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AKADÉMIAI KIADÓ

The state of the state – Economic property rights and firm profitability versus corruption. New evidence from the Czech Republic

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ABSTRACT

Despite significant advances in economic literature on the relationship between graft and economic growth, the consensus in nowhere in sight. The current paper enriches the extant literature on the subject by: 1) extending econometric techniques in an attempt to quantify and model institutional development; and 2) providing novel results on the dynamics between non-standardised and standardised institutional metrics. Utilising a new dataset compiled for 423 publicly quoted Czech, non-financial companies with macro-economic and institutional metrics, we fashion a dynamic model approximating the interactions between the country's institutional development and firm profits as well as examining the relationship between the Czech corruption and the national institutional framework in the years of 2007–2016. The economic property rights appear to contribute to firm accounting profits- and cash flow-based profitability metrics. As regards the anti-corruption policies, the study's outcomes indicate that improvement in economic property rights could have propelled the positive impact of lax anti-corruption government action and inefficient judiciary on firm profits.

KEYWORDS

corruption, institutions, economic property rights, firm profitability, transition economies

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1. INTRODUCTION

The perception of corruption has become biased by long decades of negative moral rulings which had inadvertently skewed the understanding of its possible economic consequences. As things are, the extant multi-disciplinary theoretical and empirical research provides polarised views on the issue. In particular, the efficiency-enhancing hypothesis (the so-called "*grease-the-wheels*" hypothesis) argues that bribery may assist economic agents to overcome inefficient institutions – in other words: it filled the institutional vacuum left by bad regulations. At the other side of the spectrum, the "*sand-the-wheels*" hypothesis paints corruption as a veritable tax on individuals and organisations which inevitably hindered their proper functioning (Shleifer –Vishny 1993; Mauro 1995; Meschi 2009).

Instead of taking sides *ex ante*, we scrutinise the problem through an institutional lens. Indeed, given their (illusory) certitude, we acknowledge that institutions may be either consciously accepted and followed – when they take the form of objective and official sets of governmental regulatory actions set to incentivise (or constrain) certain behaviours of economic agents (Scott 1995, 2005), or they may create behind-the-scenes, slowly evolving and generationally transmitted guidelines for individual and collective actions (Powell –DiMaggio 1991). Indeed, informal institutions display significant potential of creating a business environment and sanctioning individual and/or organisational behaviour, thus shaping socio-economic performance. However, informal institutions are not morally sound by default: Skaperdas (2001) and Dimico et al. (2017) provided extreme examples of how the failure of formal institutional frameworks had been answered by the emergence of organised crime groups. Building on the institutional configuration perspective, we recognise that individual and organisational behaviours are jointly delineated by the *dynamics of* and *between* formal and informal institutions. Specifically, we focus on the dynamics between the level of perceived corruption and economic property rights *and* their conjoint impact on economic performance of the private non-financial sector in the Czech Republic (ranked 44 out of 180 in 2019, indicating high levels of corruption).

That said, while the extant literature mainly refers to the interactions observed between the state's official institutional structures and corruption, this paper's objective is to identify possible relationships between the prevalent level of corruption in a country and firms' profitability while controlling for the role of (informal) economic institutional development approximated by property rights. Put differently, this paper strives to answer two questions:

Q1 *What is, if any, the relationship between corruption and corporate profitability?*
Q2 *How do, if at all, the informal institutions influence this dynamic?*

In the context of the post-transition economies, which are more likely to undergo economic and institutional upheavals than their advanced counterparts, structures such as economic property rights are often fragile and not firmly entrenched in popular mentality and government policies. While bribes may actually serve as temporary tools to shield certain (willing) individuals and organisations against government expropriation, in longer term graft only corrodes property rights making them available as a paid service only to the more affluent or politically connected. The current analysis assesses the impact of the perceived economy-wide anti-corruption (in)actions on domestic companies' performance in modern-day post-transition Czech Republic, which, while dynamically advancing (Patricolo 2018) has faced serious political tensions for years (Chraska 2018) and remained in a debilitating grip of corruption. Indeed, up

to 2015, the country lacked civil service legislation – in tandem with domestic instability, this legal loophole fuelled the pace of the state officials' rotations. The gravity of the situation was reflected in the alarming results of the EU-led investigation which indicated that about 95% of the surveyed Czechs had believed petty and widespread serious corruption while only 1% of the respondents claimed the anti-corruption policies to sufficiently fight graft (EC 2014: 3).

Against this backdrop we design our research to encompass the decade between 2007 and 2016 during which nearly half of the surveyed Czech entrepreneurs reported to have been offered privileges in exchange of bribes; at the same time three quarters of the Czech society agreed that domestic businesses had been markedly hampered by corrupt practices.

To the best of our knowledge, this is the first study dealing with the subject of corruption and broadly defined regulatory quality relative to dually expressed firm profitability. Little remains known about the dynamics of informal institutional structures, the role of corruption and their effects on business profits in the CEE economies. Our results, while limited to domestic publicly traded non-financial companies only, offer preliminary, yet rigorous, econometric proof that broadly defined corruption may indeed propel corporate profits and facilitate free flow of cash.

The rest of the paper is structured as follows: Section 1 presents the relevant theoretical background, Section 2 provides technical details for the analysis, stylised economic facts are included in Section 3; and in Section 4 baseline findings and robustness models are discussed. Section 5 concludes and points out the limitations of the current research.

2. THEORETICAL BACKGROUND – CORRUPTION INSTITUTIONALISED

The dynamics of corruption and a country's formal institutional structures are described mainly in reference to bureaucracy and public policy execution. As regards the (in)efficient institutions, the earliest empirical evidence (Lui 1985; Beck – Mahler 1986; Lien 1986) suggested that graft could indeed help foster growth and circumvent over-regulated procedures by replicating the outcome of competitive government bids. It seemed that the winning ticket had been assigned more often to the highest (or most generous) bidder, i.e. the organisation which had offered the highest bribe and which, simultaneously, had been often the most entrepreneurially inclined. Moreover, bribes appeared to have provided economic agents with the help in shifting the harmful influence of the public policies.

In tandem with volatile and opaque legal regulations (Stevens – Cooper 2010), lax anti-corruption practices not only obstruct planning and conducting sound business activity in longer term, but also provide fertile ground for illicit business-growth strategies, in which graft compensates for inefficient and biased public policy. In truth, by engaging in illicit practices, companies strive to limit uncertainty and gain access to reliable knowledge regarding new policies or political protection. Both of these options furnish individuals and organisations with comparative advantages over their peers (Zhou – Peng 2011), while the country's authorities have little or no incentive to relinquish their position of power.

In an environment where inadequate regulatory actions prevail, the country's authorities enjoy a high level of discretionary power to perform their own versions of "*divide et impera*" as far as allocation of resources and law enforcement are concerned. In particular, the greater the extent to which the authorities influence or even create anew the economic reality, the greater is the incentives for them to abuse their position of power and to gain private benefits – not only

by soliciting bribes from all sorts of economic agents but also by subordinating them permanently (Banfiled 1975; Murphy et al. 1993). Such practices are obvious in the context of the (post)transition economies, where security markets and banking systems have remained underdeveloped and inefficient, and where corruption has been openly acknowledged (La Porta et al. 2002; Tihanyi – Hegarty 2007; Jiang – Peng 2011). It follows that condonation of civil servants' discretionary decisions regarding interpretation of legal procedures turns corruption into a rational and sanctioned means of obtaining favourable treatment (Pistor et al. 2000). Yet, the assumption that government officials take bribes from anyone (Lui 1985), their provenance notwithstanding is debatable. For example, Cuervo-Cazurra (2008) pointed out that the actual abuse of power and rent-seeking activities hinged on the delicate balance between the risk of being discovered (and punished accordingly) and the probability of receiving benefits. Even the most corrupt government officials act in a discriminating manner when accepting illicit profits, thus distorting the optimum allocation of resources. One may argue that the transparent regulatory procedures and independent judiciary prevent such practices: firstly, they provide legal protection for whistle-blowers as well as non-governmental and private anti-corruption initiatives; secondly, clear-cut regulations facilitate identification and elimination of the very sources of corruption among civil force while simultaneously cutting transaction costs and ensuring effective and predictable enforcement of business regulations and laws (Williamson 1985; Djankov et al. 2002).

2.1. Empirical double takes on corruption – grease or sand in the wheels of commerce?

Although certain obstacles stand in the way of obtaining robust firm-level empirical data on the scale of corruption, there is some consent regarding the dynamics between the political and business spheres. As regards CEE, Hellman et al. (2003) made a case that good connections with civil servants, usually based on corrupt practices, had provided comparative advantages to entrenched economic agents. Unsurprisingly, empirical literature points to the banking system as the cradle of wheel-greasing practices: Okhmatovskiy (2010) and Wang et al. (2011) provided proof that bribery-induced preferential treatment had allowed economic agents to obtain financing from state-controlled banks more cheaply than raising capital directly from financial markets.

While empirical research indeed supplies food for thought in the form of vastly inconclusive and rather polarised outcomes regarding the impact of corruption on firm performance, the new institutional economics (NIE) literature leaves little room for argument, unanimously highlighting the burden of costs associated with economic agents' dependence on the government in an opaque and inefficient institutional environment. The NIE approach states that unreliable institutional frameworks force companies to include bribery in their strategic plans out of sheer necessity for survival. Put differently, high level of corruption taxes entrepreneurial activities and lowers business performance both in the domestic and international markets (Wei 2000; Djankov et al. 2002; Kimuyu 2007) leading organisations to seek alliances reducing the pressure for graft (Young et al. 2011). In fact, according to Fisman – Svensson (2007), graft's negative effects on firm growth could be three times stronger than those of formal taxation.

3. DATA, MODEL, AND CERTAIN ASPECTS OF CAPTURING INSTITUTIONS

Given the nature of our research, we carefully examined the most recent extant empirical literature dealing with modelling of institutional phenomena (e.g., Hartwell – Malinowska 2018a, 2018b). Pervasive and persistent endogeneity related to institutional and company-level controls in the (post)transition economies surfaced as the primary concern. To remedy this, we decided to fashion a dynamic panel model using a two-step system general method of moments estimator (2-step SYS-GMM). Adhering to the econometric rigor, we strove to eliminate the possible common method bias by retrieving the data for the independent and dependent variables form unconnected sources. Further insulating the model from the risk of endogeneity, we adopted the widely used precautions, such as: introducing time lags between all the independent and dependent variables by one period. Despite our best efforts, we acknowledge that the character of the sample may carry the risk of cross-sectional dependence. Therefore, we rely on Bouayad-Agha – Vedrine's (2010) argument that the application of the 2-step SYS-GMM estimator through lagging of the spatial term may deliver consistent estimates. With regard to heteroskedasticity and serial correlation, we introduce robust standard errors using the finite-sample corrected method of Windmeijer (2005).

Three other conditions need to be fulfilled for the 2-step SYS-GMM estimator to provide consistent results: 1) the variables need be mean-stationary, 2) a statistically significant second-order correlation in the first-differenced residuals must be avoided and 3) the correlation between the residuals and the chosen instruments must not occur (Arellano – Bover 1995; Blundell – Bond 1998). The first requirement is met, as evidenced by the figures (not included due to space limitations of this paper, but available upon request from the author), the two remaining issues are dealt with by introduction of lagged forms of the explanators as instruments, in the number matching that of the variables' in the baseline equation (Roodman 2009). Thus obtained, the dynamic model takes the following form (Eq. (1)):

$$Y_{i,t} = \text{FIRM}_{i,t-1} + \text{INSTITUTIONS}_{t-1} + \text{MACRO}_{t-1} + \text{period}_i + \varepsilon_{i,t} \quad (1)$$

where $Y_{i,t}$ denotes firm profitability measured as return on assets (ROA) and cash return on assets (CF ROA), while period_i controls for time, and $\varepsilon_{i,t}$ represents the random term. We introduced fixed effects accounting for the industry-specific effects for the 423 non-financial public entities listed on the Prague Stock Exchange in the period between 2007 and 2016.[1] We supplemented the panel with macroeconomic and discrete, quantitative institutional indicators retrieved (and calculated, where appropriate) from sources such as Freedom House (henceforth FH), World Governance Indicators (henceforth WGI), Eurostat, the Prague Stock Exchange, and the Czech National Bank.

The choice of the dependent variables requires explanation: while ROA represents profitability as the capacity of an organisation to generate operating profits from each currency unit of its assets, the said approach rarely aligns with cash availability. To remedy this, we approach the issue by introducing another metric which provides a more accurate picture of firm efficiency – cash flow return on assets (CF ROA). The use of a cash-flow-based profitability metric was also justified by the possible connections between money laundering, corruption and available free

[1]AMADEUS (Bureau van Dijk) provided firm level data for this exercise.

cash found by the recent empirical studies (Drehmann et al. 2002). Indeed, as illicit transactions hinge on anonymity, a large share of such transactions bypasses the banking channel as not to leave any trace. Recently, Singh – Bhattacharya (2017) made a case that cash in circulation and anti-corruption policies affected each other negatively – indeed, it appeared that most of the high and upper middle-income economies recording low levels of corruption were also characterised by markedly lower levels of cash in circulation.

Company-level determinants of profitability, encapsulated in $FIRM_{i,t-1}$, include firm size, solvency, growth opportunities measured as changes in total revenues from sales, and tangibility measured as the share of fixed assets in firm total fixed assets.

$INSTITUTIONS_{t-1}$ encompasses the state of property rights, regulatory quality and corruption control in the Czech Republic. The methodological aspects of capturing a country's institutional development have been subject to discussions since the relevant research has remained undecided as to the use of subjective and objective measures (e.g. Glaeser et al. 2004; Voigt 2013; Hartwell 2016). As empirical studies more often resort to the former, one may argue that (despite their non-standardised construction) they still reflect the actual state of institutions more precisely. Yet, subjective metrics are likely to be distorted, in a way that they reflect the *perception* of a country's functioning, rather than the economic *truth* (Glaeser et al. 2004). Objective indicators, on the other hand, rely on manifestations of politico-economic processes as approximations of the state of the chosen institutions. Yet, there is a very limited number of the variables attesting to the fact that, for example property rights are strong or the judiciary acts independently of political influences. Even though, with capturing outcomes as their main aim, objective indicators may reflect the realized property rights better than the often-biased subjective metrics.

Following the logic of Hartwell – Malinowska (2018a, 2018b), we utilise contract-intensive-money (CIM) as an objective *de facto* metric of realised economic property rights.[2] The Transparency International (TI) Corruption Perception Index, while seemingly an obvious choice, was inappropriate in terms of tracking the evolution of the phenomenon over time.[3] Therefore, we use subjective FH and WGI metrics to control for the perception of anti-corruption practices and the Czech government regulatory (in)adequacy. We arbitrarily classify the two subjective metrics according to the phenomenon they aim to capture treating corruption perception and regulatory quality metrics as subjective *de facto* and subjective *de jure*, respectively. The correlation between the FH and WGI metrics reached 0.53 implying that different information was conveyed by each index, despite common nomenclature and definitions. Ideal they are not, as survey-based and reliant on authorial perceptions of corruption, both indices

[2]Contract intensive money (CIM) index assumes that stronger economic property rights should correspond with a greater formal financial sector participation (Clague et al. 1999). The metric allows us to track collective reactions of the Czech society to introduce institutional changes and deterioration in anti-corruption practices over the chosen timeframe. While imperfect CIM (see Williams – Siddique 2008 for details) remains one of the best objective *de facto* property rights metrics available to be used in the econometric modelling (Clague et al. 1996; Hartwell 2013, 2016; Hartwell – Malinowska 2018a, 2018b).

[3]This information is disclosed in methodological notes pertaining to the TI Corruption Perception index: "The index primarily provides a snapshot of the views of business people and country analysts, with less of a focus on year-to-year trends." (The Methodology of the Corruption Perceptions Index: 3.) At the methodological level it should be noted that the data provided by FH is one of the twelve sources used to calculate the TI Corruption Perception Index.

failed to differentiate between lobbying (which encompasses political corruption and power abuse) and corruption (sometimes referred to as "petty corruption") as though these two could well substitute each other (Chang – Golden 2007: 5; Campos – Giovannoni 2007).

Inclusion of *both* objective and subjective metrics seemed a natural course of action given the scientific discussion above. This approach, to our knowledge the first of its kind in the empirical literature, allows us to achieve two goals: 1) we aim to fully explore how and why institutions matter for economic growth by measuring not only the *formal rules*, but also *the manner* in which they are enforced in a society (Voigt 2013); and 2) from an econometric perspective, the objective indicator is not only expected to be markedly exogenous but also its being a continuous variable (as opposed to the subjective metrics, which are discrete indices) positively affects the modelling process and yields more robust results.

The vector $MACRO_{t-1}$ addresses the Czech macroeconomic reality: GDP growth measured year-on-year captures the dynamics of the economic cycle and GDP deflator controls for inflation. The effects of the financial system on corporate profits are reflected in changes in capitalisation of the domestic equity market and development of the banking system (captured respectively by the shifts in the domestic firm market value and amount of credit available to nonfinancial entities scaled by GDP).

4. THE CZECH REPUBLIC – STYLISED FACTS

The Czech Republic has remained in the tight grip of corruption for years, being the only EU state without functioning civil service legislation up to 2015, a fact that, in tandem with upheavals in political leadership and public administration, only served to augment the dynamics of the state's officials' rotation. Such political and legal rollercoasters, while undesirable at each and every level of any country's functioning, constitute a perfect testing ground for the purposes of our research. According to the EC Anti-Corruption Report (2014: 3) a staggering majority (95% compared to the EU-wide average of 76%) of the Czech respondents believed corruption to be widespread in their country. To add an insult to the injury, only 1% of the surveyed claimed to be satisfied with the government anti-corruption policies. More relevant to the present study, the 2013 Eurobarometer business study found that 71% of the Czech were of the opinion that businesses had been harmed by corruptive actions, of which patronage and nepotism were found most prominent (69% of the surveyed). Furthermore, since 2011, 44% of entrepreneurs and businesses appeared to have had an opportunity to obtain privileges in exchange for graft. The World Economic Forum's Global Competitiveness Report for the years 2013-2014 corroborated these findings and indicated that corruption had been the most problematic obstacle to sound business activities. As far as the specific anti-corruption policies in business-related areas were concerned, accounting and external auditing offences were to be punished accordingly and effectively (OECD 2013: 52) along with promotion of ethics and internal controls. With regard to the public advantages, the government was advised to ameliorate the flow of information and grant its public agencies access to information on companies punished for foreign bribery.

As evidenced by the WGI changes (Fig. 1), it appears that growing values of CIM recorded from 2007 onwards moved in tandem (albeit with a certain lag) with reinforced anti-corruption actions undertaken by the Czech government. This correlation appears short-lived as the data indicate that stronger informal institutional frameworks co-existed with greater levels of

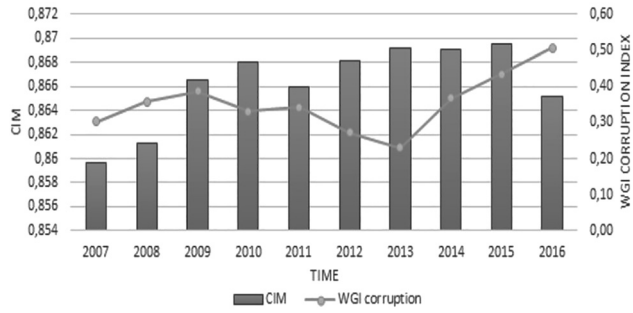

Fig. 1. Objective and subjective institutional metrics: Property rights and WGI corruption control in the Czech Republic between 2007 and 2016
Source: Author's own calculations.

perceived corruption and lobbying at different times in the period between 2009 and 2015. We may be inclined to believe that economic property rights may have propped up the formal structures in the times of need.

Prior to taking the investigation any further, we note that the FH index, given its main field of focus, may reflect more of the phenomenon of *political corruption* and *lobbying* rather than corrupt corporate practices. According to the relevant scale, lower levels convey better governance – in line with this logic, we observe that from 2013 onward lax anti-corruption solutions coincided with elevated informal property rights (Fig. 2). We hypothesise that this may be a manifestation of an experience idiosyncratic of the (post)transition economies, whereby informal institutional frameworks (i.e. economic property rights) became controlled or secured by certain privileged groups (Perotti – Gelfer 2001; Hartwell 2013). Furthermore, given the bi-directional flow of benefits from the political to private spheres, we could, with some plausibility, assume that the politically-connected individuals and organisations may have had the power to ensure better enforcement of their property rights at the expense of the less privileged ones. These entities would also use the country's informal institutional frameworks to achieve private benefits at the same time retarding or even destroying the development of broadly-based

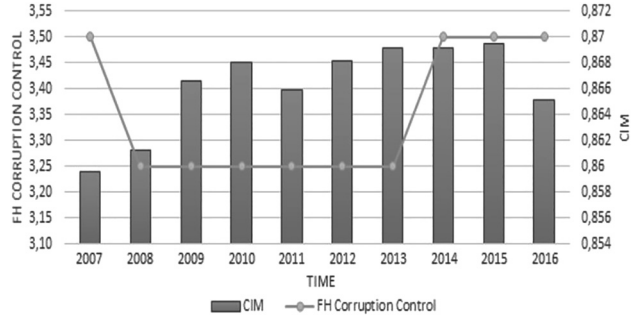

Fig. 2. Objective and subjective institutional metrics: Property rights and FH corruption control in the Czech Republic between 2007 and 2016
Source: Author's own calculations.

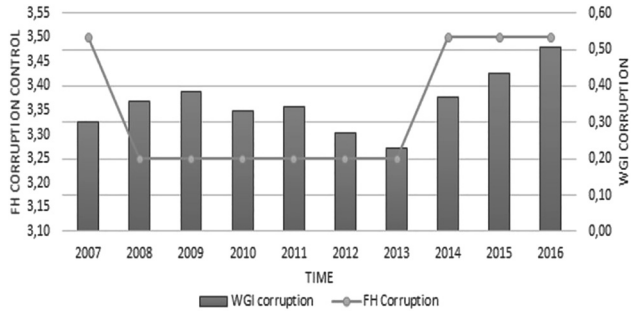

Fig. 3. Dynamics between FH and WGI subjective corruption metrics
Source: Author's own calculations.

economic property rights. This last statement seems underpinned not only by a dramatic drop in CIM observed in the years 2015–2016 but also by the omnipresent intersecting political and business interests reflected in companies' opaque ownership structures,[4] prominent lobbying, and dubious transparency of public tenders. Even though the years 2011–2013 saw what could be labelled as amelioration of anti-corruption legislation, it failed to address the problem of anonymous ownership of shares completely, spurring organisations either to move abroad or to take legal action shielding the anonymity of the owners.

Lastly, it appears that the lowest scores of the FH index go in tandem with lower WGI scores (which reflect deterioration in this area – see Fig. 3). The tendency appears consistent: from 2013 onwards FH-captured vitiation in (political) corruption prevention went hand-in-hand with a steady growth of the WGI index. At this point it has to be noted that the WGI indices ascribe low weights to household surveys relative to the weights of expert assessments and corporate surveys.[5]

5. BASELINE RESULTS AND DISCUSSION

The obtained outcomes draw attention to the firm-level perspective: we note that the firm growth hampers its profitability. Technically, this is unsurprising since firm's relative profitability is obtained by scaling its operating profits by its total assets. Yet, this assumption would hold true only if the numerator of the formula remained unchanged period-on-period and the denominator grew steadily. As it stands, in the considered period firms appeared to have channelled more effort into growth (hoarding more assets) than into actually earning profits to offset – or indeed finance – investment. To put it differently, it may appear that the Czech

[4]The existence of anonymous-bearer shares invited corrupt practices as it made impossible to determine if the entity winning a tender was in any way politically connected.

[5]The criticism of WGI indicated a supposed sample bias and lack of adequate differentiation between the facets of governance (Langbeina – Knack 2009; Apaza 2009). FH indices were labelled as severely politically biased in favour of the United States – based on the data from periods before 1988 and after 1989. Steiner (2014) argued that countries whose ties with the USA had been stronger scored better; this bias appeared not to survive the test of time and was not prominent for later years though.

companies' size expanded more dynamically than their profits. The firms possessing more free cash, and thus, building up liquidity reserves and mitigating their operating and financial risk come across as more capable of generating operating profits (at least as regards the book value thereof, as recorded in their financial statements, this does not necessarily need to translate into obtaining ready access to cash to cover any liabilities that arise) – indeed, the effects of greater solvency are quite tangible, amounting to firm ROAs growing by 1.63% with every unit of change in the ratio between total debt and total assets.

As regards firms' broader business environment, fluctuations in domestic equity market and the dynamics of the economic cycle come across as important and statistically significant factors. Both equity market and banking sector, if they are expected to contribute to economic performance at either micro- or macro-levels, need stability and predictability regarding the state institutions and rule of law, as well as the wider economy. Provision of this stability is usually done by a relevant governing body, such as the central government. Its institutional mismanagement spreads quickly over to the financial and real sectors and can have only one imaginable end – persistent instability and fragility of the domestic business environment directly mirrored by the dampened economic activity and reluctance to provide external financing. Changes in the capitalisation of the Czech stock market (Columns 2 and 4, Table 1) displayed similar magnitude of impact irrespective of the corruption metric applied, adding, all else equal, roughly 0.2% to a firm's book-value profits. Yet, the Czech domestic companies remained challenged by a restricted access to external financing provided by the banking sector.[6] In quantitative terms, this dynamic was negative, as every tiny upward twitch in the available supply of bank credit lowered firms' ROAs by 0.01%. This points to a relative underdevelopment of the banking sector (the average supply of credit from the banking sector scaled by the country's GDP stood at 48 per cent for the period under consideration according to the World Bank). Perhaps more importantly, since the equity market (*vis-à-vis* corruption metrics) appeared to have affected firm profits positively – as opposed to the banking sector – the obtained results provide us with a tentative proof that the banking sector may have been touched by the failed anti-corruption policies more than the rest of the financial sphere. This last insight is in line with the results obtained by Okhmatovskiy (2010) and Wang et al. (2011). Lastly, we observe a positive, yet scant, impact of inflation (Columns 3 and 4, Table 1); however, the outcome appears valid in statistical terms only when considered *vis-á-vis* WGI.

Turning to the key variables of interest, we note that the informal institutional framework may have affected firms' profit-generation capacities in a uniformly positive fashion. Indeed, in quantitative terms, each unit of gain in the strength of CIM adds between 0.015% (Column 1) and 1.149% (Column 3) to firm book-value profitability. The informal institutional framework, while not codified officially, seemed to reflect the broader society's stance towards economic property rights and business conduct. Both appeared not only to contradict the general corruption-related picture which had emerged country-wide, but also, when considered in tandem with effective and, at least in the public eye, impartial and independent judiciary – seemed to offset somewhat the failures of anti-corruption policies implemented by the government. This idealised hypothesis is propped somewhat by the fact that, according to popular perception, the

[6]This observation corroborates the latest evidence reported by Hartwell – Malinowska (2018a) in relation to the Polish publicly-traded companies.

Table 1. Baseline results – return on assets

Explanatory variable/Y	Return on assets			
	1	2	3	4
ROA	0.13838	0.13838	0.13829	0.13829
	0.05377***	0.05377***	0.05378***	0.05378***
TANG	−0.00640	−0.00640	−0.00643	−0.00643
	0.00639	0.00639	0.00640	0.00640
SIZE	−0.00255	−0.00255	−0.00248	−0.00248
	0.00059***	0.00059***	0.00059***	0.00058***
ΔOP REV	0.00121	0.00121	0.00121	0.00121
	0.00349	0.00349	0.00349	0.00349
SOLVENCY	0.01633	0.01633	0.01658	0.01659
	0.00814**	0.00814**	0.00813**	0.00813**
ΔGDP	0.00129	0.00130	0.00194	0.00195
	0.00031***	0.00031***	0.00035***	0.00035***
INFLATION	0.00026	0.00026	0.00056	0.00056
	0.00016	0.00016	0.00016***	0.00016***
ΔMARKET CAP/GDP	X	0.00231	x	0.00223
		0.00097**		0.00099**
ΔCREDIT to PRIVATE SEC/GDP	−0.00142	x	−0.00167	x
	0.00037***		0.00040***	
CIM	0.00158	0.00160	0.01149	0.01152
	0.00054***	0.00054***	0.00218***	0.00217***
WGI CC	x	x	0.00617	0.006154
			0.00092***	0.00092***
WGI RQ	x	x	0.00832	0.00834
			0.00270***	0.00269***
FH C	0.01248	0.01248	x	x
	0.00185***	0.00185***		
FH JI	−0.00415	−0.00414	x	x
	0.00188**	0.00188**		
CONSTANT	0.00176	0.00179	0.01319	0.01324

(continued)

Table 1. Continued

Explanatory variable/Y	Return on assets			
	1	2	3	4
	0.00060***	0.00059***	0.0025***	0.00251***
No. of observations	3,204	3,204	3,204	3,204
Number of individuals: 423				
Transformation used: first differences				
GMM–SYS estimation combines transformed and level equations				
Wald – joint	1485. ***	1484. ***	1721. ***	1692. ***
Wald (dummy)	2785. ***	2801. ***	1972. ***	1976. ***
Wald (time)	76.20***	76.20***	76.41***	76.41***
Sargan test	85.39	85.39	85.35	85.35
AR(1) test	−5.279***	−5.279***	−5.278***	−5.278***
AR(2) test	−0.7867	−0.7867	−0.7866	−0.7866

Source: Author's own calculations. *Note*: ***, **, * indicate statistical significance at the 1, 5 and 10% levels, respectively. Where possible, the results have been rounded up to the fifth decimal place, based on OxMetrics 13 – PcGive 7 suite (Doornik – Hendry 2013). All the models are econometrically sound and fulfil the conditions discussed in Section 2.

(in)efficiency of implementation of the anti-corruption policies and the depth of the state's involvement in the private sector's affairs effectively propelled ROAs of the publicly traded firms (Columns 1 and 2, Table 1).

The picture has changed once we shifted our focus to WGI (Columns 3 and 4): both regulatory quality and corruption control appeared important and contributed statistically significantly to public firms' ROAs. Yet, the positive impact reflected in a 0.06% growth of firm profitability with every unit of change in WGI CC (Columns 3 and 4) was dwarfed by the tricky influence of its FH counterpart (Columns 1 and 2) which reaches 1.24%.[7]

As opposed to ROA, company cashflow-based profitability seemed affected only (and negatively so) by firm size. Moreover, firms' ability to generate free cash flows appeared well-insulated from external forces: neither changes in market capitalization nor the supply of loans nor even the dynamics of the economic cycle seemed to affect corporate ability to produce free cash flows in the considered period.

While we observed slight variations in the effects of CIM, the general outcome remained unchanged. However, there emerged important and statistically significant shifts in our

[7]The mathematical interpretation of the two indicators differs greatly: the FH indices assume that the greater their value, the more noxious the phenomenon they capture while higher values of the WGI indicators reflect better governance. Therefore, we would expect, according to the sand-the-wheels theory, the FH index to have a negative sign while the WGI indicator should have a positive impact. That same comment is valid for the FH JJ and WGI RQ indices.

parameters of interest. Specifically, it appeared that not only the lax anti-corruption policies, but also the judicial system's faulty mechanisms raised firm-level flow of free funds relative to total assets. To put it differently, the worse the condition of the state's anti-corruption and judicial policies, the better off, at least financially, were the publicly traded Czech companies. Again, the FH corruption metric's effect came across as considerably more pronounced, adding 1.9% to firm cash flow-based profit metric, than the WGI, whose every unit of growth (understood as the strengthening of anti-corruption actions) translated, all else equal, into a meagre 0.9% growth of firm cash flow profitability. Thus, the negative effects of reinforced corruption (reflected in the FH metric) were more tangible relative to the firm cash flow, than the supposedly "healing" outcomes of the anti-corruption policies reflected by the WGI metrics.

The judicial system and regulatory quality seemed to follow a different pattern. Indeed, the increasing weakness of the judiciary translated into higher CF ROAs, but the impact was lighter than what amelioration and raising regulatory quality could potentially bring about: every unit of regulatory quality growth added about 2.9% to firm profits. On the other hand, corporate free funds seemed to grow by 0.93% with every 1% of the Czech regulatory and judicial system's deepening failure. In reality, this suggested that the corporate operating profits, as recorded in official profit and loss accounts grew less dynamically than free cash flows from the operating activities. *Vis-à-vis* anti-corruption practices such outcomes could be interpreted as indicative of unaccounted (or indeed illicit) flows of funds finding their way to the firms' stocks of operating cash flows due to inadequate court rulings and procedures which can be easily overruled or – profiting from the poor anti-corruption practices – otherwise eliminated (see Table 2).

6. ROBUSTNESS CHECKS

The robustness analyses aimed not to expand the baseline model with various macroeconomic controls. Instead, they have been intentionally designed to gauge the effects of shifts in popular perception of institutional changes on the realised property rights in relation to firm profitability. To this end, we modified the baseline model by including interaction terms between the objective and subjective institutional measures. We judged the three scenarios as conceivable: 1) the interaction may turn out to be neutral, i.e., one metric did not impact the other's relationship with the dependent variable; 2) the indicators may complement each other – put differently, higher levels of one metric boosted the effects of the other on the dependent variable; or 3) the indices may contradict each other – the presence of one metric might skew the impact of the other completely.

The modified models (both not included due to space limitations of this paper, but available upon request) retained their econometric validity and both firm-level and macroeconomic controls remained largely unaffected by the introduction of interaction terms; yet informal economic institutions became neutral at a certain point and this particular observation called for further investigation.

The reinforcing effects of informal institutions and popular perception of corruption suggested that the inefficient anti-corruption practices moved in tandem with property rights; putting differently it appeared that firms not only were unharmed by, but may have in fact gained from such a state of affairs. This directly refers to the analysis of the dynamics observed between the metrics (Fig. 2) and confirms the early conclusions drawn from the baseline models.

Table 2. Baseline results – cash flow return on assets

Explanatory variable/Y	Cash flow return on assets			
	1	2	3	4
CF ROA	0.16499	0.16499	0.16529	0.16529
	0.05238***	0.05238***	0.05178***	0.05178***
TANG	0.00310	0.00310	0.00264	0.00264
	0.02013	0.02014	0.02060	0.02060
SIZE	−0.00807	−0.00807	−0.00778	−0.00778
	0.00257***	0.00257***	0.00255***	0.00255***
ΔOP REV	−0.00207	−0.00207	−0.00205	−0.00205
	0.00339	0.00339	0.00337	0.00337
SOLVENCY	0.03210	0.03210	0.03085	0.03085
	0.03990	0.03990	0.03914	0.03915
ΔGDP	−0.00008	−0.0001	0.00086	0.00087
	0.00052	0.00053	0.00059	0.00059
INFLATION	0.00001	0.00009	0.00079	0.00079
	0.00025	0.0002546	0.00029***	0.00029***
ΔMARKET CAP/GDP	x	−0.00073	−0.00129	x
		0.001267	0.00131	
ΔCREDIT to PRIVATE SEC/GDP	0.00008	X	x	0.00003
	0.00050			0.00053
CIM	0.00517	0.00516	0.02593	0.02595
	0.00132***	0.00131***	0.00604***	0.00605***
WGI CC	x	X	0.00954	0.00952
			0.00231***	0.00231***
WGI RG	x	X	0.0295133	0.0295425
			0.007232***	0.007241***
FH C	0.01933	0.01932	x	x
	0.00448***	0.00449***		
FH JI	0.00939	0.00938	x	x
	0.00309***	0.00309***		
CONSTANT	0.00593	0.00591	0.02992	0.02995

(continued)

Table 2. Continued

Explanatory variable/*Y*	Cash flow return on assets			
	1	2	3	4
	0.00149***	0.00148***	0.00697***	0.00699***
No. of observations	3,204	3,204	3,204	3,204
Number of individuals: 423				
Transformation used: first differences				
GMM–SYS estimation combines transformed and level equations				
Wald – joint	11,340***	11,520***	12,140***	12,210***
Wald (dummy)	10,190***	10,180***	14,030***	12,160***
Wald (time)	31.16***	31.15***	31.06***	31.07***
Sargan test	101.6	101.6	100.9	100.9
AR(1) test	−5.182***	−5.182***	−5.202***	−5.202***
AR(2) test	−0.4784	−0.4784	−0.4783	−0.4783

Source: Author's own calculations. *Note*: ***, **, * indicate statistical significance at the 1, 5 and 10% levels, respectively. Where possible, the results have been rounded up to the fifth decimal place, based on OxMetrics 13 – PcGive 7 suite (Doornik – Hendry 2013). All the models are econometrically sound and fulfil the conditions discussed in Section 2.

Concurrently, informal economic property rights lost their initial statistical significance. The (supposed) (in)efficiency of informal structures in boosting firm profits notwithstanding, the many-faceted problem of corruption persisted, greasing corporate wheels. Indeed, relative to ROA, economic property rights came across as too weak to hold their own. This also sheds some light on the positive impact of the interaction term: strong and steady economic property rights should have offset the lax anti-corruption actions. Instead, we obtained the reverse – sub-standard corruption prevention and the dubious benefits it could have brought, appeared to neutralise the blessings of the sturdy informal institutional structures. This underpins econometrically the supposition that informal institutional frameworks could have been appropriated by relatively privileged economic agents, and thus, helped fuel private gains of the quoted companies. This likely contributed to corrosion of the broadly-based economic property rights which, at the end of the day, are held up in place by small businesses rather than the large and politically entrenched entities. This outcome held both when considered *vis-à-vis* changes in domestic market capitalisation and supply of loans from the banking sector. Interestingly, economic property rights retained their significance relative to corporate cash flow-based profitability; nevertheless, even stout informal institutional environment appeared insufficient to ameliorate any kind of anti-corruption policies in the timeframe under consideration.

The expected outcome materialised in the form of positive changes in informal institutional frameworks which seemed to have complemented the efficiency of the judiciary. In these cases, economic property rights also retained its positive impact on firm ROAs. Yet, this was where the

positive impact of changes in economic property rights ceased: when we turned to firm cash-flow based profitability, sturdier property rights only served to prop up judicial inefficiency, which in turn translated into companies' greater ability to produce cash-flow based profits. The observed dynamic underpins the hypothesis that the informal institutional frameworks may have been (mis)used by public firms to enforce greater gains by any means available – in this particular case – the judiciary.

We observed similar occurrences between the WGI-based interaction terms and dependent variable: both cross-terms pointed to reinforcing effects of the underlying variables; both also displayed positive and statistically significant effects on both measures of firm profitability. One particular detail demanded attention though. Informal economic rights appeared important and statistically significant determinants of firm ROA when considered vis-à-vis *both* WGI indices. Given the largely different results obtained for the Freedom House metrics, this served as proof of the divergence in scope of captured information by the institutional subjective metrics of corruption. This seemed valid, especially given the FH indicator's focus on political corruption and government's failure to eliminate it. In terms of magnitude, the effects of the FH indices were slightly greater than the ones recorded for the WGI metrics. Nevertheless, it appeared that the tendency observed in the baseline equation had remained undisturbed.

Finally, the two key variables of interest were experimentally replaced with indicators capturing corporate corruption and ethics and pertaining to the independence of the judicial system retrieved from the World Economic Forum Global Competitiveness Report (WEF GCR). The results of this exercise revealed limited impact of both firms' internal and external factors. Indeed, the only important and statistically significant company-specific factor showed a positive effect of solvency over cash-based profitability (CF ROAs). This aligned with our earlier findings and corroborated the supposed risk-mitigating properties of long-term liquidity hoarding relative to cash-generating capabilities of firms in the considered period. Economic property rights, seeing their negative or, indeed, neutral, stance towards the company accounting profitability indicator (ROA), appeared too weak and inadequate to shield firm stakeholders from expropriation or to help generate greater operating profits. At the same time, diminished corporate corruption and stronger firm ethics could contribute significantly to a company's capacity of achieving profits. The current research being based on a sample of publicly traded companies, in tandem with a slightly different nature of the WEF GCR corruption and ethics index[8] allowed us to hypothesise that the observed outcome could be tentatively linked to corporate culture standards and firms' social responsibility. The latest empirical research in this area suggested unanimously that both factors constituted important intangible assets and affected significantly company performance, at least from the shareholders' perspective (Albuquerque et al. 2015; Ferrell et al. 2016). This observation and the ensuing conjectures constitute an interesting starting point for a further in-depth empirical research, both in single-as well as cross-country studies.

Firm business environment's impact turned out to be contained and manifested itself only in the form of mixed influence of fluctuations in the economic cycle and inflation. The effects of

[8]The focus of the WEF GCR indices is on the corporate aspects of the phenomena, as opposed to the indicators used in the baseline research.

the latter seemed to hamper company ROAs very slightly and were promptly offset by the equal (in terms of magnitude) propelling impact of the economic cycle.

7. CONCLUDING REMARKS AND LIMITATIONS

This research sets out to identify the dynamics between the prevalent level of corruption in the Czech Republic at country-level and domestic non-financial firms' capacity to generate profits while accounting for the country's economic institutional development. In other words, we strove to answer two key questions: 1) what is, if any, the relationship between corruption and corporate rates of return? and 2) how do informal institutions influence this dynamic?

As the very first step, we demonstrated intriguing links between corporate profits and popular perception of corruption, ones which go beyond the usual approaches of the polarised views represented by either efficiency-enhancing or efficiency-lowering hypotheses. The outcomes helped to shed some light on these issues, however, they also identified new crucial research directions. The econometric analysis confirmed the influence of firm-level variables on corporate profitability and highlighted two consistent themes regarding the importance of certain institutions in the years of 2007–2016. With regard to firm specifics, both profitability metrics shrank as companies gained in size. Firm accounting profitability metric (ROA) was also fuelled by the risk-mitigating properties of long-term solvency, suggesting that less leveraged organisations manifested greater potential for profit generation – either thanks to their lesser financial risk exposure or more effective financial management. On the other hand, excessive hoarding of long-term liquidity could point to mismanagement and missed investment opportunities – both of which could prevent profits' growth in the longer term.

Probably the most interesting and revealing were the outcomes obtained for the Czech equity market and banking sector *vis-à-vis* corruption and judicial independence indices. Indeed, the banking system weighted heavily on firm profits, by all appearances restricting access to external financing – specifically, there were two issues which drew attention and they indeed require further in-depth investigation in a separate study: 1) the negative effects of the changes in the supply of loans were suggestive of probable sector underdevelopment; 2) in light of the significant and positive influence of the domestic stock market fluctuations on firm profits *vis-à-vis* the corruption and judiciary metrics, we could be inclined to conjecture that the Czech banking sector might have been markedly affected by the failed anti-corruption actions relative to the rest of the domestic financial markets. Yet, relative to the cash-flow based firm profits metric, the effects of the developments in the equity market and banking system remained neutral.

Closer examination of the corruption metrics yielded a multidimensional image of the dynamics between the Czech economic informal institutional framework and the society grasp of corruption. Due to the differences in scope of the information conveyed by the key controls, we could gauge the deviations in popular perception of anti-corruption practices and how they affected corporate profits. While the informal institutions contributed significantly to firms' profitability, a closer look at the results indicated that there were grounds to hypothesise that the institutional framework could have been abused by the privileged companies to obtain private benefits reflected (but not accounted for in cash) in higher ROAs – i.e., purely accounting metrics. This conjecture was strengthened by the results of interacting the informal economic institutions with corruption perception. Indeed, any amelioration in informal institutional

frameworks could have (as a dubiously desired side-effect) bolstered the impact of corruption on firm profits. While only an early attempt at quantification of the phenomenon, the research points to a peculiar situation whereby economic property rights are abused by public companies to achieve their own ends. In the case of the post-transition economies, where institutional frameworks remain volatile, property rights enforcement could easily have fallen prey to large economic agents – in this case publicly traded companies operating at the intersection of politics and business affairs. While not unheard of in the context of the emerging markets (Hartwell 2013), this particular result calls for further investigation.

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