Research Question

In light of the above, we seek to find answers to the following research questions which have been formulated to guide this study:

1. *What is the statistical association between IFRS adoption and the assets of Banks in Nigeria?*
2. *What is the relationship between IFRS adoption and the equities of banks in Nigeria*
3. *How does the adoption of IFRS affect the liabilities of banks in Nigeria?*

Conceptual Underpinning and Literature Review

The IFRS are sets of high quality principles based standards designed by the International Accounting Standards Board (IASB) for general purpose financial reporting and is currently meeting the aspirations of the world's increasingly integrated markets [16; 20; 17; 2; 23 and 1]. To date, several studies both in developed and developing economies have been conducted to ascertain or evaluate the impact of the adoption of IFRS on multi-faceted issues. For instance, [5] carried out a study to find out the effects of IFRS adoption on the quality of financial reporting among European banks. In this study, emphasis was placed on analyzing how changes in the measurement and recognition of loan loss provision, which according to [5] is the main operating accrual item among the sampled banks, affects income smoothing behaviour as well as timely loss recognition among banks. The study however found that IFRS adoption significantly reduced the ability of banks to reduce income smoothing. In a different study, [4] examined the impact of IFRS on the Indian banking industry by critically analyzing selected variables in the financial statements of banks in India. The study concluded that IFRS adoption would have major impact on the

selected variables for the study in addition to an expected wide range effects at various levels of the IT systems and architecture in India [4].

Following the adoption of IFRS in Nigeria, [18] examined the perception of financial auditors on fair value accounting in the country. The study however found that with the adoption of IFRS, financial statements prepared under fair value accounting tend to be more relevant than those prepared under the historical cost accounting approach which was the focus of the Nigerian GAAP (Statement of Accounting Standards) previously in operation in Nigeria before the adoption of IFRS.

In another study, [7] examined the insights of academics and practitioners on the adoption of IFRS in Nigeria and found that despite the fact that the respondents used in the study believed that Nigeria was yet to be ready for the adoption and implementation of IFRS, the fact that IFRS cannot be overlooked or rejected was clearly evident in the views of the respondents, as such, the study recommended the immediate review or accounting curriculum in tertiary institutions in the country to incorporate IFRS and its implementation dimensions [7]. Similarly, in a study that examined the implications of IFRS adoption on SMEs in Nigeria, [17] chronicled the challenges imminent in the adoption and implementation decision to include people, systems, process, business and reporting. Following the findings of their study, [17] recommended among others that apart from including IFRS courses in the curriculum of higher institutions of learning in the country, SMEs should be ready to always be up to date with the pronouncements, reviews and updates published by the international Accounting Standards Board (IASB) and comply accordingly from time to time.

In a cross country analysis, [21] investigated the effects which changes in accounting standards would have on earnings management by modifying the Jones [11] model and obtaining data from banks both in Nigeria (15 banks) and Malaysia (8 banks) for a period of four years. The study found that the new standards impacted more significantly and positively on the quality of accounting information of banks when compared to previous local standards used respectively by both countries.

[23] assessed the extent to which quoted banks in Nigeria complied with the IFRS framework on its first time adoption by adopting the ex-post facto and survey research designs. In addition to the multivariate regression and the chi-square techniques, the study also employed the qualitative grading system to determine the degree to which sampled banks have complied as well as the effect of the factors responsible for the compliance with IFRS 1. Empirical evidence from this study showed that despite the fact that Nigerian banks complied with the provisions of the IFRS framework on first time adoption (to some extent), the exercise of switching from the Nigerian GAAP to IFRS still faced multifaceted challenges.

In a more recent study, [25], examined the impact of IFRS on the market performance of food and beverages manufacturing firms in Nigeria. The performance variables selected for this study included Price Earnings Ratio, Earnings Per Share, and Dividend Yield. The findings from this study based on the comparative analysis of the pre and post IFRS era using the t-test indicated that the difference between market performance of the pre and post IFRS periods were not significant. This according to [25] is a suggestion that a weak correlation exist between IFRS adoption and the market performance of beverage manufacturing firms in Nigeria. Contrary to this finding, the study of [1] on the impact of IFRS adoption on the financial reporting practices in Nigeria found that the adoption

of IFRS brought about increased comparability and better decision making among banks in the country since quantitative difference in the financial reports prepared under the Nigerian GAAP and the IAS/IFRS were found to be statistically significant.

Motivated by the results from prior studies on the impact of IFRS on the financial statements of banks, [27], examined the effect of IFRS adoption on the financial statements of banks. Focus in this study was basically on the income statement. Findings from this study according to [27], revealed that IFRS adoption had positively impacted on profitability and growth potential of Nigerian banks in addition to bringing instability in income statement figures.

The result of the literature review suggests that prior studies on IFRS adoption produced mixed findings/results and that to date, empirical evidence on the impact of IFRS adoption on the financial position of reporting entities tend to be scanty or near non-existence in Nigeria, an empirical gap tend to have been created, hence, this study.

2 Methods

This paper adopted a quantitative research design which focuses primarily on the construction of quantitative data. Quantitative design employs measurement that can be quantifiable [14]. However, amidst the twenty-three (23) commercial banks as at 31st July, 2015, three (3) banks namely First Bank of Nigeria Plc, Access Bank Plc and Guaranty Trust Bank Plc were chosen.

2.1 Reasons For Choice of Sampled Banks

The rationale for choosing the sampled banks of this study was based on the fact that they were among the first set of banks that transited from Nigerian GAAP (SAS) to IFRS. Thus, they have more years/data for which their financial reports were prepared in compliance with the provisions of IFRS for the periods under investigation (Four years before IFRS adoption, and Four years after IFRS adoption). In view of the above, we obtained data from the Annual Reports and Accounts of the sampled banks of this study.

2.2 Model Specification and Data Choice

Data on Total Assets, Liabilities and Equities were obtained from the Annual Reports and Accounts of the sampled banks for the period before and after IFRS adoption. Assets, liabilities and equities are of paramount concern not just to the organizations, but also, to investors, as they constitute part of the basis for assessing the financial health or position of an organization. Owing to the above assertion, we specified a model that expressed total asset as a function of total liabilities and equities. The model specification was written mathematically as:

$$TASSET = F(TLIAB, TEQUITY, IFRS_{dum}) \quad Eq. 1$$

Assuming a linear relationship between the variables in Eq. 1 above, the explicit form can be rewritten as follows:

$$TASSET = \alpha_0 + \alpha_1 TLIAB + \alpha_2 TEQUITY + \alpha_3 IFRS_{dum} + \varepsilon_t \quad Eq. 2$$

Where:

TASSETS = Total Assets (this represents the addition of the current and non-current assets of sampled firms at time t)

TLIAB = Total Liabilities (this represents the addition of current and non-current liabilities of sampled firms at time t)

TEQUITY	=	Total Equities (this represents the equities of sampled firms at time t)
IFRS _{dum}	=	(Proxied by 1 for periods after adoption, otherwise 0)
$\alpha_1, \alpha_2, \alpha_3$	=	Regression Coefficients
ε_t	=	Error term

The regression analysis was observed for the period before (2007 – 2010) and period after (2011-2014) IFRS adoption. The Ordinary Least Square statistical tool was used in our analysis through the Statistical Package for Social Sciences (SPSS).

3 Problem Solving/Discussion of Findings

This section dealt with the presentation and analysis of data alongside with the discussion or the results. In our analysis, we presented the descriptive statistics of the variables, which was followed by the regression results. Nevertheless, the descriptive statistics (mean, standard deviation and standard error mean) and the Pearson correlation result for both periods (before and after IFRS adoption) were used to find answers to the research questions earlier formulated. For the purpose of clarity, the research questions have been restated and the results are presented in Tables 1-3.

a. Research Question 1: *What is the statistical association between IFRS adoption and the assets of Banks in Nigeria?*

To answer this research question, the Pearson correlation was conducted.

Tab. 1: Pearson correlation of the association between IFRS adoption and the assets of banks in Nigeria

Variable	N	R	P	Remark
IFRS Adoption*Assets Association	12	0.221	0.002	Associated

Source: SPSS Output, 2015

Table 1 above shows the Pearson correlation result which reveals the statistical association between IFRS adoption and the total assets of banks in Nigeria. As indicated above, the Pearson R (0.221) is greater than the p-value (0.002). The implication of the above is that there is statistical association between IFRS adoption and the assets of banks in Nigeria.

b. Research Question 2: *What is the relationship between IFRS adoption and the equities of banks in Nigeria?*

To answer this research question, Pearson correlation was also conducted.

Tab. 2: Pearson correlation of the association between IFRS adoption and the equities of banks in Nigeria

Variable	N	R	P	Remark
IFRS Adoption*Equities Relationship	12	0.015	0.002	Associated

Source: SPSS Output, 2015

Table 2 above presents the Pearson correlation result which brings to light, the statistical association between IFRS adoption and the equities of banks in Nigeria. As indicated above, the Pearson R (0.015) is greater than the p-value (0.002). This empirical evidence thus suggests that there is significant relationship between IFRS adoption and the equities of banks in Nigeria.

c. Research Question 3: How does the adoption of IFRS affect the liabilities of banks in Nigeria?

To answer this research question, a descriptive statistics was conducted. The mean score for acceptability or comparability is based on size of the mean for each period (before and after IFRS adoption).

Tab. 3: Descriptive Statistics for Total Liabilities for the sampled Banks

	N	Mean	Std. Dev.	Std. Error Mean
Liabilities*Before IFRS Adoption	12	51723379.5	78634689.9	229846.0
Liabilities*After IFRS Adoption	12	117347031.6	151135964.4	266018.7

Source: SPSS Output, 2015

Table 3 shows the descriptive statistics for total liabilities for the sampled banks. From Table 3, the mean is ₦51,723,379.5 and ₦117,347,031 for the period before and after IFRS adoption for the sampled banks. The mean value suggests that total liabilities under IFRS are greater than that reported by the sampled banks in periods before IFRS adoption in Nigeria. This situation is further depicted by the standard deviation and standard error mean of 151135964.4 and 266018.7 respectively for the period after IFRS adoption and 78634689.9 and 229846.0 respectively for the period before IFRS adoption. It therefore means that liabilities of banks have been affected in an incremental magnitude especially after IFRS adoption.

3.1 Regression Results

In this section, we presented the results of the coefficients for the period before and after IFRS adoption for the sampled banks.

Tab. 4: Coefficients for the period before IFRS Adoption for sampled Banks

Variables	Coefficients	t-statistic	Prob.
Constant	1881424.544	1.895	0.095
TLIAB	-0.006	-0.449	0.665
TEQUITY	0.004	1.479	0.177
IFRS _{dum}	-130068.154	-0.079	0.939

Dw = 1.003

Source: SPSS Output, 2015

The t-ratio is also used to test the statistical significance of the independent variables and to show the predictive power of the independent variables. [6] noted that t-ratio is a complementary approach to the confidence interval method of ascertaining the test -of-significance of variables. The t-test rule is that if the p-value is greater than the level of significance (0.05), it suggests that the particular independent variable is not statistically significant while the opposite is the case if the p-value is lesser than the level of significance. As shown in Table 4, of the three explanatory variables tested in this study during the period before IFRS Adoption, Total Liability (p-value= 0.665), Total Equity (p-value= 0.177) and IFRS_{dum} (p-value= 0.939), were statistically flawed at 5 percent or lower. This implies that there is no significant relationship between all the independent and dependent variables. In addition to the above, a negative sign was attached to TLIAB and IFRS_{dum}. The inference is that liabilities of banks had been negatively affected in periods before the adoption of IFRS in Nigeria. The Durbin Watson (Dw) statistics

(1.003) revealed the existence of autocorrelation of residual in the model for period before IFRS adoption.

Tab. 5: Coefficients for the period after IFRS Adoption for sampled Banks

Variables	Coefficients	t-statistic	Prob.
Constant	682207.801	4.545	.002
TLIAB	.1930	9.263	.009
TEQUITY	1.0785	7.103	.002
IFRS _{dum}	180844.356	10.032	.013

$Dw = 1.983$

Source: SPSS Output, 2015

The t-ratio is also used to test the statistical significance of the independent variables and to show the predictive power of the independent variables. Recall also that according to [6], t-ratio is a complementary approach to the confidence interval method of ascertaining the test-of-significance of variables. Hence the rule applicable to the t-test is that where the p-value is greater than the level of significance (0.05), it is an indication that the particular independent variable is not statistically significant while the reverse is the case where the p-value is lesser than the level of significance. As shown in the Table 5, of the three explanatory variables tested in this study during the period after IFRS Adoption, Total Liability (p-value= 0.009), Total Equity (p-value= 0.002) and IFRS_{dum} (p-value= 0.013), were statistically significant at 5 percent or lower. This implies that there is significant and positive relationship between the dependent variable and all the independent variables. The above position further proves that total liabilities and equities of banks have been influenced by the adoption of IFRS in Nigeria. The result of Dw revealed a different result during the period after IFRS adoption. Dw statistics (1.983) showed non-existence of autocorrelation of residual in the model after IFRS adoption.

Conclusion & Recommendations

Financial statements are generally believed to provide means of showcasing the financial position or the overall well being/state of affairs of organizations at any given point in time. Thus, the statement of financial position prepared under IFRS tends to be very useful in this regards. This study therefore seeks to evaluate the effect of IFRS adoption on the financial position of commercial banks in Nigeria. The banks used in this study are First Bank of Nigeria Plc, Access Bank Plc and Guaranty Trust Bank Plc. Analysis was done for periods before and after the mandatory adoption of IFRS in the country based on the data obtained with respect to total assets, total liabilities and equities from the records of the sampled banks used in this study. In a bid to determine whether IFRS significantly impacted on the financial position of the banks selected in this study, we employed both the Pearson correlation coefficients and the Ordinary Least Square (OLS) estimation technique. The outcome from the analysis of results with respect to research questions 1 and 2 provide evidences that there is statistical association between IFRS adoption and the assets and equities of banks in Nigeria. In addition to this, the results from the analysis done with respect to Research question 3 suggests that liabilities of banks have been affected in an incremental magnitude especially after IFRS adoption. The conclusion reached in this paper is that IFRS adoption significantly impacted on the financial position of banks in Nigeria.

Based on the above, the following recommendations were proffered:

1. The decision of the Financial Reporting Council of Nigeria that reporting entities must mandatorily transit to the International Financial Reporting Standards must be sustained.
2. By law, all organizations, as a matter of urgency, must compulsorily be made to comply with the provisions of IFRS since from our results, transiting to IFRS has significant impact on the financial position of banks in the country.
3. Continuous training and retraining of accountants, preparers of financial statements and all stakeholders on IFRS implementation must remain a re-occurring decimal in corporate entities generally and banks in particular in Nigeria.
4. Organizations that fail to comply with the provisions and updates of IFRS should be sanctioned by the appropriate regulatory authorities/bodies/agencies in Nigeria.
5. To further encourage stakeholders' awareness and education on IFRS due to its significant and positive impact on reporting entities, professional accounting bodies as well as tertiary institutions in the country should be closely monitored to guarantee the inclusion of topics on IFRS in the accounting curricula in Nigeria. Failure of which, should also be sanctioned by the appropriate regulatory authorities.

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MARKETING COMMUNICATION EFFECTS ON THE SPECIFIC SEGMENT OF CZECH SINGLES

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Abstract: *The purpose of this article is to present a research on Czech singles from the marketing communication point of view. Article determinates the theoretical concept of integrated marketing communication in the introductory section. Further the results of descriptive and exploratory analysis describes segment from marketing potential perspective. For the purpose of collecting data, the survey method was chosen with the use of online self-administrated questionnaire. The final sample consists of 309 respondents living voluntarily single. The data were analysed by SPSS software. Descriptive statistics showed high persuasive effect of recommendations, competition and sales and loyalty programs. Mobile advertising and promotional events had the lowest effect. Factor analysis disclosed two underlying factors. These factors explained structure in the data and showed important similarities with theoretical categorisation of communication mix.*

Keywords: *Consumer behaviour, Communication mix, Factor analysis, Marketing communication, Market segmentation, Singles.*

JEL Classification: M31.

Introduction

Young people get married later and later. They want to first establish themselves in the labour market before starting a family. Therefore the family formation patterns are rapidly changing. This trend is evident among both men and women thanks to gradual approach to equality on labour market in highly developed countries. New life phase forms new segment of *singles*. These persons voluntarily living outside the marriage, independent and self-sufficient tend to behave differently as the customers.

The lifestyle of singles in developed foreign countries has been evident for many years. This issue has been analysed very sporadically from the scientific and practical point of view in the Czech Republic. The target group of singles can be considered as a growing and significant marketing potential in the future.

1 Integrated Marketing Communication Mix Influencing the Segment Singles

Successful segmentation relies on a clear understanding of the market. Knowledge of consumer behaviour is the crucial foundation on which that market understanding is built. Segmentation is a creative process and can be conducted using a range of different variables, each bringing a particular perspective to the dynamics of the market. Segmentation variables are the criteria that are used for dividing a market into segments. The most basic form of market segmentation involves demographic or psychographic criteria, such as age or gender. However, consumers seldom make purchase decisions based solely on demographics or psychographics. Instead, they rely on a wide range of other criteria, such as attitudes or values. Levens, Ennew and Waite [18, 28] indicate that the choice of common characteristics is crucial in determining a successful outcome when segmenting a marketplace, since this effectively defines target markets and thus impacts

on what the organization will be expected to deliver to that market. They divide the types of common characteristics into two broad categories, which give rise to customer-orientated segmentation (demographic, socio-economic, geographic and psychographic) and product-based segmentation. Kotler et al. [14] determine three main segmentation criteria categories: geographic, demographic, psychographic and behavioural. Geographic segmentation requires the division of market into different geographical units such as nations, states, regions, countries, towns or districts. Demographic segmentation means dividing the market into groups according to age, gender, sexual orientation, family size, income, occupation, education, religion etc. Demographic variables are the most popular basis for segmenting of customer groups. Psychographic variables identify individuals' attitudes, opinions and interests to build up a lifestyle profile that includes the consumer's consumption patterns. Thus these profiles are inextricably associated with specific purchasing behaviour. Behavioural variables relate to the behaviour of the consumer. Thus behavioural factors such as benefits sought, usage and the purchase occasion all come under this category. Profile variables are used to characterize the consumer but in terms that are not expressly linked to, or predictive of, an individual's behaviour in the specific market.

There are different methods and techniques to identify market segments, both the acquisition, the analysis and interpretation of data. The basic deductive methods useful for market segmentation include marketing reports and content analysis. Marketing reports provide information about the external environment of the company. The source of this information represents secondary sources, various newsletters, magazines, newspapers, media, internet, statistical data, informal contacts, etc. [17] According to Koudelka [16] content analysis is used primarily for analysis of public documents. There is the analysis of the recorded information in the next phase of this method.

In the case of inductive segmentation there is the use of secondary and especially primary information. Secondary information, if they exist, often do not provide suitable connection between the group of demographic variables and group of other traditional variables. Primary information are decisive segmentation data for many companies. They have a great advantage in the validity of the data. The problems are mainly with the representativeness of the sample and the tailored-made marketing research projects are quite expensive. The method of questioning is mainly used within the primary investigation.

Further, statistical analysis methods that are most commonly applied for analysis at various stages of the market segmentation process, can be mentioned. This is a cross tabulation, analysis of variance, factor analysis and cluster analysis. Gorsuch [10, p. 2] states that the purpose in using factor analysis is the aim to summarize the interrelationships among the variables in a concise but accurate manner as an aid in conceptualization. This is often achieved by including the maximum amount of information from the original variables in as few derived variables, or factors, as possible to keep the solution understandable. According to Brown [2, p. 10] the fundamental intent of factor analysis is to determine the number and nature of latent variables or factors that account for the variation and covariation among a set of observed measures, commonly referred to as indicators. Specifically, a factor is an unobservable variable that influences more than one observed measure and that accounts for the correlations among these observed measures. In other words, the observed measures are intercorrelated because they share a common cause. If the latent construct is partialled out, the intercorrelations among the observed measures will be zero. Thus factor analysis attempts a more parsimonious

understanding of the covariation among a set of indicators because the number of factors is less than the measured variables.

Nowadays, marketers cannot afford to take the risk of failing to communicate effectively with their target segments. Marketing and marketing communications mix are changing. New insights, new tools, new opportunities and new challenges are emerging as the 21st century progresses. Marketing has moved from customer acquisition through customer retention towards customer selection. This is sometimes called as adverse selection. [27]

In practical terms, the process of communicating with consumers and customers (target segment) is called marketing communication [13, p. 1-2]. According to Fill [8, p. 17] Marketing communication is a critical aspect of a company's overall communication mission and a major determinant of its success in a market. Marketing communication is a management process through which an organisation engages with its various audiences. By understanding an audience's communications environment, organisations seek to develop and present messages for its identified stakeholder groups, before evaluating and acting upon the responses. By conveying messages that are of significant value, audiences are encouraged to offer attitudinal and behavioural responses.

Marketers try to improve their communications effectiveness by taking an integrated marketing communication approach and by managing the marketing communication strategy [13, p. 1-2]. Integrated marketing communication is really all about planning in order to deliver consistent message. Effective integrated marketing communication should certainly encourage strong customer relationship, but it does that through effective planning in order to develop an integrated communication programme that will optimize specific communication objectives that lead to a desired behaviour on the part of the target audience. [24]

The integrated marketing communication has been defined in a number of ways, stressing various aspects, benefits and organizational consequences of IMC. According to Kotler [15] the IMC solution calls for recognizing all contact points where the customer may encounter the company, its products, and its brands. Each brand contact will deliver a message, either good, bad, or indifferent. The company must strive to deliver a consistent and positive message at all contact points. Shimp and Andrews [25, p. 12] claims that integrated marketing communication is coordination of the marketing communication mix elements with each other and with the other elements of the brands' marketing mix (product, price, place) such that all elements speak with one voice. Duncan [5] describes integrated marketing communication as process for managing customer relationships that drive brand value.

The various definitions incorporate the same core idea: communications instruments that traditionally have been used independently of each other are combined. The major benefit of IMC is that a consistent set of messages is conveyed to all target audiences by means of all available forms of contact and message channels. [23, p. 8] Integrated marketing communication is a goal worth pursuing because using multiple communication tools in conjunction with one another can produce greater results than tools used individually and in an uncoordinated fashion. There is a synergistic effect of using multiple well-coordinated marcom tools. [25]

The marketing communication mix consists of a set of tools that can be used in various combinations and different degrees of intensity in order to communicate with a target audience. According to Dahln et al. [4, p. 277] the marketing communications mix

provides a menu of communication methods which can be used separately or ideally blended to achieve communication objectives and usually comprise advertising, publicity, sales promotion, packaging and personal selling. Many authors include into marketing communication mix only principal marketing communication tools. Fill [8, p. 20] mentioned five principal marketing communication tools: these are advertising, sales promotion, public relations, direct marketing and personal selling. FitzGerald and Arnott [9, p. 367] also mention five main elements of marketing communications which are advertising, sales promotion, marketing PR/product publicity, sponsorship. But currently there could be also new categories of on-line marketing communication, point-of-purchase displays, outdoor displays, product packages etc.

The balance between marketing communication tools will vary according to the nature of the overall marketing strategy, the characteristics of the product, the resources of the organization and the nature of the target market. Whatever marketing communication mix is chosen, the effectiveness of the communications process depends on the development of a clear and unambiguous message that is presented to the right target audience, at the right time and through the most appropriate medium. [28, p. 225]

At the beginning of the 21st century Czech customers are more critical and seek complex solutions within their purchasing decisions. Customers look for significant information and the result is the growing importance of interactive media. Due to the current communication technology the customer and the seller are again in direct relation. [3, p. 97] Technologies such as the convergence of the internet, mobile devices, and traditional channels are changing the way companies use marketing tools to communicate with their customers [1]. Marketing integrated communications become electronic, digital, mobile, viral, etc. Companies look for new communication methods and concepts to reach their target groups better. Today we use communication projects that use a variety of new non-traditional media and tools, which can include, for example, guerilla marketing, ambient media, DRTV, mobile marketing, viral marketing, product placement, ambush marketing and other.

Marketing communication via the internet (on-line marketing communication) is gaining importance due to the constant changes and dynamic environment, globalization, but also the development and greater use of new technologies. Sun [26, p. 5] states that online sales, online purchasing, trading electronic is undoubtedly much easier to businesses, to facilitate the consumer. Marketing results was constricted by the level of business and customer communication, and e-commerce created good conditions of effective and efficient communication between the two sides. Undoubtedly the most used Internet contact with customers is the website, e-mail and social media. According to Karlíček and Král [11, p. 182] the social media can be said as the biggest change since the industrial revolution. "On-line social media can be defined as open interactive online applications that support the formation of informal user networks." Fill [8, p. 364] defines social media as a group of Internet based applications that build on the ideological and technological foundations of Web 2.0 and that allow the creation and exchange of User Generated Content. Killian and McManus [12, p. 540] state that the viral nature of social media offers a great opportunity to brand managers who wish to gain positive traction through word of mouth. Unfortunately for brand managers, this same word of mouth can be detrimental to the brand image when consumers feel they have been mistreated.

As global markets are expanding and digital technology is transforming the way organizations communicate with their customers, the importance of communication integration is impossible to ignore. The development of digital technology, the increase

of the role of stakeholders in an organization, the growth of competition in the global marketplace, as well as globalization itself, has created a new communication environment not only within organizations but in the society as a whole. [6]

2 Methods

In order to analyse and describe the segment of Czech singles in the context of marketing communications, we conducted primary research using data from an online questionnaire conducted in July 2015. Firstly we analysed if singles have recognised the effect of certain marketing communication tools (MCT) on their buying behaviour. In other words, what they found most persuasive when buying. Twelve closed questions were asked about MCT effects. Respondents were allowed to answer on Likert scale to express their opinions from Extremely to Not at all. Then the following part explains patterns relating to the marketing communication tools employing exploratory factor analysis (EFA). Factor analysis has numerous applications in marketing research [19]. In this case it is a data reduction through identification of underlying factors without losing any informational value of the data.

Sample initially consisted of 315 responses. These were obtained all around the Czech Republic among singles living voluntarily alone. Participants were contacted by private company providing online data collection through an email database. They filled the data through self-administrated online questionnaire. To match the sample with typological description of the unit of our interest we specified segmentation criteria of participants as single living and financial independent customers.

In any type of survey research, inattentive or careless responses are a concern [21]. We checked the sample for careless responses eliminating 6 respondents who provided answers with zero standard deviation. On 12 item questionnaire it is nearly impossible to provide such indifferent answers and therefore these responses were deleted from the sample resulting in 309 respondents taken for further analysis. Since there are no exact information about population of singles and sample cannot be chosen statistically at random, we used non-probability sampling. According to Mundfrom et al. [22] minimum sample size for conducting factor analysis based on the communalities and variables-to-factor ratio is 260.

Inability to find the singles within the population is extremely repellent for researchers since the segment changes dynamically over time. However, these studies provide valuable information even from the sample characteristics. What is the structure of singles? Who dominates this segment by a socio demographic characteristics? How does it change over time? These are valuable by-products. In this research, female slightly prevailed in the sample. Singles with high school with GCSE dominated and also those aged 26-35 years (Tab. 1). Minimum age was 18, maximum 60 years and the average was 34.12.

Tab. 1: The basic characteristic of the sample

		Frequency (n)	Percent (%)
Gender	Male	149	48.2
	Female	160	51.8
Age	<25	83	26.9
	26-35	94	30.4
	36-45	73	23.6
	46-55	45	14.6
	>56	14	4.5
Education	Elementary school	36	11.7
	High school	98	31.7
	High school with GCSE	117	37.9
	University	58	18.8

Source: Authors

As Table 2 shows, respondents came from all over the Czech Republic. Prague, Central Bohemia, South Moravia and Moravia-Silesia Region were dominant and also cities with population over 100 001 had the largest representation.

Tab. 2: The characteristic of the sample by region and city

		Frequency (n)	Percent (%)
Region	Ústí nad Labem	21	6.8
	South Bohemia	19	6.1
	South Moravia	35	11.3
	Karlovy Vary	9	2.9
	Hradec Králové	16	5.2
	Liberec	15	4.9
	Moravia-Silesia	34	11.0
	Olomouc	17	5.5
	Pardubice	16	5.2
	Plzeň	15	4.9
	Prague	45	14.6
	Central Bohemia	37	12.0
	Vysočina	14	4.5
	Zlín	16	5.2
City by population	< 1 000	47	15.2
	1 001 - 5 000	61	19.7
	5 001 - 20 000	49	15.9
	20 001 - 100 000	70	22.7
	> 100 001	82	26.5

Source: Authors

3 Problem solving

Looking at the mean in the Table 3, MC1 recommendations (1.98) are perceived most persuasive from all the marketing communication tools. Despite all the positive impacts of technology, internet and social media and its importance in marketing communication, our findings show strange and alarming results. MC5 Mobile advertising (4.28) through

SMS and MMS is the least persuasive. MC3 Internet banners (3.61) and MC4 Social networks promotion (3.69) score similarly. Interestingly, MC8 TV, Radio and Print advertising (3.26), considered traditional media channel, have better overall mean than these two new media. MC2 promotional events (3.77) within the shops and public space were also evaluated as not persuasive despite the fact that singles seek active lifestyle and spend a lot of time outside their homes.

Tab. 3: Frequency table of the answers

	Mean	Extremely (1)	Mostly (2)	Sometimes (3)	Rarely (4)	Not at all (5)	Median	Mode	Std. Deviation
		%	%	%	%	%			
MC1 Recommendation	1.98	37.5	36.2	19.1	4.9	2.3	2	1	0.983
MC2 Event	3.77	4.2	8.7	26.2	27.5	33.3	4	5	1.129
MC3 Internet banners	3.61	2.6	9.1	33.7	34	20.7	4	4	0.996
MC4 Social networks	3.69	3.2	10.4	27.5	32.4	26.5	4	4	1.073
MC5 Mobile advertising	4.28	0.6	2.9	13.9	32.7	49.8	4	5	0.858
MC6 Newsletter	3.77	1	9.4	28.5	34	27.2	4	4	0.985
MC7 POP	2.95	9.7	25.6	33.7	22	9.1	3	3	1.108
MC8 TV, Radio and Print	3.26	6.5	14.9	38.8	25.6	14.2	3	3	1.081
MC9 Competitions and sales	2.56	19.1	28.5	34.3	13.6	4.5	3	3	1.084
MC10 Print flyers	2.76	14.2	27.5	33.7	17.5	7.1	3	3	1.118
MC11 Billboards	3.97	1.3	4.2	22.3	40.8	31.4	4	4	0.908
MC12 Loyalty programs	2.77	14.9	27.2	30.7	20.1	7.1	3	3	1.143

Source: Authors

On our way to conduct EFA, all twelve items were tested for reliability by Cronbach's alfa with the option to show the reliability if item was deleted. MC1 Recommendation identified as one candidate for deletion was excluded from subsequent EFA. The reason is twofold. First the measures of reliability and second our previous research. Recommendation, not only most popular among singles, always tend to form separate category or factor. Both arguments are complementary, since it confirms that MCT1 measure slightly different thing than the rest of the scale.

Consequently, we used Bartlett's Test of Sphericity to verify correlation in the data set. The computed value of χ^2 distribution (1098.805) indicates p-value of 0.000. Therefore we can conclude that there are correlations between variables. Then we conducted Kaiser-Meyer-Olkin (KMO) test to indicate appropriateness of factor analysis application.

Value of the KMO measure of sampling adequacy is 0.868. Minimum value for this test is 0.5 [19]. In conclusion both tests showed that the data are suitable for conducting EFA. We measured reliability of the scale by Cronbach's alfa test which showed satisfactory value of 0.850.

For a factor extraction we conducted Kolmogorov-Smirnova and Shapiro-Wilk tests to identify how the data are distributed. Results showed significant non-normal distribution. Therefore the principal axis factors extraction method has been conducted. For a rotation of the factors we used Oblique-rotation method (Direct Oblimin). Matsunaga [20] suggests that any exploratory factor analysis should employ an oblique-rotation because almost all phenomena that are studied in social sciences are more or less interrelated to one another and complete orthogonal relationships are practically rare. Number of factors has been determined based on Kaiser criteria, where components with eigenvalue over 1 are included. Two factors were identified and the distribution of variables on each factor is showed in EFA Pattern matrix in Table 4. All coefficients below 0.35 were manually suppressed for better visual interpretation of the factor loadings.

Tab. 4: EFA Pattern matrix

	Factor	
	1	2
MC4 Social networks	0.777	
MC11 Billboards	0.747	
MC3 Internet banners	0.744	
MC5 Mobile advertising	0.666	
MC8 TV, Radio and Print	0.525	
MC6 Newsletter	0.434	
MC2 Event	0.407	
MC9 Competitions and sales		0.779
MC12 Loyalty programs		0.752
MC7 POP		0.520
MC10 Print flyers		0.446
Extraction Method: Principal Axis Factoring. Rotation Method: Oblimin with Kaiser Normalization.		

Source: Authors

From a closer look at the variables we can assume that first factor is connected with push forms of marketing communication dominantly used as a form of advertising. Second one is connected with actual value proposition. MC9 Competitions and sales as a category of sales promotion in communication mix are highly effective form of urge call to stimulate sales. The same applies for MC10 Print flyers which are commonly used for messages connected with sales and limited offers. MC7 Point of purchase materials and displays are often used as well for special or limited offers and MC12 Loyalty programs represents another mode of sales promotion. At this point we can clearly identify underlying factors as highly similar to theoretical categorization of communication mix.

Conclusion

The purpose of this article was to describe and explore the segment of singles from marketing point of view. The analysis for the purpose of this paper was based on the number of 309 respondents. The selection of the respondents was restricted to people who

live single and are financial independent. Young singles aged from 26 to 35 prevails in the sample. Considering the education, high school GCSE graduates are the most represented group.

Recommendations have the highest persuasive power for singles. Research also showed high popularity of competition and sales, print flyers, loyalty programs, POP. Which all scored below the average of 3. On the opposite scale, events and mobile advertising have been evaluated as the lowest persuasive.

Factor analysis showed underlying latent factors and through its ability of data reduction we were able to divide a marketing communication instruments by two main factors. Our findings demonstrate similarities with categorization of communication mix tools as we know it from theoretical concepts introduced by leading marketing authors.

From a business practice perspective, integrating communication based on factor two will be highly effective when communicating to the segment of singles, since the variables has relatively higher scores on admitted persuasiveness than those loaded into factor one.

The segment of singles is growing yet this development does not always result in positive consequences. As the results from our research implies more and more young people live this life phase. Inspired by the cult of career building some of them expect particularly more from the labour market then the market can offer. Therefore any failure in career development can have impact on one's overall satisfaction as well as on general unemployment particularly in jobs which does not offer great opportunities for career development.

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DIVERSITY OF CAPITALISM IN THE EUROPEAN POST-SOCIALIST ECONOMIES: THE BALKAN STATES AT A CROSSROADS

Michal Mádr, Luděk Kouba

Abstract: *The main aim of the paper is to classify the types of capitalism in the Balkan states in the context of the European post-socialist countries and identify the principal strengths and weaknesses of institutional organization in these countries. The paper uses Amable's approach, which is supplemented by the influence of the political environment. The paper identifies two different capitalist clusters in the Balkan area: market economies (Bulgaria, Croatia, Montenegro and Romania) and hybrid economies (Albania, Bosnia and Herzegovina, Macedonia and Serbia). The Balkan countries are compared with the other post-socialist economies, the EU-8 and post-soviet countries. Within the Balkan States, only Croatia and Montenegro are approaching the EU-8 economies, while on the other hand, Albania has some characteristic in common with the Caucasian republics. In general, the Balkan States achieve better results than the post-soviet states; however, there are some common weaknesses: low quality of the education system and inefficient financial system, and rigid labour market in Albania, Croatia and Romania and underdeveloped political system in Bosnia and Herzegovina.*

Keywords: *Balkan States, Diversity of capitalism, Institutional complementarities, Post-socialist countries.*

JEL Classification: *O11, O52, P16.*

Introduction

Twenty five years have passed since the end of the bipolar world, which enables us to undertake an evaluation of the established institutional (capitalist) settings in the European post-socialist countries. The transition countries have a high level of institutional diversity, which is due to the diverse socialist organization heritage (informal institutions) and the transition process. One can identify the Central European countries and the Baltic States, which successfully executed the transformation process and have converged with the old EU members in most of the institutional settings. On the other hand, there are the post-soviet republics with a low quality of the institutional environment, which is associated with the authoritative regimes (e.g., Azerbaijan, Belarus, Russia) or with the security risk areas (e.g., Abkhazia, Chechnya, Crimea, Nagorno-Karabakh, South Ossetia, Transnistria). Countries of the third group, the Balkan States, are at a crossroads, both relatively successful (Bulgaria, Croatia, Montenegro, Romania) and relatively unsuccessful (Albania, Bosnia and Herzegovina, Kosovo, Macedonia, Serbia).

The main aim of the paper is to classify the types of capitalism in the Balkan states in the context of the European post-socialist countries and identify the principal strengths and weaknesses of the institutional organization in these countries. The first section consists of a survey of the individual approaches to the varieties of capitalism, the method of cluster analysis, data sources, proxies used and a sample of the studied countries. The main second section includes the results from the cluster analysis and a discussion about the institutional

(capitalist) environment in the European post-socialist countries with focus on the Balkan States and identifies the strengths and weaknesses of these countries. The conclusion summarizes the major findings.

1 Statement of a problem

Differences between the individual capitalist economies are given by their institutional organization. Within the research of the models of capitalism, there are two crucial works, Amable [1] and Hall and Soskice [11]. Amable [1] uses five dimensions (Product market, the Wage-labour nexus, the Financial system, Social Protection and Education) and distinguishes between five models of capitalism: Market-based, Continental European, Social-democratic, Mediterranean and Asian. Hall and Soskice [11] provide a very general classification based on the level of coordination within market economies, which defines two basic models – Liberal Market Economies (LMEs) and Coordinated Market Economies (CMEs). The other important contributors, Becker et al. [2] and Esping-Andersen [4], also describe advanced economies, or more precisely, OECD countries. Becker et al. [2], following two key features (the relation between capital and labour and the relation between politics and the economy), specifies five basic types (Liberal, Statist, Corporatist, Meso-communitarian and Patrimonial). Esping-Andersen [4] distinguishes three types of European welfare states in his seminal work (Liberal, Conservative-corporatist and Social-democratic), which were supplemented with another type, the Southern model [8].

If one includes research of the European transition countries, one can consider Myant and Drahokoupil [19] a pivotal contribution. Myant and Drahokoupil [19] used an unusual evaluation of transition economies since they put an emphasis on integration into international trade in six parts (export-oriented FDI in complex sectors, export-oriented complex sectors without FDI, simple manufacturing subcontracting, commodity exports, dependence on remittance and aid, dependence on financialised growth), and differentiate between five models, FDI based (second rank) market economies (Visegrad group), Peripheral market economies (Balkan and Baltic States), Oligarchic or Clientelistic capitalism (Ukraine), Order states (Azerbaijan, Belarus), and Remittance- and aid-based economies (Moldova).

The other papers can be divided into two main groups. The first one deals with an application of the mentioned approaches (Amable, Esping-Andersen and Hall and Soskice), the second one with a classification of institutional organization according to specific criteria. Within the first group, Farkas [6] compares old and new EU member countries on the basis of the individual dimensions of Amable [1]. The approach of Hall and Soskice [11] was used by Knell and Srholec [15] and Schweickert et al. [22], namely the division between LMEc (Bulgaria, Estonia, Latvia, Lithuania and Slovakia) and CMEc (Croatia, the Czech Republic, Romania and Slovenia). Also, Schweickert et al. [22] contrast Slovakia (a successful transformation) with Hungary (a problematic transformation). Meanwhile, Fenger [7] applied the approach of Esping-Andersen [4] and identified three new types of post-socialist welfare state, the Former USSR type (the European CIS countries), the Post-communist European type (Bulgaria, Croatia, the Czech Republic, Hungary, Poland, Slovakia) and the Developing welfare states type (Georgia, Moldova, Romania). Within the second group, one can mention three interesting papers, [13], [14] and [18]. King and Szelenyi [14] emphasise the influence of political institutions (polity, bureaucracy) and after supplementing the other social-economic areas (social classes, foreign capital and income inequality), they identify three basic groups,

Capitalism from without (Baltic states, the Visegrad Group), Capitalism from above (the Patrimonial system; Balkan, CIS) and Capitalism from below (China, Vietnam). Izyumov and Claxon [13] evaluate transition economies by similar criteria - a relation between characteristics of the political and the economic system and a relation between three groups (government bureaucracy, new capitalist class and labour). Furthermore, they identify three types of capitalism: Democratic (CEECs), Autocratic (Belarus) and Clan (the majority of the Balkan and post-soviet economies). McMenamin [18] adds the third dimension (welfare state), and on the basis of the comparison of CEECs with the OECD economies comes to the conclusion that CEECs have the same characteristics as the Mediterranean economies.

2 Methods

Classification of the models of capitalism is performed using cluster analysis, specifically Ward's method. For identification, the paper uses comparative and graphical analysis. The selected proxies have a varied range; therefore, the paper uses a formula for the normalization of the index values to preserve the equal impact of all indices, in the manner of Rozmahel et al. [21].

$$N_{i,t} = \frac{I_{i,t} - \text{MIN}(I_T)}{\text{MAX}(I_T) - \text{MIN}(I_T)} \quad (1)$$

Where $I_{i,t}$ is the value of the index in time period t . $\text{MAX}(I_T)$ ($\text{MIN}(I_T)$) represents a maximal (minimal) value of the index during the whole time span T . $N_{i,t}$ returns the value of each index within the range of 0-1.

For the classification and evaluation of the models of capitalism, the paper determines six dimensions, Product markets, Labour market, the Financial System, Welfare state, Education and Political environment. The first five areas stem from Amable [1] (basic approach) and Farkas [6] (employed on the European transition economies)⁷. Unlike to the above noted works, this paper adds the area of the political environment in the manner of King and Szelenyi [14] and McMenamin [18]. The paper's selected dimensions correspond to the three-levelled concept of the modern capitalist economy according to Scott [23]. The first level is called "Economic markets", where price coordinates supply and demand. This level consists of products markets and factor markets (labour and capital). Scott calls the second level "Institutional foundations"⁸, which comprise of institutions (laws), economic policy makers, and physical (roads, railways) and social infrastructure (education, welfare state). The third level, "Political and social foundations", has responsibility for the institutional foundations of a capitalist system. This level includes political institutions (e.g., democratic or authoritative regimes), political authorities (executive, legislative and judiciary branches) and informal institutions (culture, religion). The first level is represented by three dimensions (Product markets, Labour market and Financial System), the second level by two dimensions (Welfare state and Education) and the third level by one dimension (Political environment). Each dimension consists of five proxies, which are compiled based on [1], [6], [7] and [15]. Due to the availability of data for Balkan and post-soviet republics, the paper elects databases with a worldwide

⁷ Farkas also uses dimension „Research and development, innovation“, which we incorporate into the Education dimension.

⁸ Within our paper, we follow up from "New institutional economy", which considers all three levels to be institutions.

range, mainly the Heritage Foundation, the United Nations, the World Bank Group and the World Economic Forum, instead of OECD or Eurostat databases.

Within the dimension Product markets, the first variable represents the enforceability of the property rights, which means the fundamental condition for the working of the market mechanism. The second variable evaluates the quality of regulation and the third one represents the level of executed transformation process in the area of small and large privatization. The fourth proxy is used for the depiction of the integration into the international trade and the last variable is chosen for emphasizing the importance of the tax area using the indicator from the Doing business concept. The proxy Labour freedom, is an aggregate indicator of various aspects of the legal and regulatory framework. Another two indicators represent the flexibility of the labour market, determination of wages and the rate of the cooperation in an employee-employer relation. The remaining two proxies are used for the assessment of the structure of the labour market. The unemployment rate of youth is a very current topic in Europe and services are the most important economic sector nowadays. Likewise, within the Financial system, the research puts an emphasis on the quality of regulation, the extent of supervision of securities. In the context of the recent crisis, the paper incorporates the indicator representing the financial soundness of the domestic banks. The third, fourth and fifth proxies are used in order to express the availability of financial services in the entire economy (size and availability of financial services) and in the case of provision of the specific financial capital for enterprises.

Tab. 1: Dimensions of the first level - Product and Labour markets, Financial system⁹

Product markets	Unit	Source
Property rights	<0; 100>	[12]
Quality of regulations	<-2.5; +2.5>	[28]
Small and large privatization	<1; 4.3>	[5]
Merchandise trade	% of GDP	[27]
Total Tax Rate*	%	[26]
Labour market	Unit	Source
Labour freedom	<0; 100>	[12]
Flexibility of wage determination	<1; 7>	[29]
Cooperation in labour-employer	<1; 7>	[29]
Unemployment rate, youth (ILO)*	%	[27]
Employment in services	%	[27]
Financial system	Unit	Source
Regulation of securities exchanges	<1; 7>	[29]
Soundness of banks	<1; 7>	[29]
Domestic credit provided by financial sector	% of GDP	[27]
Availability of financial services	<1; 7>	[29]
Venture capital availability	<1; 7>	[29]

Source: Authors.

The second level of the capitalist economy comprises the socio-economic infrastructure, which is represented by the dimensions of welfare state and education. Amable [1] used the narrow approach to welfare state, it means only social protection, whereas the paper uses the

⁹ Proxies marked with (*) have a value which was changed during the normalization due to the higher value representing a more flexible and higher quality regulated Product and Labour markets, a more developed Financial system, an extensive Welfare state, a high-quality Education and a high-quality Political environment.

wide definition comprising the indicators of living standards. The welfare state is represented by the level of income inequality, the size of the government's budget, the general quality of public services, including public goods, physical and social infrastructure, and two indicators expressing living standards and the quality of the health services. Within the second dimension, the first two proxies are used for the evaluation of the quality of the whole education system, in relation to the needs of a competitive economy and according to the duration of schooling. The third indicator describes the structure of secondary enrolments and the fourth the quality of equipment. The last variable represents the area of research and development, which Farkas [6] uses as a separate dimension.

Tab. 2: Dimensions of the second level – Welfare state and Education

Welfare state	Unit	Source
GINI index*	<0; 100>	[27]
Government spending*	<0; 100>	[12]
Public services*	<0; 10>	[10]
Life expectancy at birth, total	Years	[27]
Infant mortality rate*	1,000 births	[27]
Education	Unit	Source
Quality of educational system	<1; 7>	[29]
Education index	<0; 1>	[25]
School enrolment, secondary	%	[27]
Internet access in schools	<1; 7>	[29]
Research expenditure	% of GDP	[27]

Source: Authors.

Using the dimension of political environment is our contribution to the discussion of models of capitalism. The political environment is divided into three parts; polity, level of democracy and transparency of government. The proxy, Polity, evaluates the type of the political regime (democracy, authoritarian) and its stability. The second and third variables describe the level of democracy, the specific level of transformation of the political environment in seven parts (National Democratic Governance, Electoral process, Civil Society, Independent Media, Local Democratic Governance, Judicial Framework and Corruption) and the rate of participation in the selection of government. The last two indicators represent the area of Governance, the fourth one the independence, effectiveness, and accountability of legislative and executive branches, and the fifth one the transparency of the policy makers at the government level.

Tab. 3: Dimension of the third level – Political Environment

Political environment	Unit	Source
Polity	<-10; 10>	[17]
Democracy Index	<1; 7>	[9]
Voice and Accountability	<-2.5; +2.5>	[28]
National Democratic Governance	<1; 7>	[9]
Transparency of government policymaking	<1; 7>	[29]

Source: Authors.

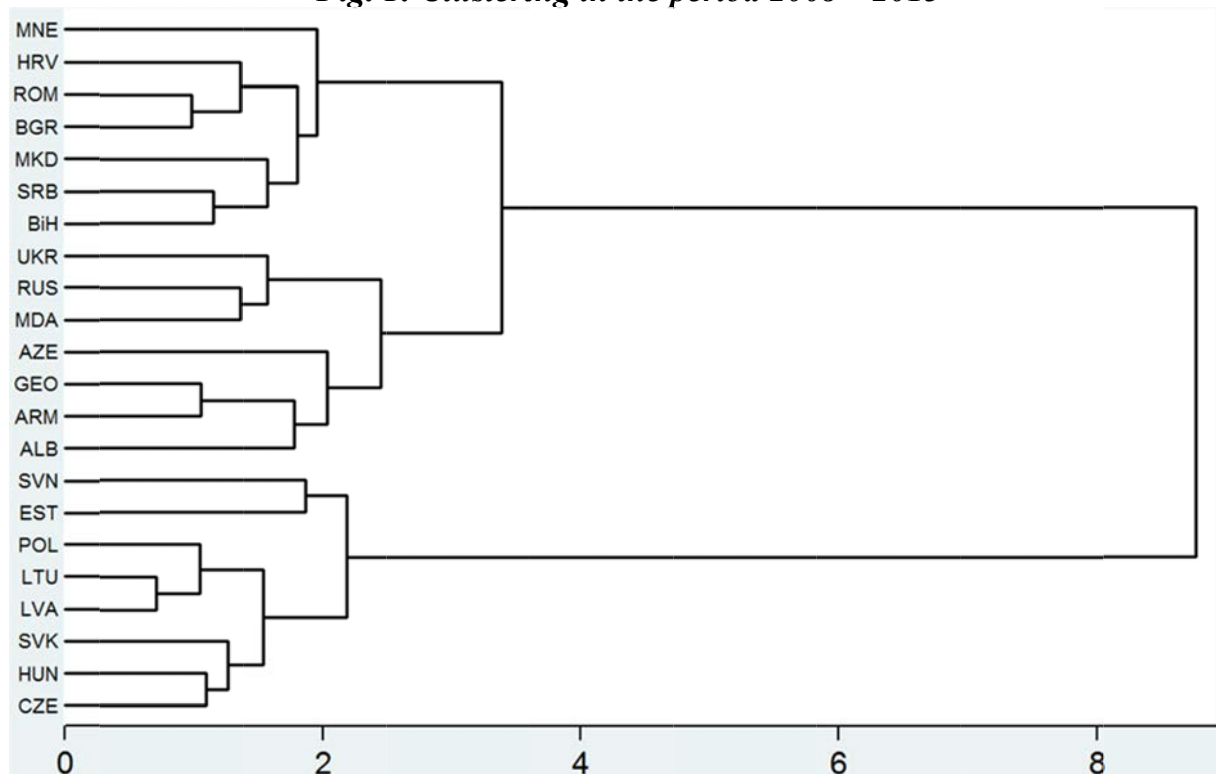
The sample of countries consists of twenty-three European post-socialist economies. The Balkan states (Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Macedonia, Montenegro, Romania and Serbia) are compared with the Central European economies (the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia and Slovenia)

and the post-soviet republics (Armenia, Azerbaijan, Belarus, Georgia, Moldova, Russia and Ukraine). Kosovo is not included due to the availability of data.

3 Problem solving

According to the results of the dendrogram, we can divide the European transition economies into two basic clusters. The first group consists of the majority of the former post-socialist states (15 of 23)¹⁰ and the second group contains the most successful CEE economies (EU-8). In the first cluster, one can identify four subgroups and in the other one a sub-cluster, which implies there are five diverse institutional units.

Fig. 1: Clustering in the period 2008 – 2013



Source: [9]; [10]; [12]; [17]; [25]; [26]; [27]; [28]; [29];

This paper starts the classification of the models of capitalism with the EU-8 countries, the most successful group, which Myant and Drahokoupil [19]¹¹ call “Second rank (FDI based) market economies”. Considering the countries within the first main cluster, one can identify four groups. The first group (Bulgaria, Croatia, Montenegro and Romania) correspond with the type “Peripheral market economies” [19]. The countries in this cluster have developed democratic institutions, but simultaneously, lag behind the Second rank market economies in most of the institutional dimensions¹² and according to Myant and Drahokoupil [19], the substantial share of less-stable manufactured-goods and raw-material exports is characteristic. The remaining three clusters (unsuccessful Balkan States and the post-soviet republics) can hardly be classified because the individual countries are not distinguished in empirical literature; these are labelled as “Patrimonial capitalism” [2], “Oligarchic/clientelistic capitalism” [3], “Hybrid capitalism” [9]; [16], “Clan

¹⁰ The Balkan and post-soviet economies.

¹¹ Myant and Drahokoupil [19] state three characteristics - democratic political system, integration into the EU and export structures increasingly built around manufactured goods produced by foreign-owned MNCs. The paper is aimed at the Balkan States, therefore, the differences between CEECs are not described. See more details in [15] and [22].

¹² See Table 5.

capitalism” [13] and “Capitalism from Above” [14]. If one put together all these individual terms, all economies have common characteristics - incomplete transformation of the economic (Hybrid capitalism) and political environment (authoritarian, clientelistic or diverse extended oligarchic structures). For this reason, the paper calls clusters “1b” to “1d” “Hybrid capitalism” with presumptive distinctive attribute.¹³

Tab. 4: Clusters and countries

Cluster	Type	Countries
1a	“Peripheral market economies”	Bulgaria, Croatia, Montenegro, Romania
1b	“Hybrid/Clientelistic capitalism”	Bosnia and Herzegovina, Macedonia, Serbia
1c	“Hybrid/Clan capitalism”	Belarus, Moldova, Russia, Ukraine
1d	“Hybrid/Oligarchic capitalism”	Albania, Armenia, Azerbaijan, Georgia
2	“Second rank (FDI based) market economies”	The Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, Slovenia,

Source: [9]; [10]; [12]; [17]; [25]; [26]; [27]; [28]; [29];

The following analysis aims to answer the question of what the strengths and weaknesses of the individual Balkan States are in a comparison with the EU-8 countries and the post-soviet republics. Table 5 lists the arithmetic means of normalized values of the individual dimensions in the observed period of 2008 to 2013. The table includes the average values of the individual clusters and detailed results for the Balkan States.

If we compare “Second rank MEs” with the other transition countries, one can see that the economies fall behind in all dimensions. There are principal differences in areas of the political environment, quality of the education system, developed financial system (excluding Montenegro)¹⁴ and extensive welfare state (excluding Bosnia, Croatia, Montenegro and Serbia)¹⁵. In a detailed view of the Balkan states within the “Peripheral MEs”, the quality of the education system is one of the main weaknesses, with the others being the financial system (Bulgaria and Romania) and the specific rigid labour market (Croatia and Romania). There is also an interesting group of “Hybrid/Clientelistic capitalist economies”. These countries have a relatively high quality political environment (Macedonia and Serbia)¹⁶, but, simultaneously, also have a low quality education system and underdeveloped financial markets. The last Balkan state, Albania, has similar characteristics as the above mentioned economies, but falls behind due to the rigidity of the labour market.

¹³ A discussion on the political/economic structures in the Balkan/post-soviet states seems to be promising for future research.

¹⁴ The higher average value of Montenegro is given by quality regulation of securities and venture capital availability [29].

¹⁵ Croatia and Montenegro have average values in all five indicators, whereas results of the others are significantly influenced by specific relics of the socialist period. There are income equality (GINI index is about 27%), relative high government expenditures (circa 40% of GDP) and a low level of infant mortality (about 6 infants per 1000 birth). [27]. On the other hand, the quality of public services and life expectancy in birth is low. For more details, see [19] and [24].

¹⁶ The paper evaluates political environment from the point of view of formal democratic institutions (relatively high level) and governance (average level), but it does not include the influence of the informal relations (corruption, nepotism), which are some of the important problematic areas in the Balkan space. Simultaneously, both countries have EU membership candidate status and therefore are forced to improve the quality of their political environment.

Looking at the post-soviet republics, one can consider all dimensions to be weakness factors with only a few exceptions, e.g. product markets (Georgia) and labour market (Armenia, Azerbaijan, Georgia). Regarding the other problematic dimensions, there is a low quality of education system (the Education index, the Quality of Education)¹⁷ and size of expenditures on research and on education system, and also the underdeveloped welfare state (Armenia, Azerbaijan, Georgia, Moldova and Russia); with the low standard of living comes dependence of a part of the population on remittance of foreign aid [3]. In general we can identify the main difference between the Balkan and post-soviet states in a quality of political environment except for Bosnia and Herzegovina. Relatively the more quality political environment in the Balkan states is associated with integration into international organizations and more successful transformation of the socialist political system.

Tab. 5: Individual dimensions according to clusters

	Product market	Labour market	Fin. system	WS	Ed.	Political env.
Second rank MEs	0.74	0.51	0.70	0.76	0.67	0.85
Peripheral MEs	0.53	0.42	0.54	0.65	0.41	0.66
Bulgaria	0.56	0.50	0.47	0.54	0.34	0.66
Croatia	0.55	0.33	0.59	0.74	0.45	0.69
Montenegro	0.49	0.63	0.70	0.73	0.49	0.69
Romania	0.51	0.21	0.42	0.58	0.35	0.59
Hybrid (Clientelistic)	0.49	0.53	0.36	0.59	0.21	0.53
Bosnia and Herzegovina	0.40	0.52	0.33	0.67	0.14	0.35
Makedonia	0.61	0.61	0.46	0.44	0.21	0.63
Serbia	0.45	0.45	0.30	0.66	0.28	0.60
Hybrid (Oligarchic)	0.46	0.51	0.30	0.38	0.24	0.42
Albania	0.45	0.37	0.23	0.53	0.18	0.60
Armenia	0.47	0.57	0.33	0.43	0.24	0.43
Azerbaijan	0.32	0.53	0.33	0.24	0.29	0.15
Georgia	0.58	0.58	0.30	0.32	0.27	0.51
Hybrid (Clan)	0.34	0.35	0.25	0.5	0.46	0.39

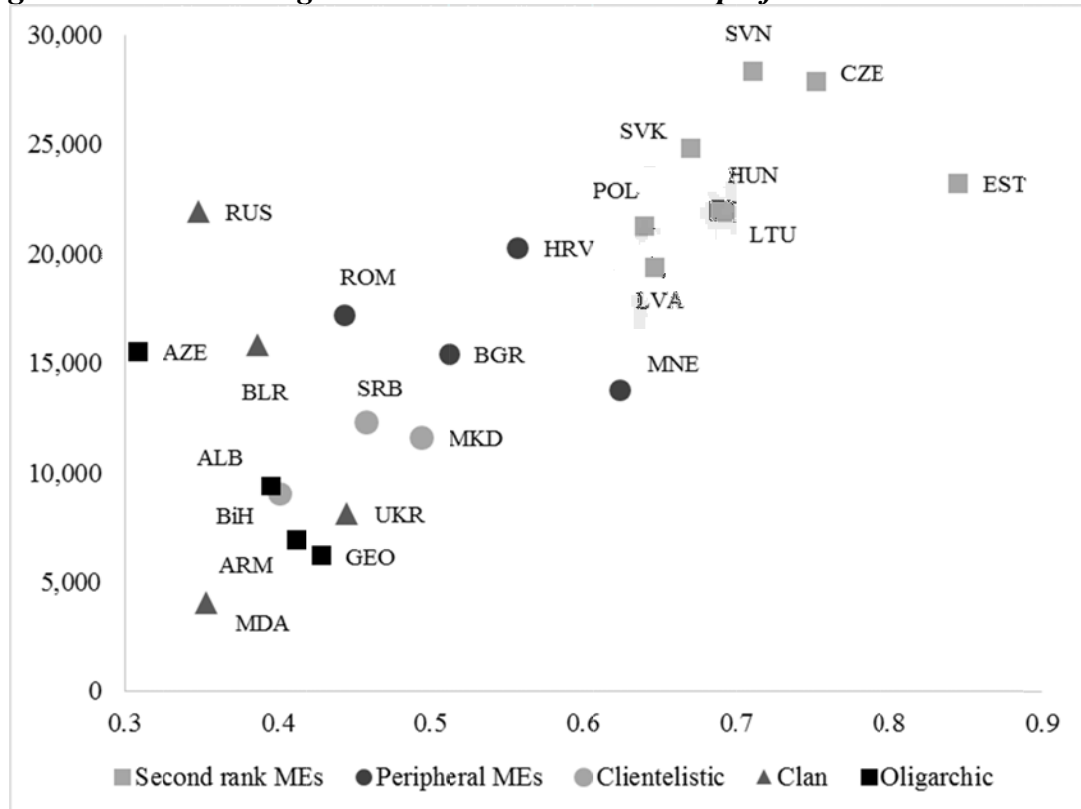
Source: [9]; [10]; [12]; [17]; [25]; [26]; [27]; [28]; [29]; Legend: Institutional dimensions have a normalized range of 0 to 1, where 1 means flexible and quality regulated Product and Labour markets, a developed Financial system, an extensive Welfare state, a quality Education and a quality level of the Political environment.

The following figure shows the relation between the average level of capitalist organization and the economic performance between 2008 and 2013. As an indicator of the economic performance, the paper uses a proxy - GDP per capita (current international \$, PPP; [27]). It is evident that the “Second rank MEs” (EU-8) reach the highest economic performance. Simultaneously, regarding the other relatively successful countries, one can include the Balkan republics in the “Peripheral MEs” and “Hybrid/Clientelistic” capitalist model. Within the second group Croatia and Montenegro approach to the first group, while

¹⁷ With the exception of Belarus

Albania and Bosnia and Herzegovina are on the level of the post-soviet states in both criteria, which can be caused by unfinished transformation of the economic and political system in contrast to Croatia or Montenegro. The relative high economic performance of Azerbaijan, Belarus and Russia is given by their specific conditions.

Fig. 2: Institutional organization and the economic performance in 2008 – 2013



Source: [9]; [10]; [12]; [17]; [25]; [26]; [27]; [28]; [29];

Conclusion

The diversity and heterogeneity persist in the European post-socialist area. On the basis of Amable's approach to the models of capitalism, we performed a cluster analysis (Ward's method). We analysed the six dimensions of the modern capitalism (product and labour markets, financial system, welfare state, education and the political environment) and identified five different institutional units in the European transition economies, which one can divide into two clusters: EU-8 countries ("Second rank (FDI based) market economies") and the Balkan and post-soviet states ("Peripheral market economies" and various types of "Hybrid capitalism with attribute"). The second group falls behind in all dimensions excluding Croatia and Montenegro. Within the Balkan States, there are "Peripheral market economies" (Bulgaria, Croatia, Montenegro, Romania), on the one hand, and the rest (Albania, Bosnia and Herzegovina, Macedonia, Serbia) on the other; nevertheless, they all have common weaknesses (quality of education and inefficient financial system) and specific problem areas (rigid labour market in Albania, Croatia and Romania and underdeveloped democratic institutions and governance in Bosnia and Herzegovina). Within comparison of the individual dimensions, a quality of political environment is the main difference between the Balkan and post-soviet states, whereas the other characteristics are very similar.

The paper is a basis for future research, which will be aimed at a comparing the institutional (capitalist) organization of the post-socialist countries with neighbouring

regions (Central Asia, the Middle East and Northern Africa). Simultaneously, the comparison will proceed from the approaches of Amable [1], used in the paper, and Pryor [20], the general classification for developing countries. In the context of the Balkan and post-soviet states, the area of relations between the individual political and economic interest groups (authoritarian, clientelistic and oligarchic structures) seems to be promising for future research.

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THE STRUCTURE OF MUNICIPAL COUNCIL COMMITTEES OF LOCAL GOVERNMENTS OF HUNGARY BEFORE AND AFTER THE LOCAL ELECTIONS OF 2014

Mariann Marincsák, Gábor Kozma, János Péntes

Abstract: *The aim of the present paper is examine the committee structure of municipal councils of Hungarian settlements having a population over 5,000 before and after the local elections of 2014, and to analyse the presence of external experts in the work of the various committees. The most important findings can be summarized as follows: the average number of municipal council committees shows a strong correlation with the size of the settlements. The roles of the individual sectors as filled in the municipal council committees, and the changes to the same, are affected by amendments in the relevant laws and the subsequent governmental measures. The participation of external members in the municipal council committees is typical primarily in sectors that are less important and require mainly professional knowledge; at the same time, municipal councils strive to keep external members away from the work of committees discussing issues that are confidential or otherwise sensitive from the point of view of the local governments.*

Keywords: *Municipal council committees, Hungary, Size of settlements, Democratism, Local election of 2014.*

JEL Classification: *H75, H76, Z18.*

Introduction

After the political changes of the 1990s, the scope of tasks and powers of local governments significantly increased in former socialist countries in comparison with the earlier situation [4, 8, 9, 11, 13]. The municipal council elected by the population has become the chief decision-making body, which governs the life of the given settlement by way of local government regulations and decisions. At the same time, however, similarly to the way it is done in most Western European countries, municipal councils in most countries in this region delegate a part of their tasks and powers, together with the financial resources necessary for their implementation, to specialized committees (e.g. Poland: [12], Slovakia: [6, 10]). Besides they also have the function of providing their opinions on proposed local legislation before it is submitted to the municipal council (the exact rights of the individual committees, however, are contained in the local laws, and as such they differ from one settlement to the next; therefore, it is not possible to make general observation about their characteristic features). In most cases, committees deal with more topics than would be obvious from their names; however, to some extent those names reflect the system of priorities of the given municipal council, emerging as a result of external (e.g. measures of the central government) and internal (e.g. budgetary constraints, the endowments of the settlement) influences.

In addition to members of the municipal council (councillors), external experts may also sit on committees, whose presence there means the embodiment of the democratism of public administration [5, 7, 14].

There had been hardly any previous publications analysing the situation in the individual sectors and the reasons for the changes, and therefore, our study can be considered as a pioneering one, but this situation also makes comparisons with the international tendencies harder.

1 Statement of problem

Under the relevant provisions of Hungarian law in effect (Act CLXXXIX of 2011 on the local governments of Hungary), municipal councils have a large degree of freedom in setting up the committees. On the one hand, they can decide whether a committee may only consist of councillors or also external experts, with the only limitation that the chairperson of the committee and the majority of its members must be councillors [2]. On the other hand, laws only require specific committees to be established in a few cases (e.g. it is mandatory to set up a financial committee on settlements with a population over 2,000, as well as to have a committee dealing with issues related to public education in case of local governments maintaining three or more educational institutions), and otherwise the municipal councils may freely decide on the creation and naming of the committees [3]. Despite the fact that the scope of the committees' work is often wider than can be deduced from their names, we think it stands to reason to examine this area, since the names reflect to some extent also the system of preferences held by the municipal council.

In the spirit of the above, this paper fundamentally wishes to accomplish two aims: on the one hand, to examine the committee structure of municipal councils before and after the local elections of 2014, and to point out the causes of the differences between the settlements and the changes occurring after the elections. On the other hand, it would like to analyse the presence of external experts in the work of the various committees and to explore the differences between the various sectors/areas, as well as the factors that stand behind them.

The choice of the abovementioned time limit is fundamentally attributable to the fact that the new municipal councils constituted after the elections in most cases significantly adjusted the structure of committees, with attention to the external and internal factors.

2 Methods

The target group of the research were the municipal council committees of settlements having a population over 5,000 (a total of 273 settlements). The necessary information was available from the Rules of Organisation and Operations, which in most cases contained the names and compositions of the committees; in the absence of this information, the minutes of the municipal councils, as well as information available on the websites of the settlements concerned were used.

In the course of the analysis, on the one hand, treating the settlements as the units, we examined the frequency with which the sectors/areas are present, as well as other characteristic features. On the other hand, in order to explore the differences between the settlements, they were placed in four categories on the basis of size (5,001 to 10,000 persons, 10,001 to 25,000 persons, 25,001 to 50,000 persons, above 50,000 persons).

3 Problem solving

3.1 A general description of municipal council committees

The role played by the size of the settlement can be clearly observed in terms of the number of municipal council committees (Tab. 1): with the increase of the number of population, the average number of the committees also increases. An analysis of the tendencies of change after the elections of 2014 reveals a minor decrease, but there are differences that can be observed between the various categories according to size: in case of settlements with a population of 10,001 to 25,000 and above, the average number of committees decreased, with an opposite change occurring in case of the other two categories.

The existence of the connection is also reflected by the various statistical indexes: the value of the Pearson correlation coefficient with respect to the size of the settlement and the number of committees was 0.513 before the elections and 0.456 after the elections (the Spearman rank correlation coefficient was 0.461 and 0.431), which indicates a significant relationship on 0.01 level (however, the decreasing value refers to a slightly weakening connection).

Tab. 1: The average number of municipal council committees at settlements of different sizes before and after local election of 2014

Number of inhabitants	Before the local election	After the local election
5,001 to 10,000 persons	3.22	3.27
10,001 to 25,000 persons	3.91	3.73
25,001 to 50,000 persons	4.57	4.79
above 50,000 persons	5.94	5.78
all settlements	3.78	3.75

Source: Authors compilation

In the course of setting up the committees, municipal councils may freely decide in the question of how many areas a committee deals with, as reflected in their names. An examination of the data (Tab. 2) reveals that committees in charge of two sectors dominate, with the second place occupied by committees whose scope of tasks and powers covers three or more sectors. If we analyse the tendencies after the local elections of 2014, there are no major changes, as the rate of change did not exceed 0.5% in any of the cases.

Tab. 2: The most important elements of the committee structures of municipal councils at the settlements examined before and after local election of 2014

Elements of the committee structure	Before the local election	After the local election
The percentage of committees dealing with a single sector/area (%)	30.2	30.5
The percentage of committees dealing with two sectors/areas (%)	37.1	37.3
The percentage of committees dealing with three or more sectors/areas (%)	32.7	32.2

Source: Authors compilation

Based on the examination of the relationship between the municipal council committee structures and the size of the settlement (Tab. 3), we can find a very close connection: in case of larger settlements, committees dealing with one or two areas are more frequent,

while in case of smaller settlements the proportion of committees responsible for three or more sectors is above average, which fact is primarily due to the different sizes of these municipal councils. At the same time, from Table 3 it is also apparent that the differences between the individual categories of settlements are not too big (only 3-5% difference from the average).

Tab. 3: The most important elements of the committee structures of municipal councils at settlements of different sizes before and after local election of 2014

Number of inhabitants	A	B	C
5,001 to 10,000 persons	29.9	36.9	33.2
10,001 to 25,000 persons	28.7	36.9	34.4
25,001 to 50,000 persons	32.1	37.3	30.6
Above 50,000 persons	32.7	40.4	26.9
All settlements	30.5	37.3	32.2

A – the percentage of committees dealing with a single sector/area (%), B – the percentage of committees dealing with two sectors/areas (%), C – the percentage of committees dealing with three or more sectors/areas (%)

Source: Authors compilation

3.2 The areas controlled by the municipal council committees

As mentioned above, with a few exceptions, the municipal councils can freely decide on the names of the committees and the scope of tasks and powers they have. In terms of the order of the sectors (Tab 4), finance occupies the first place, the second largest group includes urban development, social affairs and procedural, followed by culture, and then another larger group that includes sports, education and healthcare. In terms of the tendencies of change, it was rather a decrease that was characteristic: out of the 20 sectors examined, the share of 11 decreased, while only six increased, with the remaining three undergoing no change. The rate of change, however, can be considered as minimal (3-4%) in case of most areas, with only three sectors being exceptions to this rule (education, health care, human).

Tab. 4: The appearance of the individual sectors/areas in the structure of municipal council committees before and after the local elections of 2014 (only those sectors are shown in the table which were mentioned in case of at least 5% of the committees both before and after the given date, in %)

Sectors	Before local election	After local election
Financial	100.0	100.0
Urban development	69.6	71.1
Social affairs	71.4	68.9
Procedural	70.3	67.0
Culture	64.5	60.8
Sport	52.7	50.5
Education	60.4	49.8
Healthcare	52.0	46.2
Economic development	35.2	32.2
Law	35.9	31.9
Human	24.5	31.9
Environmental protection	28.6	28.6
Youth	25.6	24.9
Public safety	17.2	18.3
Urban management	14.3	14.3
Tourism	10.3	13.9
Public procurement	10.6	9.5
Asset management	9.2	8.8
Agriculture	8.4	8.8
Wealth-declaration	7.0	7.3

Source: Authors compilation

From the analysis of the importance of the individual sectors according to settlement category (Tab. 5), we can draw the conclusion, that the size of the municipal council has an important influence on this. If we examine the situation after the local elections of 2014, we can see that in case of 9 out of the 19 sectors, the role of a given sector was larger as the settlement size increases, while in case of 6 sectors there was only a single difference in each. An analysis of the tendencies of change according to settlement size reveals that the biggest decrease in case of settlements with a population over 50,000 occurred in healthcare, while the human sector showed a significant increase in the category of settlements with populations between 10,001 and 25,000.

Tab. 5: The appearance of the individual sectors/areas in the structure of municipal council committees at settlements of different sizes before and after the local elections of 2014 (%)

Sectors	5,001 to 10,000 persons		10,001 to 25,000 persons		25,001 to 50,000 persons		Above 50,000 persons	
	A	B	A	B	A	B	A	B
Urban development	68.9	69.7	71.6	71.6	50.0	67.9	91.4	83.3
Social affairs	68.2	67.4	71.6	65.3	78.6	75.0	83.3	88.9
Procedural	70.5	69.7	67.4	58.9	78.6	75.0	72.2	77.8
Culture	62.1	61.4	63.2	57.9	64.3	64.3	88.9	66.7
Sport	47.0	48.5	56.8	49.5	50.0	50.0	77.8	72.2
Education	52.3	53.9	65.3	51.6	64.3	53.6	88.9	77.8
Healthcare	45.5	45.5	61.1	49.5	46.4	42.9	61.1	38.9
Economic development	22.7	24.2	38.9	32.6	67.9	57.1	55.6	50.0
Law	17.4	18.2	48.4	38.9	64.3	50.0	61.1	66.7
Human	22.7	26.5	27.4	40.4	28.6	35.7	16.7	22.2
Environmental protection	18.9	21.2	38.9	33.7	25.0	35.7	50.0	44.4
Youth	20.5	16.7	23.2	26.3	46.4	35.7	44.4	61.1
Public safety	10.6	12.1	23.2	20.0	21.4	32.1	27.8	33.3
Urban management	6.8	6.8	13.7	14.7	35.7	39.3	38.9	27.8
Tourism	6.1	12.1	10.5	8.4	17.9	25.0	27.8	38.9
Public procurement	5.3	4.5	15.8	12.6	14.3	21.4	16.7	11.1
Asset management	4.5	1.5	5.3	6.3	17.9	28.6	50.0	44.4
Agriculture	6.8	6.8	10.5	10.5	10.7	10.7	5.6	11.1
Wealth-declaration	5.3	6.1	8.4	6.3	3.6	7.1	16.7	22.2

A – before local election, B – after local election

Source: Authors compilation

The weight of the individual sectors is shown, to some extent, by whether a separate committee deals with it, or the scope of tasks and powers of the committee concerned covers, at least as far as the name of the committee indicates, several areas. The analysis of the data (Tab. 6) shows the outstanding relative significance of the financial area, the second place is occupied by the human sector and the third place by committees dealing with rule of procedures.

Tab. 6: The number of committees dealing exclusively with a single sector at the settlements examined before and after the local election of 2014

Sectors	Before local election	After local election
Financial	99	95
Human	48	68
Procedural	45	38
Social affairs	30	29
Urban development	20	21
Economic development	15	12
Public procurement	12	11
Culture	4	9
Urban management	3	5
Asset management	3	4
Education	6	3
Agriculture	2	2
Public safety	2	2
Tourism	1	2
Civil society	1	1
Environmental protection	1	1
Healthcare	1	1
Law	1	1
Minority	3	1
Sport	4	1
Wealth-declaration	4	1

Source: Authors compilation

3.3 A general description of municipal council committees

The appearance of democratism, as mentioned earlier in the introduction of this paper, may be primarily accomplished by way of an involvement of external (expert) members in the work of the committees; at the same time, significant differences can be observed in this respect between the various sectors (Tab. 7). The rate of participation of external members in the committees is higher in the sectors of agriculture, human affairs, tourism and public safety while the opposite extreme (a relatively low level of participation of external members in the committees) can be found in committees dealing with issues of municipal assets, rules of procedures, public procurements and wealth-declarations of councillors.

Tab. 7: The composition of municipal council committees in the period after the local elections of 2014 (the table only shows those sectors in which at least 20 committees work)

Sectors	The proportion of committees in which there are not any external members
Agriculture	0.00
Human	2.41
Tourism	2.78
Public safety	3.85
Environmental protection	4.05
Youth	4.62
Healthcare	4.88
Urban management	5.41
Sport	5.93
Social affairs	6.03
Education	6.57
Culture	6.79
Urban development	6.95
Financial	8.78
Economic development	9.52
Law	9.64
Asset management	12.50
Procedural	18.18
Public procurement	20.00
Wealth declaration	42.11

Source: Authors compilation

4 Discussion

The findings of the research clearly underline the importance of the size of the settlement (Tab 1), which can be fundamentally explained by two factors. On the one hand, in case of a larger settlement, several such topics emerge the problems of which can be expediently addressed by separate committees, and therefore, the local councils also strove to have as many sectors represented on the level of committees as possible (Tab 5). On the other hand, larger settlements also have larger municipal councils (Tab 8), which means that the human resources necessary for setting up the committees is more readily available.

In addition, we can also observe that in terms of the number of sectors supervised by the committees, the differences between settlements of various sizes are not too big (Tab 3), which can be explained by two factors. On the one hand, the municipal councils are aware that the combination of the responsibilities of too many sectors/areas would make the efficient performance of work very cumbersome; on the other hand, it would be quite difficult to find council members or external experts, as the case may be, who would be proficient in so many fields.

Tab. 8: The number of councillors that can be elected at settlements of different sizes

Number of inhabitants	Number of councillors
5,001 to 10,000 persons	8
10,001 to 25,000 persons	11
25,001 to 50,000 persons	14
Above 50,000 persons	minimum 17

Source: [1]

The examination of the order of the individual sectors and the tendencies of change (Tab. 4 and Tab. 5), the most important factors appear to be provisions of law that have been in effect for a long time, as well as those newly entering into effect. On the one hand the population of all settlements included in the analysis was above 2,000; consequently, there was a committee dealing with financial affairs at all of the settlements (Tab. 4).

On the other hand the significant decrease in case of education is clearly attributable to the reorganisation of this sector: at 1 January 2013, the professional supervision and control of primary and secondary schools was moved from local governments to the Klebelsberg Institution Maintenance Centre. As a consequence of this fact many municipal councils came to the conclusion that since they are unable to influence the local conditions of the sector, therefore it is unnecessary to represent the sector on the level of committees, and for this reason they decided to eliminate their committees dealing with (among other things) education.

Similar reasons could be mentioned in case of another sector showing a significant decrease: healthcare. After 2010, the operation of healthcare facilities, previously a function of local governments, was taken over by the state, and as a result, local governments devote less attention to this area. The largest number of hospitals affected operated on the biggest settlements, and consequently, it is not surprising that the decrease predominantly affected settlements with populations over 50,000 persons.

The data of the human sector, which is the only one manifesting real growth, is primarily attributable to the fact that, with a view to cost reduction and the abovementioned decreasing significance of certain sectors/areas in local level, several municipal councils have decided to combine the previously separate committees in charge of education, culture, social affairs, etc., into a single "human affairs" committee. The above phenomenon was primarily characteristic of medium-sized settlements (10,000 to 25,000 people), which can be primarily related to the fact that the sectors belonging here (education, culture, sports, healthcare, social affairs) showed the biggest decrease in case of this category. At the same time, the increase of the significance of the human sector and the decrease of the role of the other five areas also explains the data in Tab. 1, according to which the biggest decrease in the average number of employees was in the category of settlements with 10,000 to 25,000 people.

With respect to the sectoral distribution of committees dedicated to a single area (Tab 6.), we can partly identify the abovementioned statutory requirement as being in the background of the outstanding importance of finance, and partly the fact that the drawing up of the budget and the monitoring of the financial processes are tasks that, in the opinion of municipal councils, require the concentrated attention of a committee. The second place of human sector (and here a significant increase may be observed after the elections) is attributable to the processes outlined above (the intention to combine several sectors and thereby decrease the number of seats on committees) while the third place

of committees dealing with rules of procedures is due to the special significance and character of the issues falling in the scope of competence of these committees.

The high level of democratism in the sectors of agriculture, human affairs, tourism and public safety can be explained by two factors. On the one hand, these are sectors dealing with which requires considerable professional knowledge; on the other hand, as shown earlier, these are not considered by municipal councils among the most important sectors. The position of sectors (issues of municipal assets, rules of procedures, public procurements and wealth-declarations of councillors) characterized by low level of democratism can be traced back to two reasons. In case of the areas of municipal assets, public procurements and wealth-declaration, the committees concerned mostly discuss issues that are of special significance from the point of view of the financial management of the local government and/or the income situation of councillors (and in some cases also constitute confidential information), and consequently, external members are not always welcome on these committees. In case of the areas of rules of procedures one of the main group of tasks is the discussion of the organisational issues of the local government, and municipal councils also strive to keep external members away from this work.

Conclusions

By way of a summary to this paper, the following main conclusions can be drawn:

- The average number of municipal council committees shows a strong correlation with the size of the settlements, and after the local elections of 2014, it has significantly changed in several categories established according to settlement size.
- The roles of the individual sectors as filled in the municipal council committees, and the changes to the same, are affected by amendments in the relevant laws and the subsequent governmental measures. The centralization processes going opposite to European trends were the strongest in the fields of education and healthcare, and as a consequence it was the committee positions of these sectors in municipal councils that changed (deteriorated) most significantly.
- The presence of democratism (the participation of external members in the municipal council committees) is typical primarily in sectors that are less important and require mainly professional knowledge; at the same time, municipal councils strive to keep external members away from the work of committees discussing issues that are confidential or otherwise sensitive from the point of view of the local governments.

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USING DEA FOR REGIONAL MERGING ZONES BASED ON GEOGRAPHIC MODELS OF THE EUROPEAN ECONOMY

Michaela Staníčková, Lukáš Melecký

Abstract: *For centuries, the “Blue Banana”, metropolitan axis running from London to Milan, has been Europe’s breeding place for innovation and growth. Recently, the “Sunbelt” from Milan to Valencia and the “Yellow Banana” from Paris to Warsaw have been identified as future European growth poles beside or even beyond the Blue Banana. Europe’s competitiveness depends on a multiplicity of actions that can optimise the potentials within its territory, especially regions. Nowadays, regions are increasingly becoming the drivers of the economy. All regions possess development opportunities – however, use these options enough and hence the competitiveness of European regions must be efficient enough. It is well-known that there are significant differences among the European Union regions which weaken its competitiveness. What are differences in territorial efficiencies with respect to the structure of Europe’s economic-geographical system? The paper is focused on using SBMT VRS DEA model for dividing NUTS 2 regions from geographic models of the European economy into efficient and inefficient ones. The main aim of the paper is to find the efficient frontier and identify optimal benchmark for inefficient regions as a strategy for enhancing their economic structure.*

Keywords: *Competitiveness, Efficiency, Geographic model, NUTS 2 region, SBMT VRS DEA model, Super-efficiency.*

JEL Classification: *C61, C67, O18, R11, R13, R15, R58.*

Introduction

Nowadays, the European Union (EU) is going through one of the most difficult periods since its establishment, with multiple challenges facing the region’s policy-makers. Recent years have seen a myriad of economic and social difficulties, i.e. stagnating economic growth, rising unemployment leading to social tensions, continuing financial troubles and sovereign debt crises in several countries, exacerbated by the fact that the future outlook remains uncertain. The financial crisis will slowly drive apart the constituent members of the EU and the Eurozone. Several European countries already are forming regional subgroups based on corresponding economic, political and security concerns. As these groupings form and solidify, they will mark the first appreciable structural change in the EU.

In order to explore the likelihood of changes in the structure of Europe’s geo-economy, Hospers [10] has developed a tentative framework (“vision”) of spatial structural change arguing that areas with sectoral and institutional diversity provide the flexibility needed to absorb new techno-economic developments and to develop “new combinations”. For the paper purpose in the case of Slack Based Model based on Tone (SBMT) in Data Envelopment Analysis (DEA) efficiency evaluation of European core areas and their growth tendencies, three basic geographic models of the European economy were used, i.e. Blue Banana, Sunbelt and Yellow Banana, and also with respect to Pentagon and Regional Competitiveness Index (RCI2013) approach.

Due to its diversified structure of the Blue Banana area (created by Pentagon areas and RCI2013 merged regions too) rather than the Sunbelt and the Yellow Banana we assumed in hypothesis the Blue Banana and surrounding Pentagon/RCI2013 areas may have the best starting-position to grow in the next decades. We thus believe that a localised European policy of “regional realism” ultimately may help the most in bringing about a less unbalanced growth of Europe’s geo-economy. In many ways, the EU situation prompts many countries to seek alternative economic, political and security arrangements, particularly by looking to form and develop regional groupings.

1 Structural Change in the EU Geo-Economy: Models Comparison

An international organization, like the EU, can be likened to a club of countries. The purpose of such a club is to achieve by common action certain goals which are impossible or hard to reach by the individual countries. The necessary condition for members to join the club is the expectation about the achievement of a net positive result from membership, but not all countries are able to create the positive impacts (especially in the case of the single market) from this membership in the same pace. Nations and regions are increasingly thrown upon the particularities of their geo-economic structure to make a difference in the single market. Studying the long-term consequences of the EU therefore requires a closer inspection of Europe’s economic landscape. Although Europe seems to be unified only by its diversity, we can still detect a more or less homogeneous economic zones. The European Spatial Development Perspective (ESDP) identifies a European core area, delimited by the London, Paris, Milan, Munich and Hamburg metropolitan areas and designated as the “Pentagon” [9]. Within this zone, one can observe a concentration of people, wealth production and command functions. The ESDP moreover claims that the main driving force behind the Pentagon's development is its status as global economic integration area. In consequence, the solution to improving the territorial balance in Europe would be to develop alternative zones of global economic integration through an increased level of integration between existing metropolitan areas, i.e. the idea of multiple “Pentagons” across Europe. Running from London over the Benelux and the Rhine area towards Milan – this axis “Blue Banana”, has often been identified as the area that traditionally has shown the greatest development potential in Europe’s geo-economy. Some suppose that the Blue Banana eventually must give way to the “Sunbelt”, an arch-shaped axis in the Southern Europe along the Mediterranean coast from Milan to Valencia. Others expect the rise of “Yellow Banana” stretching from Paris to Warsaw and further into Eastern Europe.

The Pentagon is a well-known model due to the ESDP as “the core area of the EU, the pentagon defined by the metropolises of London, Paris, Milan, Munich and Hamburg.” Later the formation got attributes ‘20-40-50 pentagon’ which is due to the data of the formation, i.e. this area represents 20 % of the total area and contains about 40 % of EU citizens producing about 50 % of the EU’s total GDP. As Hospers described [10, p. 77-78], the Blue Banana differs from other European locations in both demographic, economic, infrastructural and cultural-educational aspects. This area is densely populated and highly urbanised and comprises many large or medium-sized cities, e.g. London, Amsterdam, Brussels, Dortmund, Frankfurt, Basle, Zurich and Milan. Statistics show that the regions within the Blue Banana have higher per capita incomes and lower employment rates than the rest of Europe. Besides, this zone contains large industrial concentrations as well as strongly developed service centres, particularly in the fields of business services, banking and public administration. The Blue Banana has a well-developed physical

and telecommunications infrastructure as well as dense traffic networks. Finally, within Europe this area attracts attention because of its relatively large supply of cultural and educational facilities. But since the nineties, analysts have argued that the Blue Banana might gradually lose its dominant position in Europe. In their view, there are other growth areas in the making – in particular two zones have been identified as future growth poles in the European economy: the Sunbelt in the southern part of Europe and the Yellow Banana in the East. The Sunbelt running along the Mediterranean coast from Milan to Valencia; this arch-shaped belt with cities such as Nice, Marseille and Barcelona is said to be emerging on the basis of high-tech and service activities combined with a qualified work force and a pleasant working and living climate. Alternatively, the reunification of West and East Germany and the EU enlargement with Central and Eastern Europe countries have provoked some authors to expect the rise of the Yellow Banana from Paris via Cologne and Berlin to Warsaw; this axis has been identified as future European growth pole and may even stretch further eastward to the Baltic region.

If anything, these speculations suggest that we should look beyond the Blue Banana in studying Europe's development potentials. In this case, also the EU has developed its own approach to regional constitution in the case of performance analysis. The literature raises two issues related to selection of the appropriate regional level. The first, competitiveness should be calculated for functional economic regions. The second is that region should have an important political and administrative role. In most countries, however, functional regions are not administrative and vice-versa. Thus in practice, these two recommendations can be rarely combined. To improve the understanding of territorial competitiveness at regional level, the EU has developed the RCI approach which shows the strengths and weaknesses of each of EU NUTS 2 regions and these are the territorial objects of efficiency analysis. NUTS 2 regions are administrative or statistical regions which do not take into account functional economic links. For example, London and Paris are both cities of approximately the same size (7.7 and 6.7 million inhabitants). Paris is included in NUTS 2 region of Ile de France with 12 million inhabitants. This has the benefit that it includes the commuter belt around Paris. Greater London, on the contrary, is split into two NUTS 2 regions: Inner London (3 million) and Outer London (4.7 million) although both fall under the same mayor. In addition, these two NUTS 2 regions do not cover the commuter belt around London [12]. This problem arises for a number of cities: London, Brussels, Prague, Berlin, Amsterdam and Vienna. It is thus no random that these regions, resp. regions around these major cities, were subject of merging within RCI2013. Therefore, one important question has been asked in RCI2013, i.e. what are the consequences of not merging regions which have strong functional economic links:

- It does not take into account the qualifications of the people working in the city but living in a neighbouring region. Educational attainment is measured where people live, not where work.
- It distorts GDP per head. Distortion is due to commuting patterns – people work in city, but not live in city contribute to GDP but not the population.

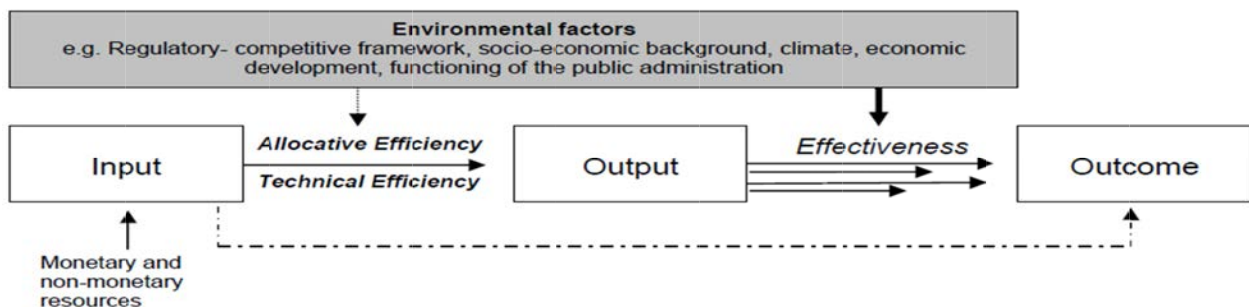
In RCI2013 construction, some regions are merged with surrounding areas to correct for commuting patterns following the new city definition. With respect to RCI2010, more capital regions are merged with their surrounding regions: Wien (AT), Brussels (BE), Praha (CZ), Berlin (DE), Amsterdam (NL) and London (UK) and with respect to revision of NUTS classification some regions in Finland (FI) were merged. But how are NUTS 2 regions selected to merge? If a region has at least 40 % of its population inside the

commuting zone (commuting zone of a city consists of all contiguous municipalities that send 15 % or more of their working residents to the city), it is added to region which contained the city. This criterion is applied to all NUTS 2 regions, but only a few NUTS 2 regions with the capital had neighbouring regions with a high-share of its population in the commuting zone of the capital.

2 Methods for Assessing Structure of Regional Competitiveness Growth

In last few years the topic about regional competitiveness stands in the front of economic interest. Current economic fundamentals are threatened by shifting of production activities to places with better conditions. In the global economy regions are increasingly becoming the drivers of the economy. Successful implementation of economic policies at the regional level requires information on the specific factors that determine the pattern of regional growth and competitiveness. Nowadays competitiveness is one of the fundamental criteria for evaluating performance and reflects the success in broader comparison. Territories need highly performing units in order to meet their goals, to deliver the products and services they specialized in, and finally to achieve competitive advantage. Comparative analysis of performance in public sector is starting point for studying the role of its two dimensions – efficiency and effectiveness, regarding economic governance of resources utilization by public management for achieving medium/long-term objectives of economic recovery and sustainable development of economies. Increasing productivity is generally considered to be the only sustainable way of improving living standards in the long term period. Concept of competitiveness is linked with performance, because competitiveness measures “how a nation manages the totality of its resources and competencies to increase the prosperity of its people” [13]. This understanding of competitiveness is closely linked with efficiency and effectiveness theory, see Fig. 1.

Fig. 1: The Relationship between Efficiency and Effectiveness



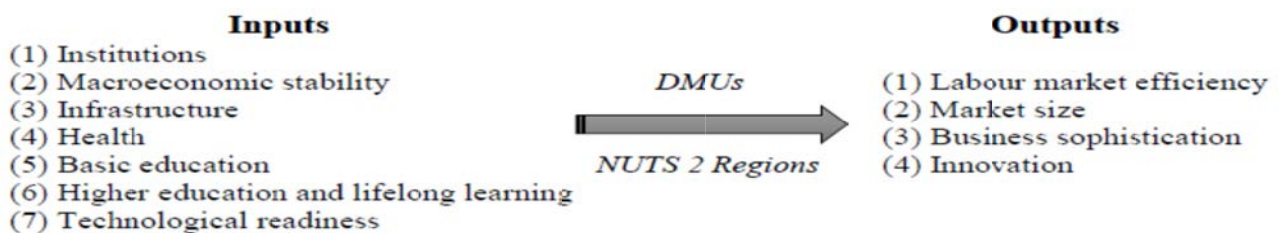
Source: [11, p. 3]

In this paper, we evaluate the efficiency of strength economic axis, resp. how powerful in economic growth and efficient in competitiveness are these core areas (based on following approaches: Pentagon, Blue Banana, Sunbelt, Yellow Banana, RCI2013) which are crucial for the European economy according to the theory of geographic models. Several quantitative approaches to measuring economic growth, convergence and competitiveness of European territorial units exists. Corrado et al. [6] develop an approach that identifies both the number and the composition of convergence clubs using pair-wise stationarity tests on time-series data, but for a variety of conditioning variables. Using these variables, Corrado et al. [6] test for regional “convergence-clusters” across the EU regions against a number of hypothetical, a priori determined clusters. However, an application of this methodology across all the regions of the 27 countries of the EU is entirely feasible, since it requires an extensive time-series data for variables such as R&D labour and so

forth; a requirement that it is difficult to fulfil, especially for the “new” member states. Using cross-section methodologies, on the other hand, can overcome the problem of small data sets for particular conditional variables [1]. Durlauf and Johnson [7] apply a “tree-regression” method using cross-section data sets and a conditional convergence equation is estimated excluding those economies that do not fulfil certain criteria, defined ex-ante. Application of such a methodology seems to be biased in identifying a predetermined convergence club. Moreover, applying a “tree-regression” method in a regional context fails to take into account the spatial dimension of the growth and convergence process [8]. Another approach in territorial analysis is based on Multicriteria Decision Making Methods (MCDM), e.g. Poledníková [12] uses MCDM for comparison of regions’ ranking in the case of Visegrad Four, or Staníčková and Melecký [14] use DEA method for measuring efficiency level of transform inputs into outputs (in relation to competitiveness) of the EU countries and especially regions.

Efficiency analysis starts from building database based on RCI approach. RCI is computed as weighted score of three sub-indices, i.e. SubInd1: RCI-Basic, SubInd2: RCI-Efficiency and SubInd3: RCI-Innovation, and covers thus a wide range of issues related to competitiveness. RCI is based on pillars describing both inputs and outputs of territorial competitiveness, grouped into three sets describing basic, efficiency and innovative factors of competitiveness, i.e. mentioned sub-indices. Inputs and outputs describe driving forces of competitiveness, and direct or indirect outcomes of a competitive economy [3], see Fig. 2. RCI seems to be convenient to using DEA, with respect to its division on input and output nature of database.

Fig. 2: Input and Output Scheme of Regional Efficiency Evaluation



Source: [3]; own elaboration, 2015

3 SBMT VRS DEA Models for Solving Regional Efficiency

Statistical evidence to help policy makers understand the routes to performance growth, especially those which can be influenced by government, can help lead to better policy. DEA originating from Farrell’s work and popularized by Charnes, Cooper and Rhodes [4] evaluates efficiency of a set of homogenous group called Decision Making Units (DMUs) which convert multiple inputs into multiple outputs, but definition of DMU is generic and flexible. There are several methods for measuring efficiency, besides the basic DEA models, certain modifications exist. The aim of DEA is to examine DMU into two categories – efficient and inefficient. DEA is convenient to determine the efficiency of DMU, which are mutually comparable – using the same inputs, producing the same outputs, but their performances are different. Efficient DMUs have equivalent efficiency score, but they don’t have necessarily the same performance. DMU is efficient if the observed data correspond to testing DMU on the imaginary efficient frontier. Intent of frontier estimation is to deduce the production function in form of efficient frontier. If DMUs are plotted in their input/output space, then efficient frontier that provides a tight

envelope around all of DMUs can be determined. The main function of this envelope is to get as close as possible to each DMU without passing by any others.

The first step in efficiency analysis is Returns to Scale (RTS) estimation. Why is necessary to decide RTS orientation? Various types of DEA models can be used, depending upon the problem at hand. Used DEA model can be distinguished by scale and orientation of model. If one cannot assume that economies of scale do not change, then a variable returns to scale (VRS) type of DEA model, is an appropriate choice (as opposed to a constant returns to scale (CRS) model). If in order to achieve better efficiency, governments' priorities are to adjust their outputs (before inputs), then an output oriented (OO) DEA model, rather than an input oriented (IO) model, is appropriate. There are also no IO or OO models, but distance from efficient frontier is solved – what will be type of DEA model for this paper, see Tab. 1. Territorial background of analysis is applied at 36 NUTS 2 region level within EU Member States where geographic models have axis (see Tab. 2), as was mentioned in chapter one; NUTS 2 regions are specified in Tab. 2.

Tab. 1: RTS Estimation to EU NUTS 2 Regions and Models Specification

<i>Geographic Model</i>	<i>NUTS 2</i>	<i>RTS</i>	<i>DEA Model</i>
Pentagon	London-Paris Axis	VRS	1 st stage: SBMT VRS DEA Model of Efficiency 2 nd stage: SBMT VRS DEA Model of Super-Efficiency 3 rd stage: NUTS 2 classification
Blue Banana	London-Milan Axis		
Sunbelt	Milan-Valencia Axis		
Yellow Banana	Paris-Warsaw Axis		
RCI2013	Merging Regions		

Source: Annoni and Kozovska (2010), Hospers (2003); own elaboration, 2015

Suppose there are n DMUs which consume m inputs to produce s outputs. There is a rough rule of thumb [5] which expresses the relation between the number of DMUs and the number of performance measures. Toloo et al. checked more than 40 papers that contain practical applications and statistically, they found out that in nearly all of the cases the number of inputs and outputs do not exceed 6 [15]. A simple calculation shows that when $m \leq 6$ and $s \leq 6$, then $3(m + s) \geq m \times s$. As a result, in this paper following formula (1) is applied:

$$n \geq 3(m + s). \quad (1)$$

In the paper, the rule of thumb is for NUTS 2 regions and inputs and outputs met: $36 \geq 3(7 + 4)$, $36 \geq 3(11)$, $36 \geq 33$.

For calculations of EU NUTS 2 regions efficiency across core economic axis, SBMT not-focusing on input and output assuming VRS is used (2) [16]:

$$\min \rho = \frac{1 - \frac{1}{m} \sum_{i=1}^m (s_i^- / x_{iq})}{1 + \frac{1}{r} \sum_{k=1}^r (s_k^+ / y_{kq})}, \quad (2)$$

subject to

$$\begin{aligned} \sum_{j=1}^n x_{ij} \lambda_j + s_i^- &= x_{iq}, \\ \sum_{j=1}^n y_{kj} \lambda_j - s_k^+ &= y_{kq}, \\ \lambda_j, s_k^+, s_i^- &\geq 0, \end{aligned}$$

$$j = 1, 2, \dots, n, j \neq q; k = 1, 2, \dots, r; i = 1, 2, \dots, m,$$

where x_{ij} is the value of i -th input unit U_j ; y_{kj} is the value of k -th output unit U_j ; x_{iq} is the value of k -th input unit U_q ; y_{kq} is the value of k -th output unit U_q . Additional variables s_k^+ and s_i^- measure the distance of inputs and outputs of virtual unit $\mathbf{X}\lambda$ and $\mathbf{Y}\lambda$ from inputs and outputs of evaluated unit U_q . Expression in the numerator, resp. the denominator of the objective function (2) measures the average distance of inputs, resp. outputs from the efficient frontier. For efficient units, the value of the objective function equals to one, units with the value of the objective function less than one are inefficient. For VRS applies condition of convexity $\mathbf{e}^T \lambda = 1$.

For possibility of efficient units' classification, SBMT Model of Super-Efficiency not-focusing on input and output assuming VRS is used [16]. In this model, evaluated unit U_q is removed from the set of units and is searched virtual unit U^* with inputs x^* with inputs and outputs y^* , which will be efficient after this removal. Inputs and outputs of unit U^* will not be better in comparison with unit U_q . Value of Super-Efficiency is defined as the distance of inputs and outputs from both units U_q and U^* . As measure of distance, metric δ is used, as follows (3):

$$\min \delta = \frac{\frac{1}{m} \sum_{i=1}^m (x_i^* / x_{iq})}{\frac{1}{r} \sum_{k=1}^r (y_k^* / y_{kq})}, \quad (3)$$

subject to

$$\begin{aligned} \sum_{j=1}^n x_{ij} \lambda_j + s_i^- &= x_i^*, \\ \sum_{j=1}^n y_{kj} \lambda_j - s_k^+ &= y_k^*, \\ x_i^* &\geq x_{iq}, \\ y_k^* &\leq y_{kq}, \\ \lambda_q &= 0, \\ \lambda_j, s_k^+, s_i^- &\geq 0, \\ j &= 1, 2, \dots, n, j \neq q; k = 1, 2, \dots, r; i = 1, 2, \dots, m, \end{aligned}$$

where all symbols have the same interpretation as (2). The numerator in the metric δ can be interpreted as the average rate of input increase of units U^* compared with inputs of unit U_q . For optimal value of the objective function holds $\delta^* \geq 1$. For inefficient units $\delta^* = 1$, for efficient units $\delta^* > 1$ and the higher value corresponds to higher value of Super-Efficiency. For VRS applies condition of convexity $\mathbf{e}^T \lambda = 1$.

4 Comparison of Efficiency among the EU Core Economic Axis

Using SBMT VRS model of efficiency and SBMT VRS model of Super-Efficiency is measured level of efficiency in NUTS 2 regions represent the EU strength economic axis including Pentagon, Blue Banana, Sunbelt, Yellow Banana and RCI2013 merging regions. Based on results of SBMT VRS model of efficiency, evaluated NUTS 2 regions are divided into two groups – efficient and inefficient regions (see Tab. 2). Coefficient of efficiency (CE) equals to one for efficient NUTS 2 regions and is less than one for inefficient ones (the lower CE, the less inefficient unit). Total number of evaluated NUTS 2 regions is

36 – 29 units were identified as efficient and 7 as inefficient, but what are the differences among them? Efficient NUTS 2 regions are those on the main core economic axis according to RCI2013 and in line with Pentagon and Blue Banana too. Less efficient, resp. inefficient NUTS 2 regions are outside the main axis – these units are (in most cases) part of Yellow Banana and Sunbelt.

The main questions of efficiency analysis were following: How powerful in economic growth and efficient in competitiveness are the main core areas (Pentagon, Blue Banana, Sunbelt, Yellow Banana, and RCI2013)? Which NUTS 2 regions are the most crucial for the European economy? Will be DEA NUTS 2 regions classification in line with the importance of areas based on the theory of geographic models? For their answering SBMT VRS model of Super-Efficiency was used and final ranking was ordered based on Coefficient of Super-Efficiency (CSE) (see Tab. 2). Evaluated NUTS 2 regions are based on CSE classified from the most to the least efficient.

The category of the most efficient NUTS 2 regions (1st – 14th positions: CSE is greater than 2,000) contains large and wealthy urban conglomerations with high shares of employment in the service sector. These areas have a diversified economic and institutional structure and advanced educational and infrastructure facilities. Compared with these contemporary growth poles, intermediate efficient NUTS 2 regions (15th – 29th positions: CSE is greater than 1.000) are less dynamic: they often have to cope with adaptation problems. Overspecialisation in manufacturing together with a rigid institutional structure have created lock-in situations that hamper the restructuring towards a service economy, what could be also the case of inefficient NUTS 2 regions (30th – 36th positions: CE is less than 1.000), they have experienced no major difficulties in making the switch-over to an industrial or services economy.

This classification of geo-economic areas makes clear that the pattern of economic activity in Europe is unevenly distributed. Results of efficiency analysis show a more polycentric pattern with strong capital and metropolitan regions in many parts of Europe. Some capital regions are surrounded by similarly competitive regions, but in many countries, regions neighbouring the capital are less competitive. Despite the increasing level of mobility of economic sources, i.e. inputs to find out better condition for economic activities, access to places, and services is still difficult, what has an impact on economic development of regional areas distant from the main economic centres of the country, especially major cities and their surrounding areas. Efficiency results underline that competitiveness has a strong regional dimension, which national level analysis does not capture [2].

Tab. 2: Efficiency and Super-Efficiency SBMT Results for NUTS 2 Regions

NUTS 2 REGIONS		SBMT CE*	SBMT CSE*	FINAL RANKING		
				Rank	CSE	Region
AT12	Niederösterreich	1.000	2.248	1.	2.986	UKI1
AT13	Wien	1.000	2.302	2.	2.881	UKI2
BE10	Région de Bruxelles-Capitale	1.000	2.752	3.	2.856	UKH3
BE24	Prov. Vlaams-Brabant	1.000	2.689	4.	2.840	UKH2
BE31	Prov. Brabant Wallon	1.000	2.502	5.	2.752	BE10
CZ01	Praha	1.000	2.159	6.	2.689	BE24
CZ02	Střední Čechy	1.000	2.098	7.	2.502	BE31
DE11	Stuttgart	0.639	0.639	8.	2.302	AT13
DE21	Oberbayern	1.000	1.067	9.	2.248	AT12
DE30	Berlin	0.559	0.559	10.	2.159	CZ01
DE41	Brandenburg - Nordost	0.546	0.546	11.	2.098	CZ02
DE42	Brandenburg - Südwest	0.548	0.548	12.	2.071	FI13
DE60	Hamburg	1.000	1.003	13.	2.034	PL12
DE71	Darmstadt	1.000	1.031	14.	2.016	FI1A
DEA1	Düsseldorf	1.000	1.037	15.	1.238	LU00
DEA2	Köln	0.135	0.135	16.	1.206	ITC3
ES51	Cataluña	0.336	0.336	17.	1.170	ITC4
ES52	Comunidad Valenciana	1.000	1.091	18.	1.139	FR10
FI13	Itä-Suomi	1.000	2.071	19.	1.102	ITD3
FI1A	Pohjois-Suomi	1.000	2.016	20.	1.091	ES52
FR10	Île de France	1.000	1.139	21.	1.067	DE21
FR42	Alsace	0.013	0.013	22.	1.053	FR82
FR82	Provence-Alpes-Côte d'Azur	1.000	1.053	23.	1.037	DEA1
ITC3	Liguria	1.000	1.206	24.	1.031	DE71
ITC4	Lombardia	1.000	1.170	25.	1.027	NL31
ITD3	Veneto	1.000	1.102	26.	1.015	UKD5
LU00	Luxembourg (Grand-Duché)	1.000	1.238	27.	1.010	UKD3
NL23	Flevoland	1.000	1.008	28.	1.008	NL23
NL31	Utrecht	1.000	1.027	29.	1.003	DE60
PL12	Mazowieckie	1.000	2.034	30.	0.639	DE11
UKD3	Greater Manchester	1.000	1.010	31.	0.559	DE30
UKD5	Merseyside	1.000	1.015	32.	0.548	DE42
UKH2	Bedfordshire and Hertfordshire	1.000	2.840	33.	0.546	DE41
UKH3	Essex	1.000	2.856	34.	0.336	ES51
UKI1	Inner London	1.000	2.986	35.	0.135	DEA2
UKI2	Outer London	1.000	2.881	36.	0.013	FR42

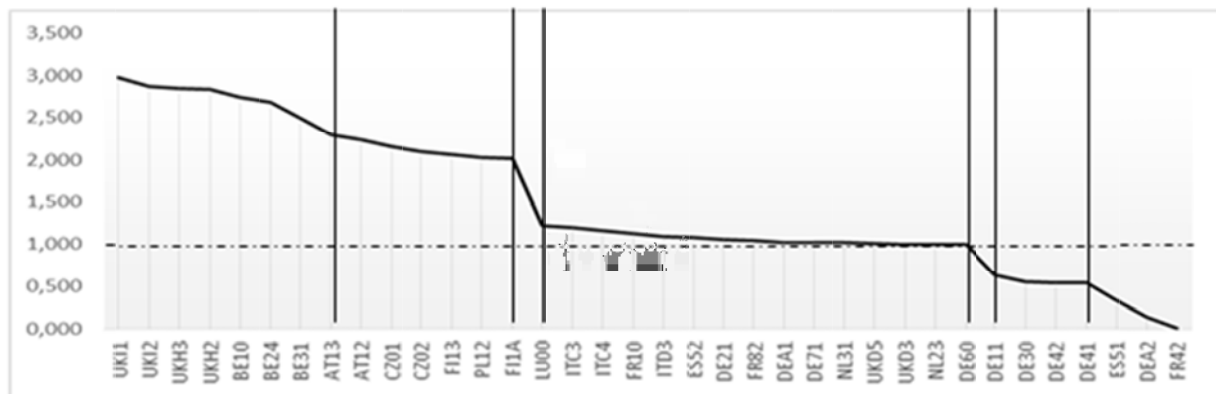
**Results of CE for SBMT and CSE for SBMT are listed to NUTS 2 regions according to their order in left column NUTS 2 regions. Part "Final ranking" of NUTS 2 regions is based on CSE values.*

Source: own elaboration, 2015

Following Fig. 3 shows development of efficiency level for evaluated NUTS 2 regions based on SBMT VRS model of efficiency. One horizontal axis on the value 1.000 represents the boundary between efficiency and inefficiency – within our sample is in the case

of NUTS 2 region DE60 Hamburg. Six vertical axis imagine breaking points for substantial decrease among efficiency levels of evaluated NUTS 2 regions.

Fig. 3: Development of Efficiency Level for Evaluated NUTS 2 Regions



Source: own elaboration, 2015

For each unit identified as inefficient, DEA creates group of so called Peer-Units which suggest strategy for the optimal combination of inputs and outputs to enhancing their efficiency. For this strategy, efficient units are used as benchmark because these units move on the efficient frontier and thus their combination of inputs and outputs seems to be optimal – no need to change. In Tab. 3 is possible to seen inefficient NUTS 2 regions and for each of them the benchmark NUTS 2 regions which are efficient and seems to be convenient background for calculation of changes in values for original inputs and outputs – optimal strategy how to improve efficiency.

Tab. 3: Optimal Peer-Units for Improving Inefficient NUTS 2 Regions

Inefficient NUTS 2 Region		Benchmark NUTS 2 Regions to Change Level of Inputs and Outputs	
DE11	Stuttgart	FR10 ITC4	Île de France Lombardia
DE30	Berlin	ITC3 ITC4 PL12	Liguria Lombardia Mazowieckie
DE41	Brandenburg - Nordost	ITC3 ITC4 PL12	Liguria Lombardia Mazowieckie
DE42	Brandenburg - Südwest	ITC3 ITC4 PL12	Liguria Lombardia Mazowieckie
DEA2	Köln	DEA1 FR10 ITC4 PL12	Düsseldorf Île de France Lombardia Mazowieckie
ES51	Cataluña	ITD3 PL12	Veneto Mazowieckie
FR42	Alsace	FR10 ITC4 PL12	Île de France Lombardia Mazowieckie

Source: own elaboration, 2015

Conclusion

An efficient economic integration arrangement should generate higher total welfare than any other arrangement. It's possible to expect that the EU core economic axis such as Pentagon, Blue Banana, Sunbelt, Yellow Banana and RCI2013 merging regions will be also the European growth axis in the next decades. This is not to say that there are no chances for other NUTS 2 regions in the European economy. As Hospers [10] also introduced, in addition to Blue Banana new growth poles might emerge in Europe. The future prospects of new areas depend upon their capacity to solve transition problems and to make use of the rising demand for services. From this perspective, Sunbelt may indeed have growth potential. The pleasant climate and attractive environment of this area along the Mediterranean coast offers opportunities to expand tourist, cultural and leisure services. Like peripheral agricultural areas in the Mediterranean, most regions in Central and Eastern Europe still have to cope with economic and institutional inertia effects resulting from the past. Therefore, these inefficient areas will be the objects of the next research. Via construction the Peer-Units, strategy of optimal settings of inputs and outputs will be suggested for enhancing their efficient options and economic positions within the EU axis.

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OKAMŽITÉ ZRUŠENÍ PRACOVNÍHO POMĚRU ZÁKONNÝM ZÁSTUPCEM NEZLETILÉHO ZAMĚSTNANCE

IMMEDIATE TERMINATION OF EMPLOYMENT BY THE LEGAL REPRESENTATIVE OF THE MINOR EMPLOYEE

Martin Šmíd

Abstract: *The paper deals with the actual issue of the possibility of the immediate termination of employment by the legal representative of the minor employee. Since 2014, The employment of minor employee (who is younger than 16) can be immediately terminated by the decision of his legal representative (typically parent). Consent of the court is necessary to this termination according to Labour Code. The main aim of this paper is to analyse the main struggles of the new legal regulation from two main aspects: material law aspect and process law aspect. The main problems are found, described and criticized in the article. The analysis of the issue is based on the legal exegesis of the current legal rules active since 1st January 2014 in all related laws – Civil Code, Labour Code, Civil Procedure Code and Act on Special Procedures. Consequences of the principles of the autonomy of will are also mentioned in the article.*

Keywords: *Labour law, Employment, Immediate Termination of Employment, Labour Code, Civil Code.*

JEL Classification: K31.

Úvod

Příspěvek se zabývá se institutem rozvázání pracovního poměru zákonným zástupcem nezletilého mladšího 16 let, který byl do českého pracovního práva zaveden v souvislosti s přijetím občanského zákoníku (zákon č. 89/2012 Sb.) [13]

Cílem příspěvku je na základě exegeze právního stavu po 1. 1. 2014 v oblasti vzniku a zániku pracovního poměru provést analýzu problematických aspektů tohoto institutu, a to jak z hmotněprávního, tak z procesněprávního hlediska. Příspěvek se bude věnovat také souvislostem s autonomií vůle jakožto vůdčí zásadou soukromého práva po rekodifikaci.

1 Změny v oblasti vzniku a zániku pracovního poměru

1.1 Rekodifikace soukromého práva a pracovní právo

Občanský zákoník (zákon č. 89/2012 Sb., dále také „OZ“) vstoupil v účinnost 1. ledna 2014. V této souvislosti byly provedeny taktéž změny právní úpravy pracovního práva, a to ať už přímo občanským zákoníkem (zejména § 34 a 35 OZ) nebo zákonem č. 303/2013 Sb., kterým se mění některé zákony v souvislosti s přijetím rekodifikace soukromého práva.

Kromě celkové úpravy vybrané terminologie došlo touto změnou především k propojení základních zásad pracovního práva s pojmem veřejného pořádku (§ 1a zákoníku práce, dále také „ZP“), byla změněna obecná ustanovení o právním jednání v pracovněprávních vztazích (zejména §4a, § 18-20, ale též § 346d-e ZP) a zjednodušena definice zaměstnance a zaměstnavatele (§ 6-7 ZP). Dále byl například změněn následek nedodržení písemní

formy v případě jednostranného rozvázání pracovního poměru; takové právní jednání je nově zdánlivé, nikoli pouze neplatné (§ 50 odst. 1, § 60, § 66 odst. 2, § 77 odst. 4 ZP). Do zákoníku práce byl také včleněn nový § 56a, upravující otázku okamžitého zrušení pracovního poměru zákonným zástupcem nezletilého zaměstnance. Dále došlo ke změně úpravy postoupení a započtení práva na mzdu a jeho použití pro zajištění (nově § 144a ZP). Za zmínku v této souvislosti stojí, že oblast náhrady újmy v pracovním právu byla uvedena do souladu s terminologií a pojetím občanského zákoníku až zákonem č. 205/2015 Sb., kterým se mění zákon č. 262/2006 Sb., zákoník práce, ve znění pozdějších předpisů, zrušuje zákon č. 266/2006 Sb., o úrazovém pojištění zaměstnanců, a zrušují nebo mění některé další zákony, a to s účinností od 1. 10. 2015.

Problematiku změn, které nastaly v důsledku rekodifikace, spojenou se vznikem nebo zánikem pracovního poměru podrobněji rozebírá další text.

1.2 Právní úprava vzniku a změny pracovního poměru po 1. 1. 2014

Samotná úprava vzniku pracovního poměru doznala jen minimálních změn, především formulačních. Za zvláštní zmínku stojí výslovné zmínění omezení možnosti odstoupit od smlouvy jen, dokud zaměstnanec nenastoupil do práce (§ 34 odst. 4 ZP). I zde ale bude platit, že takové odstoupení je možné jen z důvodů, které předpokládá zákon nebo dohoda smluvních stran v souladu s občanským zákoníkem.

Větší význam mají z tohoto pohledu vybrané změny obecných ustanovení o právním jednání v zákoníku práce. V první řadě to je stanovení zdánlivosti ujednání, kterými by se zaměstnanec vzdal práva, které mu přiznává zákon nebo kolektivní smlouva.

Pravidlo, že není možné dovolat se neplatnosti právního jednání, kterým vzniká nebo se mění základní pracovněprávní vztah, pokud již bylo započato s plněním, již zákoník práce obsahoval v předchozí úpravě; nyní bylo toto pravidlo jen přeformulováno (§ 20 ZP).

1.3 Právní úprava zániku pracovního poměru po 1. 1. 2014

Významnější změny zasáhly oblast zániku pracovního poměru. Nejpodstatnější změnou je v této oblasti zdánlivost jako následek sankcionující nedodržení předepsané písemné formy u většiny jednostranných právních jednání, kterými se rozvazuje pracovní poměr.

Dle § 50 ZP nyní platí, že „výpověď z pracovního poměru musí být písemná, jinak se k ní nepřihlíží.“ [12] Obdobná úprava byla stanovena pro okamžité zrušení pracovního poměru v § 60 ZP, pro zkušební dobu v § 66 ZP a pro výpověď nebo okamžité zrušení dohod o pracích konaných mimo pracovní poměr v § 77 odst. 4 ZP.

Tato změna byla patrně vedena snahou vyhnout se v tomto případě pochybnostem o tom, zda je taková neplatnost relativní či absolutní. V případě, že by výpověď byla učiněna pouze v ústní (nebo jiné nedostatečné formě), podle nové úpravy se vůbec nejedná o právní jednání. Je ale pravda, že důvodová zpráva je v tomto směru poněkud vágní a exaktní odpověď neposkytuje: „I v tomto případě negativním následkem bude, že vadné právní jednání bude právně bezvýznamné“ [8]. Toto tvrzení je chybné v tom, že nově nejde o vadné právní jednání, ale o zdánlivé, tedy vůbec neexistující právní jednání.

Úskalí tohoto řešení nastává v situaci, kdy se jedna popřípadě obě strany začnou podle zdánlivého právního jednání fakticky konat a skončí výkon závislé práce jako takové. Předchozí právní úprava poskytovala řešení dané pochybnosti (i v případě nedodržení formy) v ustanoveních o neplatném rozvázání pracovního poměru (§ 69 a násl. ZP). Podle ní v případě, že jedna strana oznámí druhé, že trvá na dalším zaměstnávání, pracovní poměr

trvá, zatímco pokud nikoli, platí nevyvratitelná právní domněnka, že pracovní poměr skončí dohodou. Dále je potřeba brát v zřetel, že v případě neplatnosti rozvázání je možné podat žalobu k soudu nejpozději do 2 měsíců ode dne, kdy by pracovní den tímto rozvázáním skončil (§ 72 ZP). V případě zdánlivosti je ale situace jiná a ustanovení o neplatnosti zde použít nemůžeme. Právní jednání bylo v tomto případě nicotné, respektive vůbec nešlo o právní jednání.

Současná právní teorie se shoduje v tom, že v takovém případě je teoreticky možné žalovat kdykoli po (fiktivním) datu skončení takového pracovního poměru, a to na určení, zda tu pracovní poměr je či není (určovací žaloba podle § 80 občanského soudního řádu, dále také „OSŘ“). [6]

Druhou významnou novinkou je právě zavedení možnosti okamžitého zrušení pracovního poměru (resp. jakéhokoli základního pracovněprávního vztahu) zákonným zástupcem nezletilého zaměstnance mladšího 16 let. Tato možnost byla obecně dána § 35 odst. 2 OZ a konkrétně realizována § 56a a § 77 odst. 5 ZP.

Aby takové zrušení pracovního poměru ze strany zákonného zástupce (zpravidla rodiče) bylo možné, musí být splněny tři základní podmínky:

- a) jedná o nezletilého, který nedosáhl věku 16 let,
- b) je to nutné v zájmu vzdělávání, vývoje nebo zdraví nezletilého,
- c) vyžaduje se přivolení soudu.

Jsou-li tyto podmínky splněny, je zákonný zástupce povinen doručit stejnopis okamžitého zrušení zaměstnanci.

Dle důvodové zprávy „tato nová právní úprava akcentuje zvýšení rodičovské odpovědnosti, dokud dítě nenabude plné svéprávnosti. Proto byla (...) ve prospěch zákonného zástupce zesílena. Toto zesílení rodičovské odpovědnosti je v souladu s mezinárodními smlouvami, kterými je Česká republika vázána.“ [8] Dále uvádí, že fakt, že se nezletilý může zavázat k výkonu závislé práce, neznamená, že je způsobilý se sám bránit proti vykořisťování pracemi, které škodí jeho zdraví nebo rozvoji.

Podrobnému rozboru problematických aspektů tohoto řešení je věnována další kapitola.

2 Problematické aspekty rozvázání pracovního poměru zákonným zástupcem nezletilého zaměstnance

2.1 Obecné vymezení

V první řadě je možné dívat se na danou problematiku prizmatem základních zásad soukromého práva. Za základ občanskoprávní regulace může být chápáno především řešení rozporu mezi individuální a sociální dimenzí člověka v reálném světě. Individuální dimenze je představována svobodou (v konkrétní právní rovině pak smluvní svobodou, potažmo autonomií vůle), společenská dimenze je pak představována rovností. Tyto základní zásady lze dialekticky chápat jako tezi a antitezi. [4] [5]

V této souvislosti je patrný především rozpor daného řešení s autonomií vůle, která je proklamovaná jako vůdčí myšlenka občanského zákoníku. [3] „Bývá charakterizována jako možnost soukromoprávních subjektů utvářet soukromoprávní vztahy podle jejich svobodné vůle; tím umožňuje jejich sebeurčení.“ [4]

Pokud zákon současně přiznává nezletilému, který dovršil 15 let a ukončil povinnou školní docházku, možnost zavázat se k výkonu závislé práce (§ 35 odst. 1 OZ), je řešení, kdy do takto vzniklého základního pracovněprávního vztahu může zasáhnout třetí osoba, přinejmenším neorganické a autonomii vůle nezletilého zaměstnance oslabující.

Otázkou je, zda je možné spojit možnost zrušení pracovního poměru zákonným zástupcem s principem rovnosti. Ochrana slabší strany je zásadou soukromého práva s vazbou na rovnost. Tato zásada se uplatňuje typicky ve vztazích, kde jsou výchozí pozice stran nerovnovážné a nelze se spokojit s tím, že budou oběma stranám poskytnuty stejné právní prostředky. [4] Rovnost je zde cíl, kterého je dosaženo korekcí výchozích pozic nerovnou úpravou práv a povinností subjektů.

Je zřejmé, že ochrana slabší strany byla hlavním motivem této úpravy, což vyplývá i z výše zmíněného odkazu na Úmluvu o právech dítěte. Z tohoto pohledu je snad pochopitelné, že tím, kdo by měl zvážit adekvátnost této formy ochrany je rodič dítěte, potažmo soud, který musí k danému rozvázání přivolit.

Dále je možné zmínit hledisko účelnosti. Z tohoto pohledu je dané ustanovení oprávněně kritizováno.

„Pro praxi se toto ustanovení nejeví jako příliš účelné. Nelze totiž předpokládat, že soud při všeobecně známé „rychlosti“ rozhodování stihne přijmout rozhodnutí dříve, než bude nezletilci 16 let.“ [6] Je tedy třeba si uvědomit, že ono ustanovení dopadá na poměrně marginální část pracovního života malého zlomku zaměstnanců. I samotnou povinnou školní docházku dokončí žák zpravidla později než hned v 15 letech, na celý proces zrušení pracovního poměru včetně nezbytného soudního řízení tak příliš prostoru nezbyvá. [1]

To dokládá i fakt, že zatím neexistuje žádné rozhodnutí vyšších soudů, které by danou otázku nějakým způsobem řešilo.

2.2 Hmotněprávní aspekty

Z hmotněprávního hlediska je otázkou, zda vzniká nějaký právní vztah mezi zaměstnavatelem a zákonným zástupcem nezletilého zaměstnance. Na daný problém se lze dívat optikou občanskoprávní svéprávnosti, které člověk nabývá dovršením 18 let. Pak tedy rodič zaměstnance jedná z titulu své pozice zákonného zástupce a v případě rozvázání pracovního poměru tedy de iure jedná za zaměstnance.

Druhý možný pohled vychází z pojetí pracovněprávní subjektivity, které je v našem prostředí tradiční (od přijetí předchozího zákoníku práce v roce 1965), tedy že způsobilost zaměstnance k právům a povinnostem a způsobilost k právním úkonům (dle staré terminologie) v pracovním právu vzniká dovršením 15 let.

Je pravda, že toto chápání vychází ze socialistické koncepce oddělenosti právních odvětví a odmítání dualismu soukromého a veřejného práva [2], kterou se i občanský zákoník snaží svým pojetím vymýtit. [3] Autoři občanského zákoníku záměrně přesunuli veškeré statusové otázky do materie nového kodexu, takže o pracovněprávní subjektivitě se v současnosti hovořit spíše nedá, respektive lze o ní uvažovat ve stejné rovině jako o subjektivitě ke kupní smlouvě či subjektivitě ke smlouvě o obchodním zastoupení. U jednotlivých závazků tedy mohou být stanoveny podmínky (včetně podmínky subjektů), ale hovořit v tomto smyslu o subjektivitě je spíše zavádějící.

Zajímavou otázkou spojenou s možností, kterou takto nově zákonný zástupce nezletilého zaměstnance má, je otázka informování zákonného zástupce o existenci pracovněprávního

závazku dítěte vůbec. Tuto povinnost nepochybně nemá zaměstnavatel, neboť pak by musela být explicitně vyjádřena v zákoníku práce.

Otázkou je, zda je možné dovodit povinnost dítěte informovat své rodiče o existenci svého pracovněprávního vztahu. Ustanovení občanského zákoníku o vzájemných právech a povinnostech rodičů a dětí jsou v tomto směru příliš obecná.

Okrajovou úvahou v tomto směru je také to, zda by nebylo možné dovodit povinnost dítěte rozvázat pracovní poměr, pokud se rodič bude domnívat, že to je nezbytné například pro ochranu jeho zdraví nebo práv, podle § 857 odst. 2 OZ.

Problémem může být i situace, kdy se oba rodiče na zrušení pracovněprávního závazku dítěte neshodnou. Pak by bylo lze uvažovat i o tom, že celému postupu by ještě muselo předcházet rozhodnutí soudu podle § 877 odst. 1 OZ, který určuje, že nedohodnou-li se oba rodiče v záležitosti, která je pro dítě významná, rozhodne na návrh rodiče soud. Odst. 2 pak mezi příklady významné záležitosti uvádí volbu vzdělání nebo pracovního uplatnění dítěte.

Nejasné je také doručení okamžitého zrušení zákonným zástupcem. Zákon výslovně uvádí povinnost doručit stejnopis nezletilému zaměstnanci, ale nestanoví povinnost jeho doručení zaměstnavateli. Obecná ustanovení o doručování (§ 334 a násl. ZP) pak řeší jen otázku doručování zaměstnavatelem nebo zaměstnancem.

Proto by bylo lepší výslovně stanovit povinnost doručení stejnopisu též zaměstnavateli, aby nevznikaly teoretické (a v horším případě praktické) otázky, zda je okamžité zrušení platné, pokud ho zákonný zástupce doručil pouze nezletilému zaměstnanci.

2.3 Procesněprávní aspekty

Z procesního hlediska je potom předmětem příspěvku otázka charakteru řízení jako takového a na to navazující problematika účastenství v řízení.

Občanský zákoník stanoví v § 35 odst. 2, že zákonný zástupce nezletilého, který nedosáhl věku šestnáct let, může rozvázat jeho pracovní poměr nebo obdobný pracovněprávní vztah, pokud je to nutné v zájmu vzdělávání, vývoje nebo zdraví nezletilého, způsobem stanoveným jiným právním předpisem. [13] Tímto jiným právním předpisem je zákoník práce, který tuto možnost v § 56a pro pracovní poměr (resp. v § 77 odst. 5 a 6 pro dohody o pracích konaných mimo pracovní poměr) navázal na přivolení soudu.

Bohužel na tuto změnu hmotněprávní úpravy nereagovala úprava procesněprávní. V rámci rekodifikace soukromého práva došlo k oddělení úpravy klasického sporného řízení, která zůstala obsažena v občanském soudním řádu, od úpravy zvláštních (nesporných) řízení, která byla zahrnuta do samostatného předpisu (zákon o zvláštních řízeních soudních, dále také „ZŘS“). [11] [14] Tím byl dovršen odklon od principu jednotnosti (sporného a nesporného) řízení, který byl typický především pro socialistické procesní právo, stojící na zásadě materiální pravdy, trvající vždy na zjištění skutečného skutkového stavu věci. [7]

Důvodem pro opětovné oddělení obou druhů řízení do samostatné právní úpravy je především věcná rozdílnost řízení, různost účelu, různý způsob stanovení pravomoci, odlišné vymezení okruhu účastníků řízení a jejich jiné postavení v rámci řízení, jiný způsob zahájení řízení či průběh dokazování a řada dalších dílčích odlišností (např. možnost vstupu státního zastupitelství do nesporných řízení). [10] Na místě je také zmínit, že nelze plně ztotožňovat pojem nesporného řízení a zvláštního řízení; do zákona o zvláštních řízeních

soudních mohou být zařazena i řízení, která mají sama o sobě sporný charakter (např. řízení o rozvod manželství).

Právní úprava civilního procesu nicméně neposkytuje jednoznačnou odpověď na otázku, jaký charakter má řízení o přivolení soudu k okamžitému zrušení pracovního poměru nezletilého zaměstnance jeho zákonným zástupcem.

§ 7 odst. 1 OSŘ uvádí, že v občanském soudním řízení soudy projednávají a rozhodují spory a jiné právní věci, které vyplývají z poměrů soukromého práva, pokud je podle zákona neprojednávají a nerozhodují o nich jiné orgány. [11] Pod toto obecné vymezení pravomoci a působnosti civilního soudu by bylo možné řízení s tímto charakterem nepochybně podřadit.

Problém nastává s podobou takového řízení, pokud by mělo probíhat podle občanského soudního řádu (jako klasické sporné řízení). Účastníky řízení jsou podle § 90 OSŘ žalobce a žalovaný. Žalobce (zákonný zástupce nezletilého zaměstnance) by zde patrně musel žalovat zaměstnavatele. To však neodpovídá charakteru civilní žaloby, která je formulována tradičně na plnění nebo na určení (§ 80 OSŘ), zatímco vyslovení souhlasu soudu s právním jednáním (okamžitým zrušením pracovního poměru) ze strany zákonného zástupce tuto povahu nemá.

To vede k závěru, že se musí jednat o řízení nesporné, resp. o zvláštní řízení podle zákona 292/2013 Sb. § 1 odst. 1 ZŘS uvádí, že podle tohoto zákona soudy projednávají a rozhodují právní věci stanovené v tomto zákoně. [14] § 2 ZŘS, který vyjmenovává jednotlivé druhy řízení podle zákona o zvláštních řízeních soudních, s takovým řízením (jako samostatným druhem řízení) nepočítá.

V úvahu tak přichází pouze subsumpce pod řízení ve věcech péče soudu o nezletilé [§ 2 písm. t)], které je pak dále upraveno v § 452 ZŘS a násl. § 466 ZŘS vymezuje, že ve věcech péče o nezletilé soud rozhoduje zejména ve věcech: jména a příjmení nezletilého dítěte; péče o nezletilé dítě; výživy nezletilého dítěte; styku s nezletilým dítětem; rodičovské odpovědnosti; poručenství; opatrovnictví nezletilého dítěte; předání nezletilého dítěte; navrácení nezletilého dítěte; pro nezletilé dítě významných, na nichž se rodiče nemohou dohodnout; souhlasu s právním jednáním nezletilého dítěte; zastupování nezletilého dítěte; péče o jmění nezletilého dítěte; ústavní výchovy nezletilého dítěte a jiných výchovných opatření; ochranných opatření; pěstounské péče; určení data narození nezletilého dítěte; přiznání svéprávnosti nezletilému dítěti; přivolení souhlasu a odvolání souhlasu zákonného zástupce k samostatnému provozování obchodního závodu nebo k jiné obdobné výdělečné činnosti. Z výčtu je opět patrné, že s řízením o přivolení k okamžitému zrušení pracovního poměru zákonným zástupcem nezletilého zaměstnance zákon výslovně nepočítá, byť jinak obsahuje několik řízení, která mají obecně přivolovací charakter.

Zde je patrně nutné vycházet z toho, že výčet v § 466 ZŘS je konstruován jako demonstrativní, jak uvádí i literatura: „Přestože je výčet uvedený v ustanovení § 466 ZŘS poměrně obsáhlý, jde pouze o výčet demonstrativní a zákon tedy předpokládá existenci neuzavřené skupiny dalších obdobných řízení týkajících se nezletilých dětí.“ [10] Řízení ve věcech péče soudu o nezletilé tak může být vedeno i v dalších věcech, týkajících se nezletilých.

Otázkou je, zda je možné skutečně podřadit řízení, které má povahu souhlasu s právním jednáním zákonného zástupce, pod řízení ve věcech péče soudu o nezletilé; zda by nemělo

mít spíše charakter samostatného řízení. To je však otázka de lege ferenda. Dle aktuální právní úpravy patrně jiné řešení nezbyvá.

V návaznosti na to pak vzniká i otázka, jaký by byl okruh řízení. V případě sporného řízení by se jednalo o zákonného zástupce jako žalobce a zaměstnance jako žalovaného; případně by bylo možné dovodit účastenství nezletilého dítěte jako vedlejšího účastníka, který má právní zájem na výsledku sporu.

V případě nesporného řízení (resp. řízení soudu ve věcech péče o nezletilé) by byl účastníkem nepochybně zákonný zástupce jako navrhovatel. § 6 odst. 1 ZŘS uvádí, že v řízeních, která je možné zahájit i bez návrhu, je účastníkem navrhovatel a ten, o jehož právech má být jednáno. Tím by bylo patrně nezletilé dítě, ale toto řízení bez návrhu zahájit nelze. § 6 odst. 2 ZŘS pak za účastníka povolává navrhovatele a toho, koho označuje zákon. Zde se odkrývá největší problém absence samostatné procesněprávní úpravy tohoto řízení. Podle pravidel určování účastenství nelze určit za účastníka nikoho jiného než navrhovatele (nelze určit dle § 6 odst. 1 ZŘS; zákon nikoho neoznačuje podle § 6 odst. 2 ZŘS).

Závěr, že by mělo být vedeno řízení ve věci péče o nezletilé bez možnosti účasti nezletilého dítěte, se však jeví absurdní. Jedinou možností je tak dovodit, že řízení ve věcech péče o nezletilé dítě může být zahájeno i bez návrhu (vyjma výjimek stanovených v § 468 ZŘS) i v tomto případě; nezletilé dítě by pak bylo účastníkem řízení jako ten, o jehož právech či povinnostech má být jednáno. Zdá se však, že hmotněprávní úprava s účastí nezletilého v soudním řízení o přivolení nepočítá – viz § 56 a odst. 2 a § 77 odst. 6 ZP, které stanovují povinnost zákonného zástupce doručit stejnopis okamžitého zrušení a přivolení soudu nezletilému zaměstnanci.

Závěr

Rekodifikace soukromého práva přinesla významné změny i v pracovním právu, především v pojetí právního jednání jako takového a v otázkách jeho neplatnosti či zdánlivosti. Podstatnou konkrétní změnou pak bylo zavedení možnosti okamžitého zrušení pracovního poměru (či obdobného pracovněprávního vztahu) zákonným zástupcem nezletilého zaměstnance mladšího 16 let.

Tato úprava zjevně trpí nedostatky; a to jak po hmotněprávní, tak po procesněprávní stránce. Z hlediska hmotného práva je otázkou, zda je vůbec nezbytné uvádět tuto možnost v občanském zákoníku, když se jedná o problém čistě pracovněprávní povahy. Zde je kritizován především fakt, že nezletilí sice mají plnou způsobilost vstoupit do pracovněprávního vztahu, ale tento jejich vztah může být ukončen z vůle třetího subjektu, který není jeho stranou. [1]

Z pohledu praktické realizace je ještě problematičtější procesní strana věci. Z právní úpravy nevyplývá jednoznačně, jaký charakter by mělo mít řízení, v kterém soud přivoluje zákonnému zástupci k rozvázání pracovního poměru nezletilého zaměstnance. Ani teorie, která se tomuto problému věnovala okrajově, nedospěla k jednoznačnému závěru. [9]

Lze se ztotožnit s tvrzením, že kvalita zákona o zvláštních řízeních soudních je nízká a nelze očekávat jeho delší životnost. [7] Pokud by tedy v budoucnu mělo v této oblasti dojít ke změně, bylo by žádoucí výslovně upravit charakter tohoto řízení (jako zvláštního řízení sui generis), případně celou úpravu možnosti rozvázání pracovního poměru zákonným zástupcem z pracovního práva vypustit, a vrátit se tak k původní právní úpravě.

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PROCESS OPTIMALISATION WITH EFFECTIVE INTERCONNECTION OF PRODUCTION SYSTEM MODELS IN PLANT SIMULATION

David Tuček, Ivo Novák

Abstract: *This paper describes an object-oriented simulation approach for the design of a production system that is primarily focused on data exchange between system models of one manufacturer. Article deals with Plant Simulation software utilization for production systems modelling. The paper emphasizes the option of production process optimization and data exchange between models. Also the model can be utilized to predict the production sequence in a short period of time. There is also emphasized the global point of view to optimization of a system. The simulation issue is solved by fundamental construction of system models, which require data exchange. Furthermore the model functions for data exchange in Plant Simulation are programmed. The contribution that we described in this article is the introduction of the possibilities of simulation programs for production optimization.*

Keywords: *Computer simulation, Plant Simulation, Data exchange, Model, Optimization, Process.*

JEL Classification: M11, M15, M100.

Introduction

Currently it is relatively common that the completion of a final product is the result of the cooperation of several suppliers, who are often far away from each other. Some of the individual components are manufactured, some are purchased and then assembled. It is necessary to efficiently control such a chain, and to predict its efficiency to ensure optimal efficiency. Computer simulations are one of the optimization options. These programs can completely optimize the chain via external data exchange between models, however this article focuses on another option, and specifically efficient data exchange between individual models e.g. of production systems within the plant of a single company. We will describe methods with an emphasis on user friendliness of simulations for the purpose of increasing their efficiency. We will first introduce a short theoretical basis which follows from the results of some research on Faculty of management and economics e.g. of the GAČR 402/08H051 project, R&D project: Ergonomic – Evaluation of Local Muscular Load – Carpal Tunnel and other then we will introduce a case study applying this research into practice. The Plant Simulation software will be used.

1 Statement of a problem - production systems simulations

For the following research results, we would like at first define several significant manufacturing system simulation approaches that address real-time control issues. One of them is the Rapid-CIM project [5] develops a plug-and-play shop floor control design environment based on a simulation model of a target system and a simulation model of its controller. All too often these systems are based on the control system architecture described by e.g. Smith, Hoberecht, and Joshi [12], and an automatic control code generator

for message passing between workstation controller and equipment developed by Smith and Joshi [13].

But in Rapid-CIM, the control modules are integrated within the simulation. It is anticipated that, after debugging a control module, it can be plugged into the actual physical environment and serve as the shop floor control system. This is accomplished by using the simulation software package Arena [14]. World known is Plant Simulation too. It is a computer application developed by Siemens PLM Software for modelling, simulating, analysing, visualizing and optimizing production systems and processes, the flow of materials and logistic operations. Using Tecnomatix Plant Simulation, users can optimize material flow, resource utilization and logistics for all levels of plant planning from global production facilities, through local plants, to specific lines. History of this SW application started in 1986 in the Fraunhofer Society for Factory Operation and Automation. This company develops an object-oriented, hierarchical simulation program especially for the Apple Macintosh.

The recent extensive survey by Narayanan et al. [10] summarizes the efforts in the last decade towards the development of object-oriented simulation of manufacturing systems. From the real-time control simulation perspective, OOSIM project [1] addresses deadlock issues within their described framework.

Current state of research

The primary contribution of object-oriented approaches is through their ability to facilitate links.

Between the analysis and specification of a real system and the design and implementation of an action model for that real system where the structure and behaviour of entities are readily modelled as objects. An object, in the object-oriented paradigm, is a collection of data (attributes) together with all the operations (methods) which access or alter that data [4].

Computer simulation stands among relatively new fields of research; not only from time perspective but also from perspective of their utilization. This is implicated by the lack of research papers dealing with the subject thoroughly and particularly through data exchange between models. The availability of simulation software is known. Many authors mention this, but only as a significant feature of the system, e.g. [11], [15].

Other authors point out external data upload possibilities and their integration to a model (e.g. machine cycle times). They also provide description of data route through production system, which is a useful feature for improving accessibility of the model for uninitiated people, e.g. [2].

Moreover different simulation models are described, such as ones with output functionalities that provide statistical data transfer into Excel, after the termination of simulation procedures (e.g. [6], [7]). Thus a considerable significance of linkage between simulation software and Excel is shown by these synergies. The linkage is provided both from the input and output perspective and provides a fairly large amount of data. Particularly Lassalle [7] describes the linkage involving different types of transferred information (number of manufactured products etc.)

But simulations we can also use in so more other areas and the development of simulation models, their program support and increasing computing power brought about attempts at use of simulation techniques for solving for example large Travelling Salesman

Problem. Their merit rests in random PC sampling in large scale that is later evaluated according to a selected objective function. Though the solution does not guarantee the global optimum, a sufficiently large number of simulations will issue in achieving the best possible solution, the value of which will be close to the optimum [3].

Yalcin & Namballa [16] define that the output produced by the simulation model is often captured in data files and includes event trace information, system performance information, and supervisory controller computation complexity information. The trace information includes a trace of the events ordered by time for understanding the behaviour of the system. The system performance information includes measures such as the throughput, resource utilization, etc. Also, included are the state space and response time of the supervisory controller to keep track of computational complexity.

The subject of this paper is to elaborate methodology with the usage of Plant Simulation program. This methodology can be utilized for data exchange between individual and independent models, but is recommended for dependent models. The emphasis is put on elements which considerably decrease demands on servicing staff qualification.

2 Methods - Options for effective data exchange between models

What is necessary to do on the start of the simulation? At the beginning of each simulation, the user has to specify the number of machines in the model, the number of parts and types of conveyors to be processed in the plant during whole the simulation. The user can also simulate resource failures in the plant by specifying failure-rates and repair rates for the resources. These set of details are complete in themselves in describing the structure and behaviour of the plant comprehensively.

The creator of the cell class is used as an initialization procedure to create the buffer, the machine, the material handler and the part objects that form the cell object, and to create certain information arrays from the input files. These arrays capture all the information on the cell behaviour and are henceforth, used by the supervisor to formulate a control strategy [16].

For the following case study, a part of the research focusing on data exchange between models via frame hierarchic organization was selected. Here a main frame is selected, which will represent the model of the plant and which will contain other frames as components representing individual, mutually interdependent processes. This solution is suitable especially for internal customers. The simulation will be performed based on the size of the customer's order – the required number of produced pieces will be an input for the model.

Thus, the basis is the main frame, and individual complete models of production lines are then inserted into it. It is important to properly interconnect these production line models. This is done via so-called connectors. However, the key aspect for utilizing the power of the simulation software is the proper setup of the correct monitoring functions, which show the current numbers of produced parts, the time of production of individual components and how individual production lines interact. For this monitoring, it is necessary to use so-called variables and to prepare a range of so-called methods, which contain programming code to assign the correct values of elements to variables.

This manner of building models is relatively fast and convenient. It is well suited for internal customers, since mutually dependent processes affect each other both in the direction of production and the opposite direction, as is often the case in real life. This also comes with a high level of flexibility – if we have a complete frame with prepared models

of processes, these can be changed in seconds/ A disadvantage of this approach can be e.g. higher hardware requirements in case of complex production processes all running simultaneously.

The case study forming the second part of the article provides a closer view of the area.

2.1 Used methodology

The simulation issue is solved by fundamental construction of system models, which require data exchange. Furthermore the model functions for data exchange in Plant Simulation are programmed. The models are submitted to experiments and observed, particularly from the perspective of service. Evaluation of monitoring procedures is conducted. On the basis of evaluation results, the authors seeks arrangements, which enhance efficiency of the model for purposes of service simplification and production time reduction.

3 Problem solving – qualitative research

In this type of research it was necessary of course use qualitative techniques, e.g. case study. In this article we would like to demonstrate the problem solving thanks to one specific case study. There is no other possibility to introduce the problem solving then in the case study.

The case study focuses on the practical application of research within the project GAČR 402/08H051, called *Optimization of multidisciplinary design and modelling of production systems of virtual companies*.

Plants with mutually dependent production processes are introduced and data exchange is performed via simulations. The Plant Simulation software is used.

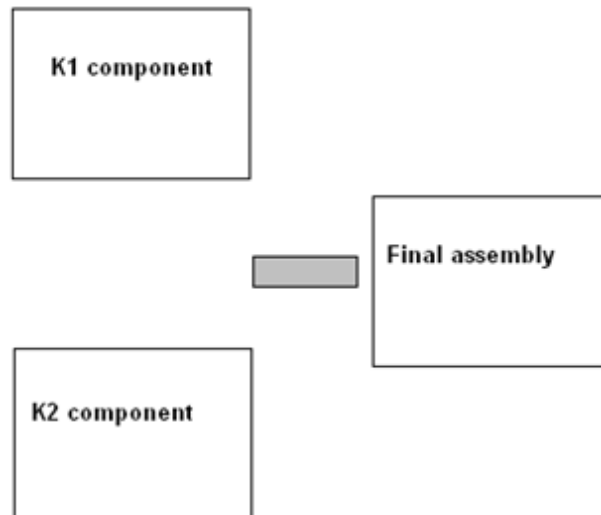
3.1 Workplace introduction

XZ is a foreign-owned company focusing on the production of plastic mouldings. Several workplaces were selected for the purposes of this study. These are located in different rooms in a single building, and so material exchange occurs without problems. The final product is a case for paper towels.

The workplace where the final assembly takes place stores most of the components, these are purchased from external suppliers.

Several intermediate products is however produced by the company in-house and their production and the management of requirements will be the subject of this case study. In line with GAČR research, internal solutions for data exchange will be used and some specific elements will be added for this particular situation.

Fig. 1: Production layout



Source: Custom-made

The cycle times of machines are shown in the following table. Machines K1 and K2 work automatically, including the delivery of material into the machine, however an operator needs to remove the product and place it in a box. The final assembly is manual and the task of the operator is not only to bring components K1 and K2 from the input material holder, but also the pre-final product where the components are to be placed. He also needs to perform the assembly itself, and place the final product into the box. Transportation of components K1 and K2 is performed via manipulation trolleys between workplaces.

Tab. 1: Cycle times in seconds

Machine	Machine cycle time in seconds
K1	10
K2	20
Final assembly	120

Source: Custom made

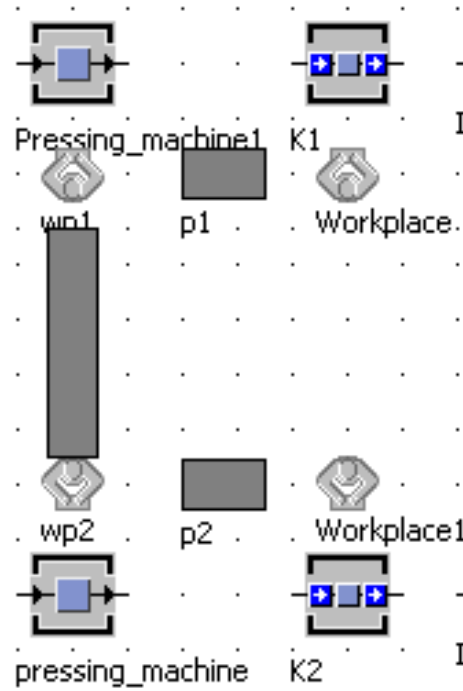
3.2 Task assignment

The task is to model the production systems and model adequate data exchange between individual workplaces. Another task of the simulation is to mark possible optimizations and their effects on production. It is also required to have clearly defined time requirements of individual productions to allow timely entering of components orders and, including an indication of the duration of complete production. These times must be flexible and reflect the current configuration of the model so that real-life scenarios can be applied with different numbers of operators or optimization of the workplace and the impacts of these changes on the time requirements for production must be immediately visible.

4 Discussion – workplace for component production

Currently the operator regularly moves between machines and new products and brings them to the boxes. Two machines are operated at once. The following figure illustrates the layout.

Fig. 2: Component production layout

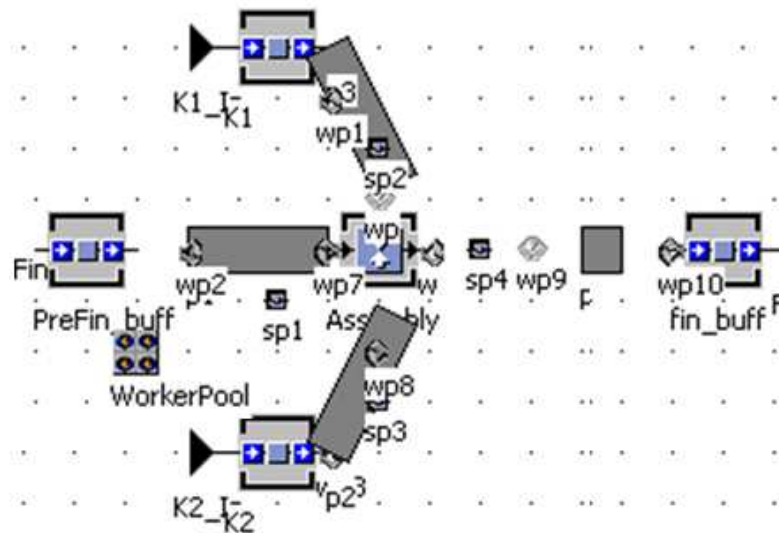


Source: Custom-made

The distance between workplaces is 19.5 meters, which is not optimal, and the distance between the machine and the holder is 1.5 m.

4.1 Current status – workplace of final assembly

Fig. 3: Final assembly workplace layout

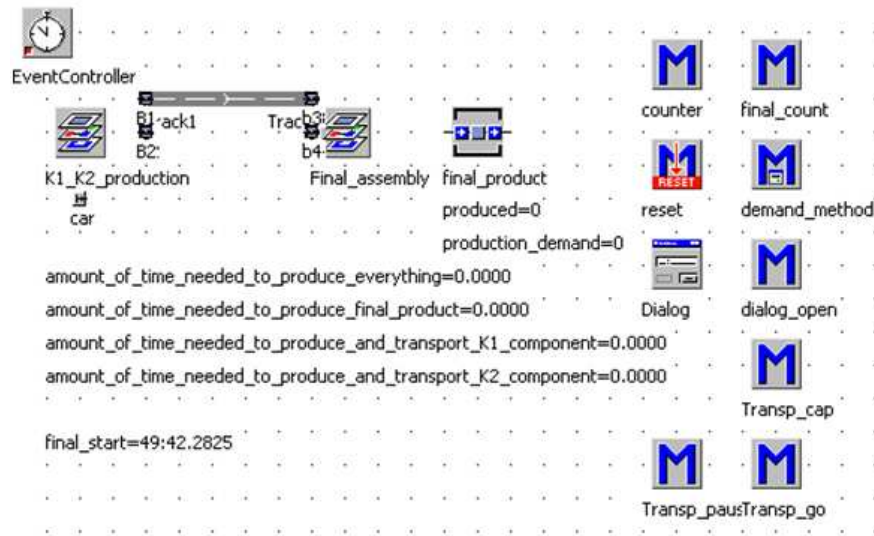


Source: Custom-made

The distance between the input holders and the machine are always 3 meters, and the final product needs to be then brought by the operator to a holder which is 4 meters away.

4.2 Basic model

Fig. 4: System layout

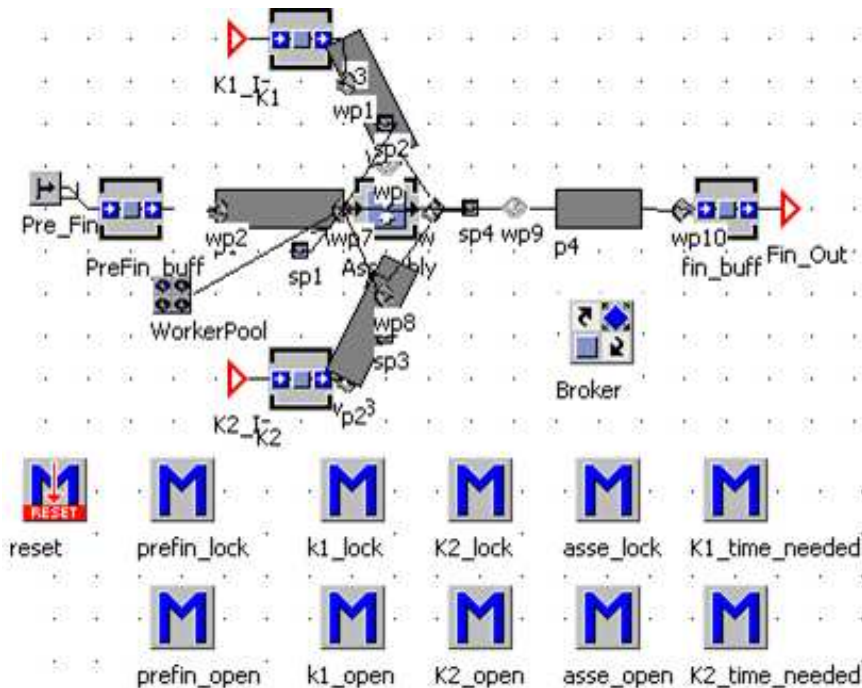


Source: Custom-made

Based on the research realized in the GAČR project, the frame hierarchic organization method was used for this system. This means that the model for component production and the model for final assembly were placed into a parent frame, which represents the whole system. Figure 4 already shows the necessary methods for the model and the key items are those displaying the amount of time necessary for individual production phases. The distance between the component production workplace and the final assembly workplace is 35 meters (shown smaller on figures for clarity).

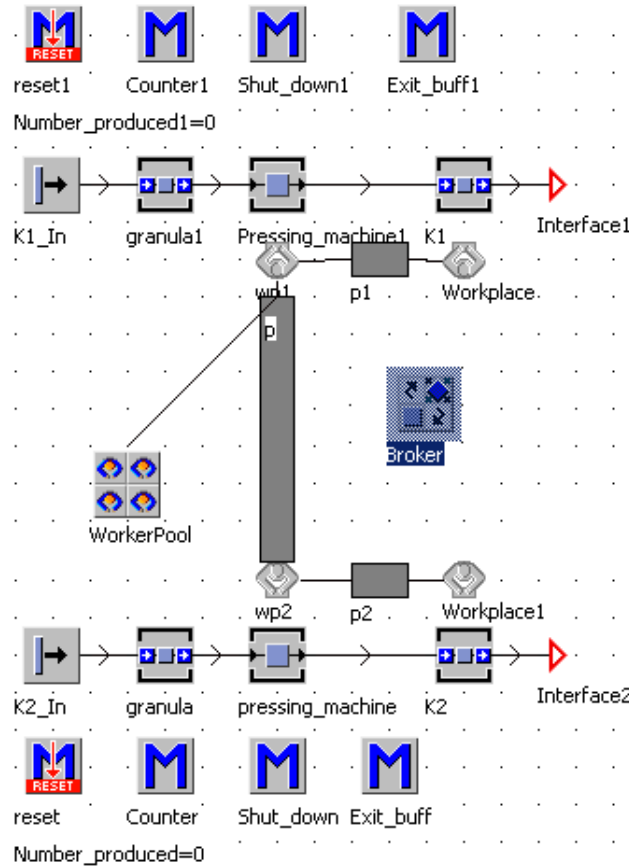
The component production and final assembly subframes including methods are illustrated on the following figures.

Fig. 5: Complete subframe of final assembly



Source: Custom-made

Fig. 6: Complete subframe of component production



Source: Custom-made

4.3 Basic model of current status run

We will now test the results the model provides in its basic configuration. We have entered 100 pieces of final products as the customer's requirement. The simulation then outputs the results shown in the following figure.

Fig. 7: Basic model results

```

produced=100
production_demand=100
amount_of_time_needed_to_produce_everything=4:56:16.7076
amount_of_time_needed_to_produce_final_product=3:41:37.7784
amount_of_time_needed_to_produce_and_transport_K1_component=1:14:04.1914
amount_of_time_needed_to_produce_and_transport_K2_component=1:14:23.2932
final_start=1:16:38.9293

```

Source: Custom-made

It takes almost 5 hours to produce 100 pieces of products. It is also clear that we need to begin the production of components at the latest 1 hour and 14 minutes before final assembly to be able to finish in 5 hours.

4.4 Optimized model run

We will now look at optimizations of the model. The machine times are fixed and cannot be reduced. The greatest potential for improvement lies in changing the workplace layout, where it would be possible to reduce the distance the operator needs to travel. It was possible to slightly reduce all distances. The greatest reduction was possible in the transfer distance between workplaces K1 and K2, where the distance was reduced to 10 m.

However, it was not possible to reduce the travel distance of 35 m, since it is necessary to move from one room to another.

We will also show variants for servicing workplaces by a single operator and 2 operators. The production batch has so far been always delivered all at once. We will also show variants for two and four deliveries.

The following table clearly illustrates the obtained results.

Tab. 2: Cycle times in seconds

Variant	Obtained time for 100 pieces of products in hours
Without layout adjustments, with two operators on two workplaces	4:21 h
Layout adjustment with reduced distances	4:34 h
Two operators in final assembly (incl. layout adjustment)	4:23 h
Two operators in component production (incl. layout adjustment)	4:29 h
Two operators in both workplaces (incl. layout adjustment)	4:18 h
Increasing the number of deliveries between workplaces to 2 (every 50 pieces, incl. layout adjustment)	4:01 h
Increasing the number of deliveries between workplaces to 4 (every 25 pieces, incl. layout adjustment)	3:52 h
Increasing the number of deliveries between workplaces to 4 (every 25 pieces) with only a single operator on each workplace (incl. layout adjustment)	3:59 h
Original time required for production, without optimizations	4:56 h

Source: Custom - made

The results show that using several operators leads to time savings. This advantage is significant especially with the unadjusted layout, since several operators can help reduce the necessary amount of travel. The greatest savings potential however lies in changing delivery policies. The workplace for final assembly so far had to wait for components delivered in bulk after their production. IF deliveries were more frequent, the whole production time would be significantly lower. A mere 7 minute difference between optimized production with 1 operator and with 2 operators indicates that it is probably more profitable to use a single operator. The final time savings are thus 57 minutes, almost 20%.

Conclusion

Several approaches can be used to program data exchanges between models, such as using additional files as information carriers or internal methods. It is also possible to use different simulation programs and ensure their mutual communication. Each method has its own advantages and disadvantages.

The contribution of this case study is the introduction of the possibilities of simulation programs for production optimization. We have managed to obtain a time saving of over 20%. The main benefit is however the application of research within the GAČR project. We have successfully modelled data exchange between models of production systems within

a single company. The contribution in this case is a summary of the production time of individual productions - we know how long the production of components and the final assembly take, and can use this to enter orders into production. **The contribution of this specific solution is that it can be very easily replicated.** The methods used for creating the model are universally valid and can be extended to arbitrarily large productions of many components. The direct interaction between systems is also a key contribution here. If one system has an error, production stops or slows down due to the unexpected event or adjustment or work procedures, and the effects on the whole system are immediately available. It is thus possible to search for the global optimum of the whole system instead of only realizing local optima, as is often the case. It needs to be noted that local optimization can in fact lead to a reduction of global efficiency.

Thus, the contribution of simulation lies not only in finding the global optimum, but also in the possibility of quickly testing various scenarios of production system configurations and production predictions.

So many applications of this type of models we can use in logistics chain and logistics supply chain systems. Some of these applications are very sophisticated. For example simulation model by Liao and Chang for the supply chain of the hospital logistic system [8]. This simulation model it is possible to combine and based on the dynamic Taguchi method too. Of course some study on the quality of decision-making problems under multi-period conditions in the logistics service supply chain (LSSC) are very practical. Logistic service quality is not easy to measure. Hence, paper of Liu et al. proposes a multi-period quality coordination model based on the single-period quality coordination model in a two-echelon LSSC, and establishes a new model in a three-echelon LSSC when the logistics service integrator (LSI) is punished [9]. Simulation results indicate that under multi-period cooperation conditions, the LSI tends to make rapid decisions when punishment intensity is below the critical value.

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TRIPLE BOTTOM LINE REPORTING PRACTICES AND CORPORATE RELATIONSHIP WITH HOST COMMUNITIES IN NIGERIA (A CASE STUDY OF NIGER DELTA REGION)

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Abstract: *This study seeks to examine Triple Bottom Line (TBL) reporting practices and corporate relationship with host communities in Nigeria. A survey research design was adopted for the study hence structured questionnaires were administered. The population of the study consists of members of host communities and management staff of companies in the Niger Delta region of Nigeria. Hypotheses stated were tested and analyzed through the use of correlation analysis and one-way analysis of variance (ANOVA) at 5% level of significance with the aid of statistical package for social sciences (SPSS) software (version 16.0). The study findings reveal that there is a significant difference between the level of awareness of host communities members and company management about TBL reports. The result also shows that there is an insignificant relationship between TBL reporting practice and corporate relationship with host communities. Based on the findings of this study, it was recommended amongst others that there is need to adequately localize sustainability reporting framework in line with international standard and that community organization need to imbibe culture of peaceful negotiation in their agitations to avoid negative consequences.*

Keywords: *Triple Bottom Line, Corporate Reporting, Niger Delta Region.*

JEL Classification: *M40, M41, M49.*

Introduction

The notion of Triple Bottom Line reporting has become increasingly fashionable in management and financial reporting circles over the last few years. The increases in global environmental awareness and the campaign for sustainable economic development are redirecting the attention of corporate businesses towards environmental sensitivity. The idea behind the TBL paradigm is that a corporation's ultimate success or health can and should be measured not just by the traditional financial bottom line, but also by its social/ethical and environmental performance. Of course, it has long been accepted by most people in and out of the corporate world that firms have a variety of obligations to stakeholders to behave responsibly. It is also almost a truism that firms cannot be successful in the long run if they consistently disregard the interests of key stakeholders. The quest for sustainability has caused an emergence of many global institutions enunciating varying norms that guide human interaction with the environment. Triple Bottom-Line reporting is an emerging issue in accounting profession that aims at assessing and enhancing corporate performance with regards to sustainability. It widens the scope of traditional reporting which emphasizes financial profitability and considers the contributions of a corporate organization towards environmental and social sustainability thereby giving more attention to other stakeholders other than shareholders. The traditional goal of a business focuses on economic performance. However with the current global trend

of social sustainability, corporate organizations are beginning to pay more commitment to environmental and social obligations.

Triple bottom line report is usually a stand-alone annual report through which an organization accounts for its impacts on the broader environment, society and economy, as an advance on a traditional annual report which focuses solely on an organization's financial accountability [14]. According to [20], TBL reporting is hinged on improved relationship among stakeholders beyond the owners of business. It considers the interest of employees, customers, natural environment, host community and investors. It is believed that the adoption of Triple Bottom Line reporting in firms will lead to the enhancement of corporate reputation. Among other things, it will also guarantee an adequate social responsibility, improved access to investors, reduction in risk profile, and identification of cost savings potential, increased scope of innovation, and identification of stakeholders' needs with management focus and creation of an opportunity for stakeholders' dialogue [2].

At various national levels are government regulations, society pressure groups and green consumer pressure. These developments are reawakening corporate attention to strategic and competitive role of environmental responsibility to corporate survival. However within the developing nations, the understanding is somewhat different mainly because of weak government regulations and lack of organized pressure groups and consumer awareness to influence corporate behaviour. Although, sustainability reporting has yet to reach a generally accepted standard of financial reporting and is still largely a voluntary exercise in many countries of the world, however, this is changing with mandatory requirements being introduced in countries such as France, Germany, South Africa [2]. Hence many corporations in developing countries such as Nigeria are beginning to brace up to the challenges of going beyond social and environmental disclosures to sustainability reporting.

1 Problem Statement

Most studies on Triple Bottom Line reporting practices of companies have focused on the developed economies [8, 9, 12,]. However, a few studies have been conducted in the developing world such as Nigeria [17, 7]. [2] argue that contemporary social reporting practices have evolved within a system skewed towards the spirit of free-market individualism without effective regulation in Nigeria. More so, the discretionary or voluntary nature of social responsibility reporting is suggestive that corporations exert unimaginable control over the preparation and disclosure of social and environmental information. However, Triple Bottom Line reporting goes further than corporate social responsibility or environmental reporting. Researches such as [2, 17, 19, 4] dwelt on TBL and corporate sustainability. [7] highlighted the benefits of Triple Bottom Line reporting to corporate organisations. Studies such as [25, 14, 18, 10] also examined TBL reporting as it relates to regulatory compliance and corporate performance. Studies have also been conducted to examine the determinants of TBL and corporate performance [23, 28, 12].

The empirical results of these studies have been diverse and inconclusive indicating that the issues are still quite unresolved in the literature. Furthermore, there is also a knowledge gap about how community agitation will influence triple bottom line reporting for oil producing areas of Nigeria as the level of awareness and implications of social cost differs considerably. Also, the nexus between triple bottom line reporting and corporate relationship with host communities is complex and leaves much to be desired. Thus, this study fills this gap by examining the relationship between Triple Bottom Line Reporting practices of quoted firms in Nigeria.

1.1 Research Objective

The broad objective of the study is to examine Triple Bottom Line reporting practices of and host communities' relationship of companies in Nigeria. However, the specific objectives are to:

1. Ascertain the level of awareness of host communities members and management staff of companies.
2. Investigate to what extent TBL reporting practices influence the corporate relationship with the host communities; and
3. Examine if there is any significant difference between the perception of host community members and company management about TBL reporting practices.

1.2 Research Questions

The following research questions have been specified as a general guide for this study:

1. What is the level of awareness of host community members and company management staff about Triple Bottom Line reports in Nigeria?
2. To what extent does TBL reporting influence corporate relationship with host communities in Nigeria?
3. Is there any significant difference in the perception of host community members and company management about TBL reporting practices in Nigeria?

1.3 Research Hypotheses

- H₁: There is no significant difference between level of awareness of members of host communities and management staff of companies.
- H₂: TBL reporting practice does not impact on corporate relationship with host communities in Nigeria.
- H₃: There is no significant difference in the perception of host community members and companies' management about corporate-host community relation through TBL reporting.

1.4 Conceptual Framework and Literature Review

The term "Triple Bottom Line" dates back to the mid 1990's, when management think-tank accountability coined and began using the term in its work. The term found public currency with the 1997 publication of the British edition of John Elkington's *Cannibals With Forks: The Triple Bottom Line of 21st Century Business* [15]. According to [8], in his Triple Bottom Line approach theory, capitalism must satisfy legitimate demands for economic performance. With this, [8] echoed Adam Smith's theory of the firm which states that the firm has one and only one goal – to satisfy the desires of shareholders by making profits. However, profit may not be attainable if the environment in which the business operates is neglected. In his word "A corporation which accommodates the Triple Bottom Line approach (social, economic and environmental performance) is contributing to sustainable development".

[17], anchors on this by stating that TBL is an accounting framework that incorporates three dimensions of performance social, environment and financial. The notion of TBL was developed as a new framework to measure both financial and non-financial performance during the mid-1990s. The framework of TBL focuses on the interrelated dimensions

of profit, people, and the planet [23]. TBL is a departure from the traditional focus of companies in maximizing their economic or financial bottom-line, commonly known as profits. TBL reporting is directly tied to the concept of sustainable development [16], which is defined as ‘development that meets the needs of the present world without compromising the ability of future generations to meet their own needs’[27].

[20] defined Triple Bottom Line reporting as the measurement, management and reporting of economic, environmental and social performance indications in a single report. They added that Triple Bottom Line reporting is therefore best seen as a process that includes managing, measuring and publicly reporting multi-dimensional performance and integrating it with management process. It goes beyond the traditional way of reporting mechanism and encourages businesses to give closer attention to the whole impact of their commercial activities over and above their financial performance.

[7] noted that the advent of the Triple Bottom Line paradigm aims at encouraging managers to think beyond the old fashioned financial bottom line in terms of two additional “bottom lines” namely the social bottom line and environmental bottom line. The pursuit of sustainability has become a core strategic objective for most organizations. Societies are increasingly aware of the fragile environment limits being transcended by the global pursuit of prosperity and better standards of living. [14] also maintain that a company’s financial statement are not able to account for the wider economic impacts of a company’s activities at the local community level through the provision of employment, the income that employees earn and use, and the taxes that they pay, as well as the impact on local suppliers and service providers and called for a more robust sustainability reports. Changing societal expectations are placing new challenges before business leaders, and are shifting the nature of the business and society relationship. The potential for far greater stakeholder activism, along with a rise in competition from global scale production and trade, have created a significantly more challenging management environment than in the past. The availability and flow rate of information have increased exponentially over the past decade. This has vitalized a new generation of civil society groups, who, along with other business stakeholders—consumers, communities, employees, and governments—are reshaping the set of demands facing contemporary business leaders. Business firms are therefore placing increased emphasis on their ongoing sustainability, which implies a simultaneous focus on economic, social, and environmental performance [21, 12, 14].

[25] posited that Triple Bottom Line accounting (also known as sustainability reporting) was originated about 20 years ago and is considered a sub category of financial accounting that focuses on the disclosure of non-financial information about a firm’s performance to external parties such as capital holders, creditors and other stakeholders. Tilt emphasized that TBL is the report of activities of a firm that have direct impact not only on the economic performance, but also on the business environment and the society at large. Triple Bottom Line reporting is a method used in business accounting to further expand stakeholders’ knowledge of the company. It goes beyond the traditional, financial aspects and reveals the company’s impact on the world around it. There are three main focuses of TBL: “people, planet, and profit (Global Reporting Initiative, 2008). It is a “concerted effort to incorporate economic, environmental and social considerations into a company’s evaluation and decision making processes” [11]. This type of reporting establishes principles by which a company should operate to concentrate on the total effect of their actions (both positive and negative).

Further, Sustainability accounting in contrast with financial accounting is used for internal decision making and the creation of new policies that have effect on the organization's performance of economical, ecological and social (known as the triple bottom line or triple – P's, people, planet, profit) level [26]. [24] argues that sustainability reporting is driven by the desire to improve an organization's measure of progress across an integrated social, environmental and economic platform. He stated further that sustainability has emerged as a guiding principle and value-laden construct that integrates issues of the environment with issues of development and society, while the concept has become a "principle" bench mark, its application has promoted wide debate and often confusion. It is often interpreted in sectorial (development, agriculture, fisheries, industry etc.) and dimensional (environment, social, economic) contexts at varying scales (local, national and international). This led to the conclusion of [13] that the consequence of this is that sustainability can mean different things to different players but that the highest level of management should be guided by a common set of principles and objectives.

[22] identified several generic characteristics of Triple Bottom Line initiative to include accountability, transparency, integrated planning and management commitment to stakeholders' engagement and multi-dimensional measurement reporting. [5] defined sustainability as "development which meets the needs of the present without compromising the ability of future generations to meet their own needs. [10] claims that Triple Bottom Line theory is geared towards reporting mechanism designed to encourage businesses to give closer attention to the whole impact of their commercial activities rather than just their financial performance. It is probably the best known among non-financial reporting formats to have been given serious attention over recent years.

2 Methods

Survey research design was used in this study. This research strategy was considered necessary because of its ability to view comprehensively and in detail the major questions raised in the study. According to [6], this research design is an efficient way of collecting information from a large number of respondents and the ability to use statistical techniques to determine statistical significance. Primary data was used for this study. The population of this study consists of members of host communities and management staff of companies in the Niger Delta area of Nigeria. According to [3], a population can be finite or infinite. While a finite population is conceivable in size, an infinite population is inestimable due to some factors. In this study however, members of host communities and companies' management are infinite and inestimable due to lack of data.

A sample consisting of respondents in the Niger Delta region was considered a good representative of the respondent groups for this study. According to [1], the ultimate test of a sample design is how well it represents the characteristics of the population it purports to represent. A random sample of (100) one hundred was targeted for the respondent groups. This consists of fifty respondents from each group. Due to the survey nature of the research, questionnaires were used to solicit data pertaining to TBL reporting practices in Nigeria.

A summary of the completed and returned questionnaires of the targeted respondents are presented in Table 1 below:

Tab. 1: Summary of completed & returned questionnaires

Respondents category	No. Administered	No. Returned	Percentage
Members of Host Communities	50	48	52.17%
Management Staff	50	44	47.83%
TOTAL	100	92	

Source: Field Survey, 2015

3 Problem Solving

This section relates to the testing of hypotheses earlier stated in this study. For the sake of understanding, the hypotheses will be restated before presenting the result analyses. The decision rule is to reject the null hypothesis and accept the alternative if $P < 0.05$ otherwise accept the null hypothesis if $p > 0.05$.

Hypothesis One: There is no significant difference between the level of awareness of members of host communities and company staff.

Tab. 2: ANOVA Summary on the Level of Awareness of Host Communities & Company Representative about TBL

	SS	DF	MS	F	Sig.
Between Groups	18.809	2	37.618	45.159	0.003
Within Groups	75.511	90	0.833		
Total	94.320	92			

SS: Sum of Squares; DF: Degree of Freedom; MS: Mean Square; F: F-ratio Sig.: Level of Significance

Source: SPSS Output

To test this hypothesis, we subjected statement 3 on the questionnaire to empirical test. The result of the hypothesis is presented in Table 2. There are indications from this table that the statement used (Statement 3) is significant with p-value less than 0.05. In essence, there is a significant difference in the level of awareness of host community members and company representatives ($F_{45,159}(2, 90) = p=.003$, $p\text{-value} < 0.05$).

Hypothesis Two: TBL reporting practice does not impact on corporate relationship with host communities in Nigeria.

Tab. 3: Coefficient Correlations for TBL reporting practice on corporate relationship with host communities

		TBL reports improves community relations	Host communities interest in TBL reports
TBL reports improves community relations	Pearson Correlation Sig. (2-tailed) N	1 92	0.109(*) 0.055 92
Host communities interest in TBL reports	Pearson Correlation Sig. (2-tailed) N	0.109(*) 0.055 92	1 92

*N: Number of Observations; TBL: Tipple Bottom Line; *Not Significant*

Source: SPSS Output

To test the impact of TBL reporting on corporate relationship with host communities, items 19 and 20 on the instrument were subjected to correlation test. The result shows that TBL reports have an insignificant impact on corporate relationship with host communities; $r(92)=.109$, $p=.055$ and therefore have evidence to accept the null hypothesis and conclude that there is no significant impact of TBL reports practice on corporate relationship with host communities.

Hypothesis Three: There is no significant difference in the perception of host community members and companies' management about corporate-host community relation through TBL reporting.

Tab. 4: ANOVA Summary on TBL reporting practice and improved company's relationship with host communities

	SS	DF	MS	F	Sig.
Between Groups	23.301	2	11.650	15.248	0.161
Within Groups	68.828	90	0.764		
Total	92.129	92			

SS: Sum of Squares; DF: Degree of Freedom; MS: Mean Square; F:F-ratio Sig.: Level of Significance

Source: SPSS Output

To test this hypothesis, we subjected statement 19 on the questionnaire to empirical test. The result of the hypothesis is presented in Table 4. There are indications from this table that the statement used (Statement 19) is not significant with p-value greater than 0.05. In essence, there is no significant difference in the opinion of host community members and company representatives that a good TBL reporting practice will improve company relationship with host communities ($F 15.248 (2, 90) = p=.161$, $p\text{-value} > 0.05$).

4 Discussion

This study was undertaken to examine the triple bottom line reporting practices and its implication for host community's relationship with companies. In conducting this study, a survey was carried out to capture the opinion of company management staff and members of host communities. The findings of this study reveal that there is a significant difference between the level of awareness of host communities and companies representatives.

Responses show that as community stakeholders have very little knowledge about TBL reports. The study finds that the awareness of host communities' members about TBL reports is still low based on responses from the community members. Further, the study reveals that there is weak and insignificant relationship between TBL reporting practices and corporate relationship with host communities. This was amplified by the respondents who are of the opinion that TBL reports do not improve corporate image. It is also observed that there is lack of peaceful co-existence between the host communities and companies in the Niger Delta area in spite of TBL reporting practices. The study also finds that there is no significant difference in perception of community members and company management about TBL reporting practice improving company's relationship with its host community. To buttress this, the responses reveal that most community members and company management believe that the TBL reports do not depict the true position relationship between the company and host communities and hence is not a panacea for corporate-community peaceful co-existence.

Conclusion

The study was carried out to examine the TBL reporting practices of firms and how it impacts on relationship with the host communities. We have used some tables, correlation analysis ANOVA to examine the relationship among the variables. The study found that accessibility of TBL reports affects level of awareness but that the corporate-community relationship does not depend on the TBL reporting practices of companies and concludes that TBL reporting practices of companies in the Niger Delta areas have little impact on improving companies' peaceful co-existence with their host communities.

Recommendations

Based on the findings of this study, the following recommendations have been made:

1. There need to be a mandatory localized sustainability reporting framework in line with international best practices.
2. Companies in the Niger Delta area should take cognizance of the local community needs in the preparation of their triple bottom line report so as to significantly improve the relations with host communities.
3. Companies need to make their TBL reports accessible to all stakeholders including the host communities so that the community will be kept abreast of the development in their environments.
4. Community organisations need to imbibe the culture of peaceful negotiations in their agitations so as not to hamper the operations of the companies in their area.
5. There should be disclosure of more quantifiable triple bottom line indicators encompassing social, environmental and economic performance indicators by corporations.

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