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Do Developing Financial Services Affect Corruption?

SUMMARY

The study examines the relationship between the perception of corruption and financial inclusion, that is, the prevalence and use of modern financial services. The authors use Transparency International's corruption index and the World Bank's Global Findex database of financial inclusion. Based on the time series data of Hungary and Mexico between 2009-2022, statistical methods are used to examine the evolution of performance. First, they compare data by geographic region. The countries are then classified into clusters, and then the results of Mexico and Hungary are analysed. Based on the results, the authors did not find a direct correlation between the financial culture and the reduced perception of the severity of the corruption problem in the examined period.

Keywords: korrupció, pénzügyi bevonódás, Magyarország, Mexikó

Jel-code: D73, G53, D63, G28

INTRODUCTION

The phenomenon of corruption is as old as history, even the Roman historians report on numerous cases of bribery. One of the most obvious forms of the relationship between power and money is that those who have money are willing to pay if the representative and owner of power helps to judge their case favorably. The development and digitization of financial services makes financial transactions more transparent and traceable. Digital and online payments are becoming commonplace in more and more areas. This direction of development also helps to reduce corruption. The increasingly widespread access to modern financial services reduces the possibility of transactions without a trace. Therefore, examining the relationship between financial inclusion and corruption is a timely task today. The present study by the authors contributes to this research.

The term corruption comes from the Latin word *corruptio*. According to Transparency International (TI), the current definition of the term is abuse of public power / public trust / entrusted position for personal gain (Nagy, 2018). The most serious forms (e.g. bribery and its acceptance, dealing with influence, but also the failure to report such cases) are also punishable by the current criminal law in most states. However, such cases are only the most serious and publicized cases of criminal corruption. These are only parts of the social corruption phenomena. There are also forms of corruption that are not prohibited by law or sanctioned but cause moral and political damage. The phenomenon of corruption was already connected with politics in ancient times (Szántó, 2018). This relationship still exists today. Current examples of this are von der Leyen's text related to vaccines against COVID-19 (Stolton, 2023) or the Qatargate corruption scandal that broke out in 2022 (Wax et al., 2023).

Corruption does not take place within institutional frameworks, but under their surface. Therefore, its discovery and assessment is difficult. The creators of corruption indices used and accepted around the world today (Freedom House, the Open Society Institute, TI, Gallup monitor) generally use two types of methods. The perception method is the assessment of opinions by asking ordinary people or experts. The approximation method assesses the frequency of clearly identifiable forms of corruption (kickbacks, gifts, paid trips) and infers the general picture from this. The fundamental difference between the two methods is that the perceptual method is completely subjective, leaving ample room for interpretation and under- or overestimation. The approximation method is clear, there are no external distorting effects (media, politics), but – as it only focuses on certain types of cases – it underestimates the frequency of the occurrence of corruption (Sík, 2001). The indices are only suitable for determining the approximate frequency of corruption. That is why it is necessary to examine the reliability of the indices. A verdict based on an ill-founded index can cause significant economic damage and seriously damage the brand and perception of the country in question. A good example of this is the title of the coverage of Portfolio.hu (2021) and Index.hu (Előd, 2020): “In a three-way tie, Hungary became the most corrupt country in the EU according to Transparency International's index” and “We have reached the same level as South Africa in terms of corruption”.

Reliability can be influenced by many factors (Németh et al., 2019). Most often, the composition of the respondents, the reliability of the sources, the transparency of the method, and even the political independence of the organization conducting the survey are the subject of criticism of the methods. One of the most widely used indices is, for example, the Corruption Perceptions Index (CPI) published regularly by TI. A number of reliability questions arise in relation to this indicator. The organization's list of supporters (Transparency International, 2023) includes organizations such as the US, Danish and Dutch Ministries of Foreign Affairs, the European Commission, the Open Society Foundation, or the international NGO FERN, which supported TI's work with a total of €20 million in 2022-in. This raises the issue of conflict of interest.

In today's world, the ability to manage personal finances is becoming increasingly important. People have to make short-term and long-term financial decisions. In order to make these decisions correctly, at least basic knowledge of basic financial concepts is essential (Chen & Volpe, 2002). Scientific results increasingly prove that a higher level of financial knowledge results in better financial decisions (Lusardi & Mitchell, 2014). The latest results of OECD surveys (Kossev, 2020) paint a fairly favorable picture of the level of financial knowledge in Hungary from a Hungarian point of view. Out of the three examined

components, Hungary performs best in the field of financial knowledge, which means an average performance of nearly 66 percent.

METHODS

For the study, the authors collected their data from several sources. The TI CPI index is used to examine the situation of corruption in Hungary. The data on financial inclusion were taken from WB surveys conducted at regular intervals between 2009 and 2022. These databases created by international organizations are publicly accessible and can be freely used. The sources and methodological aspects of the data collection are also available. Given the structure of the databases, anonymity is an important research ethical requirement. Since the surveys do not take place every year, or even in the same years, we also find missing data in the samples. In order to process it, missing value imputation became necessary, for which several methods can be used (He et al., 2021; Van Buuren, 2018). The authors determined the missing data using the free WEKA software with the DMI filter setting (Rahman & Islam, 2011, 2016). Both CPI and GFR are based on a global survey. Therefore, based on the central limit theorem (Polya, 1920), due to the high number of sample elements, the normality of the samples of both surveys can be assumed.

At the beginning of the research, the authors examined the entire sample covering 131 countries. Since it was not necessary to perform the normality test, Levene's test was used to examine homoscedasticity. Based on this result, a comparative study of the regions' corruption and financial performance (Welch test) was prepared. To classify the countries into regions, the authors used the CPI methodology (Lambsdorff, 2008; Saisana & Saltelli, 2012). The names of the geographical regions and their abbreviations used in this study were summarized by the authors in Table 1. After that, the authors examined the country clusters created by cluster analysis, focusing separately on Mexico and Hungary. Finally, a targeted study compared the corruption and financial indicators of the two countries. Smart-PLS 4.0.9.5 and Jamovi 2.3.21.0 were used to perform the tests.

RESULTS

The authors began the study by preparing descriptive statistics. Based on the results of this, in the majority of the countries examined, the TI respondents perceive a higher than average level of corruption. At the same time, the frequency of use of financial services, which are already widely available in our time, is at a lower than average level in the examined countries. The next step was the examination of homoscedasticity with Levene's test, which the authors examined separately for corruption and separately for financial inclusion. The Levene test was found to be significant in both cases ($p < 0.001$), which means that homoscedasticity cannot be established. Therefore, the regional comparison was performed by the authors using the Welch test. They also compared corruption and financial performance separately. Based on the results, there is a significant difference between the individual geographical regions in the area of corruption perception and financial inclusion. The background of these differences is shown by the results of the Games-Howell post hoc test (Table 2).

The table summarizes the significant differences among the differences measured in individual years. According to them,

Table 1 Geographical regions (according to TI)

Name of Region	Abbreviation
Americas	AME
Western Europe & European Union	WE/EU
Eastern Europe & Central Asia	ECA
Middle East & North Africa	MENA
Sub-Saharan Africa	SSA
Asia-Pacific	AP

Source: Lambsdorff (2008); Saisana & Saltelli (2012)

Table 2 Games-Howell outputs (summarised table)

	Corruption	Financial inclusion	
	WE/EU	WE/EU	SSA
AME	***	***	*
AP	*	**	**
ECA	***	***	*
MENA	**	**	–
SSA	*	***	–
WE/EU	–	–	***

Note: * $p < 0.05$, ** $p < 0.01$ *** $p < 0.001$

Source: authors' own

the WE/EU region differs significantly from other regions in terms of corruption perception and financial involvement. The perception of corruption in the other regions does not differ significantly. However, from the point of view of financial involvement, further significant differences can be pointed out: first of all, the difference between Asia-Pacific and Sub-Saharan Africa is significant, which can be understood if we recall the financial centers of Hong Kong, Shanghai, Singapore, Beijing, or Tokyo. This result agrees with the finding in the literature that Asia-Pacific financial centers, looking back over many years, are most developed as Sub-Saharan Africa's centers (Z/Yen & CDI, 2016, 2023).

The results of the cluster analysis are shown in Figure 1 and Figure 2.

Based on the results, the examined countries are divided into three well-definable clusters from the point of view of financial involvement. The countries of the Top quarter show the highest financial inclusion throughout the examined period. The proportion of people using modern financial services is the highest here. 29 of the examined countries (22%) belong to this cluster. A similarly even but medium performance characterizes another quarter of the countries (Mid-range cluster, 32 countries, 24%), while more than half of the examined countries, exactly 70 countries (53%) currently shows a lower level of financial inclusion, but their performance is growing rapidly every year. These countries are expected to catch up within the foreseeable future to those belonging to the other two clusters, which are characterized by stagnant rather than increasing performance. Typical examples of the Emerging cluster are the countries of Sub-Saharan Africa, which Sy et al., (2019) vividly call "Game Changer" countries.

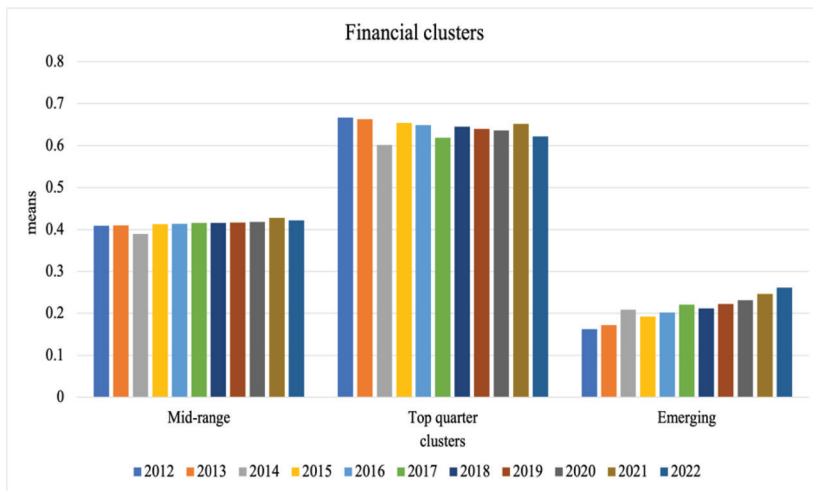


Figure 1 Centroids of financial involvement clusters

Source: authors' own

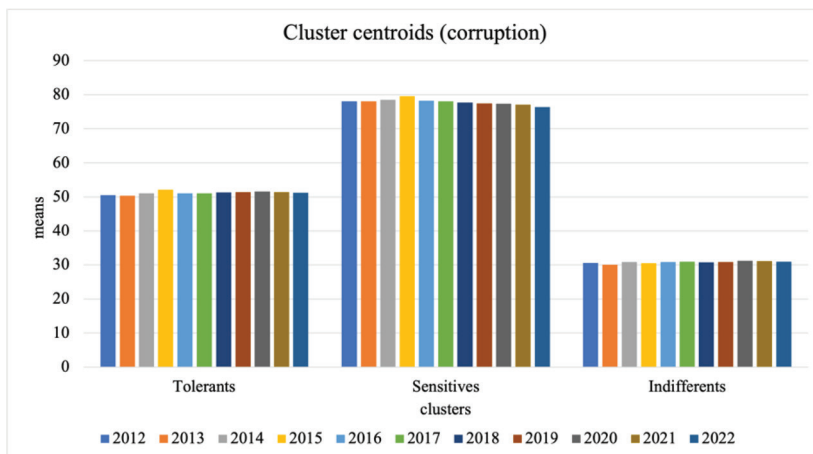


Figure 2 Centroids of corruption sensitivity clusters

Source: authors' own

The first cluster of corruption sensitivity is Tolerants. Roughly a third of the countries belong to this group (34%). In these cases, their sensitivity to corruption is average: the respondents know about it and are familiar with the phenomenon. Although they think corruption is an existing problem, they do not act against it. The 23 countries (18%) belonging to the second cluster (Sensitives) are characterized by the fact that the respondents judge the occurrence of corruption very sensitively and mark most of the suspicious cases as corruption. As we have seen, sensitivity also depends on other characteristics of the individual, like the pain threshold (Fenyvesi, 2013). A surprising result is that cluster 3 (Indifferents) includes 64 countries, i.e. almost half of the countries (49%). In these, the interviewees do not deal with corruption. Their attitude is best described by the formulation of the European Committee (EC, 2022): “always acceptable” (Corruption is unavoidable, it has always existed). On the one hand, this result indicates that many people think of corruption as part of everyday life.

CONCLUSION

The present study examined the relationship between the perception of corruption and the use of advanced financial ser-

vices based on the assumption that the digitization of finances makes financial movements more transparent, which reduces the possibility of corruption. The authors investigated the relationship between the two phenomena in Hungary and Mexico. Although they did not manage to prove a direct significant correlation, the study provided a lot of other valuable information in the field of corruption and financial involvement. It turned out that the population of almost half of the surveyed countries is not concerned with the existence of corruption. This fact draws attention to the importance of further investigations and the importance of making anti-corruption action more effective.

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