Perception and Reality of Corruption: A Spatiotemporal Analysis in Indonesia Sub-national Level

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Abstract: This paper employs regional perception and judicial report of corruption to investigate the patterns of corruption at districts and municipalities level in Indonesia. To describe the distribution of the existing data, spatial distribution has been utilized supported by the correlation for each measurement. Spatiotemporal analysis has been used to see changes among regions or overtimes. The number of corruption incidents and state financial loss increased significantly in Indonesia while the perception is showing a better condition against corruption. The comparison among regions shows the perceptions toward the level of corruption tend to be higher in the region, which has fewer incidents of corruption. However, corruption perceptions tend to improve when corruption incidents/value increase in one particular region, indicating the effectiveness of judicial systems enhances business sectors' perception of corruption over time. The main lesson highlighted from this paper is the necessity for regional corruption measurement to explain corruption patterns in Indonesia.

1 INTRODUCTION

Corruption is extraordinary and unique since it is hard to determine the right victims afflicted by corruption. The objective data are difficult to obtain, and to date, all existing approaches have not yet described the actual level of corruption. The measurement of corruption should be emphasized that there is no general agreement on corruption definition in the world that ultimately affects the level of corruption in each country (Johnston, 1996, 2002, 2010; Jain, 2001; Kurer, 2005; Brown, 2006; Miller, 2006; Philp, 2006). Many factors that cause corruption are very difficult to define or measure. Besides, it is hidden activities; the acceptance of corruption is different based on variations in culture, law, customs (Svensson, 2005). In addition, the definition of corruption in either explicitly or comprehensively is not clearly explained by the United Nation Convention against Corruption (UNCAC). Therefore, measuring the real corruption is exceptionally challenging as it is an essential part for analyzing the impact of corruption that can be used to design corruption eradication policy.

The debate on corruption measurement is very interesting among economists since corruption has an impact on economic variables and vice versa. Although it is impossible to measure real corruption (Johnston and Kpundeh, 2002), some scholars claim that measuring corruption is reasonable since monitoring corruption can be done through various approaches and indicators in either subjective or objective, aggregate or disaggregate, cross as well as the single country (Kaufmann, 2005; Kaufmann, Kraay and Mastruzzi, 2007). There are some reasons why it is important to measure this phenomenon. First, it is essential to figure out the problem scale since what it is dealing with can be recognized (Belousova, Goel, and Korhonen, 2016). Second, to see whether there are any clear patterns to identify explanatory variables that explains why and where corruption developed (Mauro, 1995). Third, corruption measurement can help policymakers where they need to take any actions and examine whether it has been effective or not (Rose and Mishler, 2010; Bohn, 2012; Gutmann, Padovano and Voigt, 2015).

In general, the explanation of corruption measurement can be narrated by dividing it into four possible approaches, i.e., perception indicators, surveys, indirect and outcome indicators (Kenny, 2009), judicial system reports (Bhargava and

Bolongaita, 2004; Del Monte and Papagni, 2007). Although corruption is a part of criminal activities, it is difficult to find the studies describing the pattern of corruption by regional mapping using those approaches.

In the context of Indonesia, since the system of governance has changed to decentralization after a massive protest in reformation 1998, much of the government authorities have been transferred to the district level, and the corruption pattern has changed from centralized (Mcleod, 2000) to be spread to the regional level. However, studies on corruption in Indonesia have not discussed how the pattern of corruption in this era. The country that has more than 17,000 islands with diverse cultures and languages, it is likely that corruption level is varied in a different area of the country. Current measurements are not able to describe the level of corruption in the regional context (districts or municipalities). Therefore, it is important to know how the level of corruption in each area in Indonesia. Consequently, understanding corruption in Indonesia requires investigation at its regional level.

This paper provides information on how the pattern of corruption in Indonesia's districts and municipalities has been changed since decentralization. Following this, it is structured into four sections. In the second section, it elaborates a literature review discussing corruption definition, the concept of perception indicators as well as judicial system reports, and spatiotemporal analysis in the context of a criminal issue. Data and method applied to analyze this paper are explained in the third section. Findings of this research are written in the fourth section discussing the international approach on corruption measurement, the distribution of judicial report on corruption, regional perception, and reality on corruption. The fifth section presents the conclusion as well as contribution and recommendation for future empirical studies on corruption measurement in Indonesia region.

2 LITERATURE REVIEW

2.1 Corruption Definition

Understanding of corruption literature is very varied. Corruption can be defined from many perspectives such as religious, law, sociology, politics, and even economics. Some institutions and scholars can also explain corruption definition. However, the definition of corruption in this study focuses on economic thought. It is believed that addressing definition early

in this paper is essential to develop strong academic arguments regarding corruption terminology. The discussions of corruption definition become an important issue because it provides more pertinent information for measuring corruption.

Some institutions give the definition of corruption. Although United Nations Convention against Corruption (UNCAC) as a world institution which focuses on corruption issues does not define precisely about its context since corrupt behavior differs one and another (United Nations, 2004), others define corruption in almost the same meaning. For instance, World Bank implies that corruption is an act of influencing other people whether directly or indirectly in an inappropriate manner while Transparency International defines corruption as the misuse of public power for private profit or the misuse of entrusted power for private gain. As for Organisation for Economic Co-Operation and Development (OECD) does not have a specific definition about corruption; however, they set up a range of corrupt behavior as mentioned in UNCAC such as influencing on trading, bribing public officials whether domestic or international, obstruction of justice, embezzlement. Likewise, International Monetary Fund (IMF) concludes the definition from several institutions is becoming "the abuse of public office for private gain," and it is included whether financial gains or not (IMF, 2017).

Among scholars, the spreading of corruption definition is still highly debated and not agreed yet (Mikkelsen, 2013). The concept of corruption was traditionally restricted to the destruction of integrity in the discharge of public duties (Theobald, 1990). The definition of corruption usually associated with public officials and the performance of public duties influenced by bribery. However, it is now increasingly accepted that the act of corruption may apply to both public and private individuals and may extend beyond bribery (Ng, 2006).

Wedeman (2004) stated that corruption includes bribery, embezzlement, concealment, and laundering of proceeds, and trading in influence. Corruption is not about manipulation only, but it is also related to cronyism, money politics, bribery, and gratification. It has been classified as administrative and legislative corruption. However, understanding of corruption is closely related to the norms and conventions of its original state because the limitation of the definition of corruption is still difficult to determine even though the term corruption is very easy to understand by many people (Kurer, 2005).

In Indonesia context; however, the view and definition of corruption have been shifting as well as

judicial processes (Butt, 2012). Finding a national consensus on corruption definition is necessary. There is no consensus about corruption definition in either among scholars as well as international organizations. However, corruption is closely related to the norms and conventions of its original state (Kurer, 2005). Hence, this paper uses the definition of corruption based on Indonesian corruption eradication act. No. 20 of 2001 on the changes in law No. 31 of 1999.

In a juridical sense, the definition of corruption is not only limited to the actions of public officials that cause state financial loss but also includes the actions is detrimental to individual or public. Such as Bribery, both active (bribing) and passive (bribed); Embezzlement; Extortion; Trading in influence; Gratification; and Fraud. Accordingly, the understanding of corruption measurement in this paper is in-line with the definition of corruption referred.

2.2 Corruption Perception Indicator

Scholars interested in the complex phenomenon of corruption have been trying to measure corruption, although the issues over the definition of corruption remain unsettled. Initially, the efforts were based on obtaining objective measurements such as a number of asserts and convictions for corruption, counts of newspaper stories on corruption, and other official records and statistics. In this approach, it is hard to define whether the criminal justice system (anti-corruption agencies, prosecutors, and judges) are effective or not. Meanwhile, in highly corrupt countries, the media has not had an important role in reporting serious corruption.

Over the past 30 years, the efforts to proxy corruption as valid and reliable data have been more developed by academicians, the international organization, as well as non-government organization using subjective measure developed perception and experience-based measures. It has been derived from a range of surveys, business and expert assessments based on their experiences to corruption, for instance, whether they have been offered as well as received or given a bribe in a country.

The most perception indicators commonly used to see the level of corruption across the world and have become established as cited indicator for the economics of corruption research is the Corruption Perception Index (CPI). The data has been published by Transparency International (a non-governmental organization based in Berlin dedicated to raising public awareness about the severity of the global corruption problem). First released in 1995, the CPI has quickly become the best known of corruption measurement tools. The CPI is a composite index (a survey of surveys) that draws on existing global expert evaluations and business opinion surveys from a variety of third party sources, including commercial risk rating agencies, think tanks, NGOs, and international organizations. It provides information about corruption from administrative and political aspects around the world yearly according to the perceived level of public sector corruption as determined by experts, business people, and analysts (Heinrich and Hodess, 2011).

Since Transparency International first released, the CPI has quickly become the best-known corruption indicator worldwide. This index has been broadly used by many scholars to measure corruption in every country level as well as compare and analyze cross-countries' level of corruption. From the first publication, the CPI's score countries are from 1 to 10 scale, where 0 represents the most corrupt while 10 represents the least corrupt. However, from 2012 until now, the scale has changed becoming on a zero-to-hundred. The CPI has been widely credited with making a comparative and large number of studies of corruption possible, as well as putting the issue of corruption squarely in the international policy agenda. Despite its enormous influence on both academic and policy fronts, the CPI is not without critics. One often noted critique is that the CPI relies solely on surveys of foreign businesspeople and the expert assessments of cross-national analysis; as such, the CPI mainly reflects international experts' perceptions, not the perceptions of each country's citizens.

Although perception measurement is more stable across time and it represents the quality of institutions (Kenny, 2009), these are much different from actual occurrence and real corruption level (Treisman, 2007; Rose and Peiffer, 2012). For control of corruption indices, business elites could give bias information when describing corruption since they have political interest (Rohwer, 2009).

In addition, Malito (2014) has particularly emphasized evaluating perception indicators to the three matters. First, there are biases in subjective data since the perception avoids the absolute amount of corruption. Second, the technique of aggregating multiple data may be risked. The third is the problem of gathering and missing data since for some indicators, and it affects the researcher to reach other information without considering about aggregation. Internal validity could be low because the indices depend on different sources for most of the years.

Andersson & Heywood (2009) state that those indices have created a "corruption trap"; however, it is widely recognized that perception-based measure has contributed to the efforts of corruption eradication agenda through promoting good governance system.

According to the explanation above, although CPI has some benefits to see the level of corruption in Indonesia and the source of data received from various Indonesia region, it is very difficult to analyze deeper about corruption in sub-national level. Therefore, it is imperative that regional perception-based should be considered in either from the municipality or district level.

3 DATA AND METHOD

3.1 Data

This paper employs two approaches as indicators to measure corruption in Indonesia. First, it is a subjective approach using the Corruption Perception Index (CPI) data issued by Transparency International Indonesia. Second, the data on corruption cases are legally binding from the Supreme Court, which is an objective approach. CPI itself is only available in the 4-year period (2004, 2006, 2008, 2010) using a scale from 0 to 10 (0 is highly corrupt, and 10 is very clean). For 2004, it covers 26 cities/districts in Indonesia, while 2006 becomes 37 cities/districts. Whereas the coverage area in 2008 and 2010 are 55 cities/districts.

Corruption cases data are from 2001 to 2014, which are divided into two types. First, the number of corruption cases indicated by the number of perpetrators, and second, the value of state losses due to corruption. During the data period, the number of corruption cases was 3050 spread across 230 districts and 64 cities, while the total of state financial loss was USD8.1 Billion. This research uses 294 districts/municipalities as a spatial unit based on the 1996 version from the number of districts/municipalities in Indonesia. Since the decentralization era, the latest consistent region in Indonesia can be used to analyze spatial distribution is in 1996. All region that has divided after decentralization will be re-adjust to the number of regions in 1996.

3.2 Method

To describe the distribution of the existing data, spatial distribution has been utilized supported by the correlation for each measurement of corruption that

has been used to see the relationship between regional CPI and judicial report data. Spatiotemporal analysis has been employed to see changes among regions or overtimes. Since corruption is a part of crime issue, spatiotemporal is used to see understanding location and connectivity through interaction when incidence at the same time close in regional space (Jacquez, 1996; Kulldorff and Hjalmars, 1999), and regular occurrence in the timing and spacing (Bowers and Johnson, 2005; Sagovsky and Johnson, 2007). Further understand the characteristic of the region (Block and Block, 1995; Brantingham, P. L. Brantingham, 1999; Loukaitou-sideris, 1999). Likewise, an increase or decrease of corruption level in an area over time can be approached using this method which as it is done by (Grubesic and Mack, 2008) in analyzing crime trend.
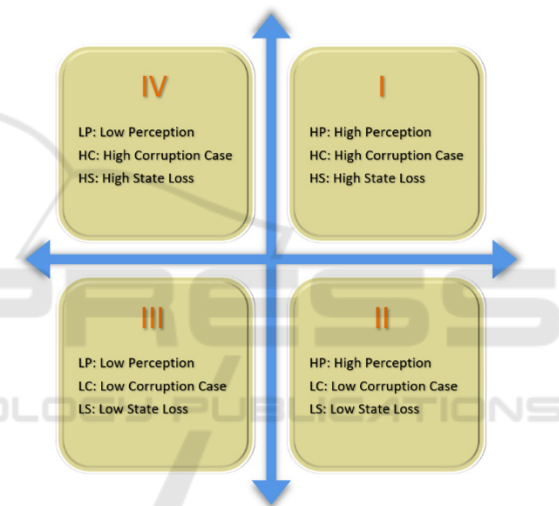

Figure 1: Corruption perception (x-axis) and corruption reality (y-axis) quadrant.

To get more understanding about those connections, this paper has divided and grouped the area with the same patterns into four quadrants (see figure 1). In general, regions that have a high perception of corruption, the number of corruption cases and their state financial loss are low (quadrant II), and vice versa (quadrant IV). It means that there is a negative relationship between perception and the incident of corruption.

4 FINDINGS

4.1 An International Approach to Corruption Measurement

The result shows that the country's perception of corruption tends to improve and positively related to the number of corruption cases handled in Indonesia. It indicates that the more corruption cases treated, the perception index will increase over time. The trend between national CPI, regional CPI, and state financial loss have the same pattern as well. Table 1 shows that the correlation between the three measurements is positive. It means that corruption perception is in-line with corruption reality.

Table 1: Correlation matrix of National CPI, Corruption Cases (CC), and State Financial Loss (SFL).

	CPI	CC	SFL
CPI	1.000	–	–
CC	.810**	1.000	–
SFL	.628*	.790**	1.000

** Significant at the 0.01 level
* Significant at the 0.05 level

4.2 The Distribution of Judicial Report on Corruption

At the regional level, the distribution of corruption cases and state financial loss can be seen since 2001. Ogan Komering Ilir District was the largest in the number of corruption cases and state financial loss at that time. The corruption cases had increasingly spread in various regions in 2014, Cirebon City was the highest number of corruption cases, while the biggest state financial loss was in Bekasi District. At this year, the western part of Indonesia dominates corruption practices while some are in the central region and only a few regions in the eastern. However, almost all regions in Indonesia have corruption cases with various types of corruption from 2001 to 2014; It was found that only two regions were not indicated by corruption. There were Bungo Tebo District in Jambi Province and Sintang District in West Kalimantan Province (see figure 2).

This result has been strengthened by a significant and positive correlation between the corruption cases and the state financial loss (see table 2); nevertheless, the island of Sumatra, Kalimantan, Bali and Nusa Tenggara are stronger than Java and Sulawesi. In addition, there is no significant correlation between Maluku and Papua. It means that many corruption cases in that area indicated do not result in state financial loss.
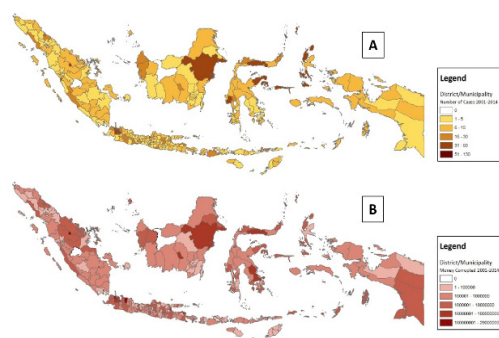

Figure 2: Spatial distribution of corruption in Indonesia (A-the number of corruption cases from 2001-2014, B-the value of state financial loss from 2001-2014).

Table 2: Correlation matrix of Corruption Cases (CC), and State Financial Loss (SFL).

	CC	SFL
CC	1.000	–
SFL	.419**	1.000

** Significant at the 0.01 level

4.3 Regional Perception and Reality of Corruption

The more specific result found in the relation between regional CPI (red circle) and two judicial report data. In 2004, corruption perception data showed that Kalimantan and Sulawesi Islands have a higher perception than Sumatra, Java, and Bali Island. Hence, it indicates that perceptually, Kalimantan, and Sulawesi are cleaner than other areas. The same condition had also occurred in 2006. Despite there is an increase in corruption cases in several areas of Kalimantan and Sulawesi, the perception has not significantly changed (see figure 3).
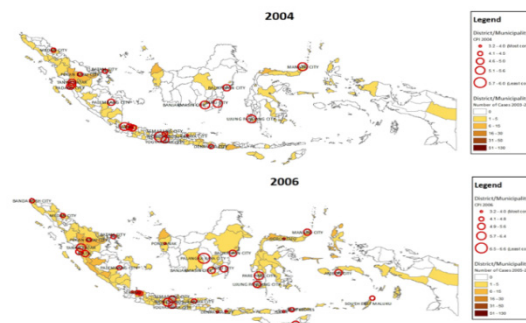

Figure 3: The pattern of corruption perception and corruption cases between 2004 and 2006.

An interesting comparison was shown in 2008 and 2010. For instance, in 2008, while there were no corruption cases revealed in the period of 2007-2009, the perception of corruption has a different score. This difference may occur because the region has different administrative types, namely District and City. So that the perception of corruption built in the City is far greater than in the District if there are no corruption cases in that area. In 2010, where the number of corruption cases increased in the period of 2009-2011, the corruption perception in Palangkaraya City declined. Interestingly, the perception in East Kotawaringin slightly rose. Probably, it is because of the influence between regions. There is a view that this area is still cleaner than others around it, although the number of corruption cases in the region itself increases (see figure 4).
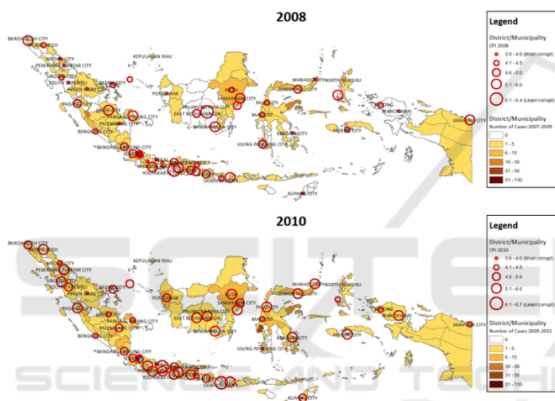

Figure 4: The pattern of corruption perception and corruption cases between 2008 and 2010.

In the relation between regional perception and state financial loss should be noted that the areas with a large number of cases do not necessarily have a huge amount of state losses. As shown by the previous correlation coefficient below than 0.5. Therefore, the value of state loss varies for each region in a given year. For instance, in the period of 2005-2007, the number of corruption cases in Gorontalo and Manado City is equal (5), but the value of state financial loss in both regions is different. The corruption that occurred in Gorontalo City resulted in US$ 1,516,590, while in Manado City, it was US$ 526,922. Interestingly, the corruption perception in Manado City is much better than Gorontalo City in 2006. It shows that there is a negative relationship between perception and state financial loss in both regions (see figure 5).
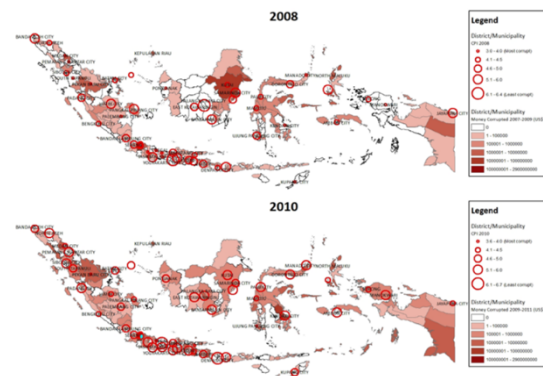

Figure 5: The pattern of corruption perception and state financial loss between 2004 and 2006.

Another interesting discussion is in the Papua region. In the period of 2007-2009, there was no state financial loss in Manokwari and Sorong District. However, the corruption perception index in 2008 in both regions was very small, although Sorong District was still better than Manokwari District. It means that businesspeople feel a state financial loss in that area, but it has not been revealed by a law enforcer. Changes occurred in the perception of corruption in 2010 for both regions. Corruption perceptions in Manokwari District rose significantly from 3.39 to 5.81 with the value of state financial loss US$ 149,242, while the perception of corruption in Sorong declined from 4.39 to 4.26 with the value of state financial loss US$ 416,197. From this description, it can be said that there is a negative correlation between perception and state financial loss in both regions (see figure 6).
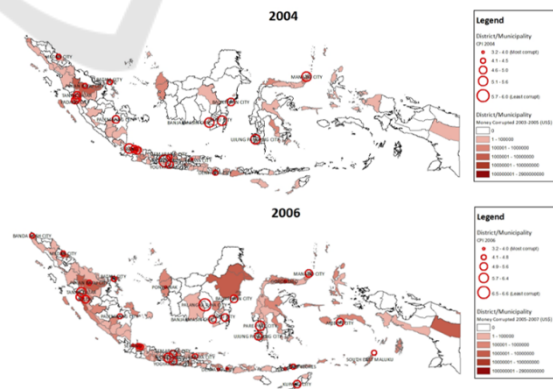

Figure 6: The pattern of corruption perception and state financial loss between 2008 and 2010.

4.4 The 4-quadrant of Corruption Measurement

From the 4-year period of regional CPI, it can be seen several regions are in quadrant II and IV. It shows the regions that have a small number of corruption cases, the perception of business actors tends to improve, and the regions that have a large amount of corruption, the perceptions tend to deteriorate. This result is in-line with the previous paper using corruption perception and corruption incidence in Russia (Belousova, Goel, and Korhonen, 2016). They found that there is a positive relation between perception and reality. Please take note that in their paper, they use different perception meaning which is 0 is very clean and 10 is very corrupt. That is why the correlation sign is positive.

Interestingly, in fact, some regions are also in quadrant I and III. I expect that the perceptions formed in these areas were accentuated comparing the number of corruption cases with other regions so that the perception is directly proportional to reality.

Over time, there are different patterns in each region. For example, in South Jakarta, the number of corruption cases increased in the period of 2003-2011. In line with this, the perception of corruption is also getting better. It describes that the more corruption cases revealed, the perception of business actors on corruption is getting better as well. In Padang City, the number of corruption cases is relatively the same in the period of 2004-2006, while the corruption perception experienced a significant increase in this region. However, until 2010, this perception has decreased as the number of corruption cases handled has declined. A much different pattern occurred in Surabaya, the increase in the number of corruption cases in the period 2003-2011 did not give much chance to the corruption perception in the period of 2004-2010 (see appendix 1).

An interesting discussion is in Manado City. Within the four period measurements, the amount of state financial loss rose in this city, while the corruption perceptions also increased during this period. It shows that there is a positive relationship between perceptions and state financial loss overtime in one region. Hence, people tend to have a positive view that the state is working hard to eradicate corruption and prosecute those implicated in it, when the justice system is properly enforced (Bohn, 2012). Therefore, corruption perception tends to improve in-line with the effectiveness of law enforcement. The same pattern also occurs in West Jakarta. The increase in the number of state losses improves the perception of businesspeople against corruption in that region (see appendix 2).

5 CONCLUSION

Regional corruption measurement is essential to see the pattern of corruption. There are three points that can be highlighted to conclude this paper. First, there is a negative correlation between corruption perception and corruption reality among regions. Second, there is a positive correlation between corruption perception and corruption reality over time. Third, corruption perception, corruption cases, and state financial loss have complemented each other in explaining the pattern of corruption in Indonesia sub-national level.

ACKNOWLEDGMENTS

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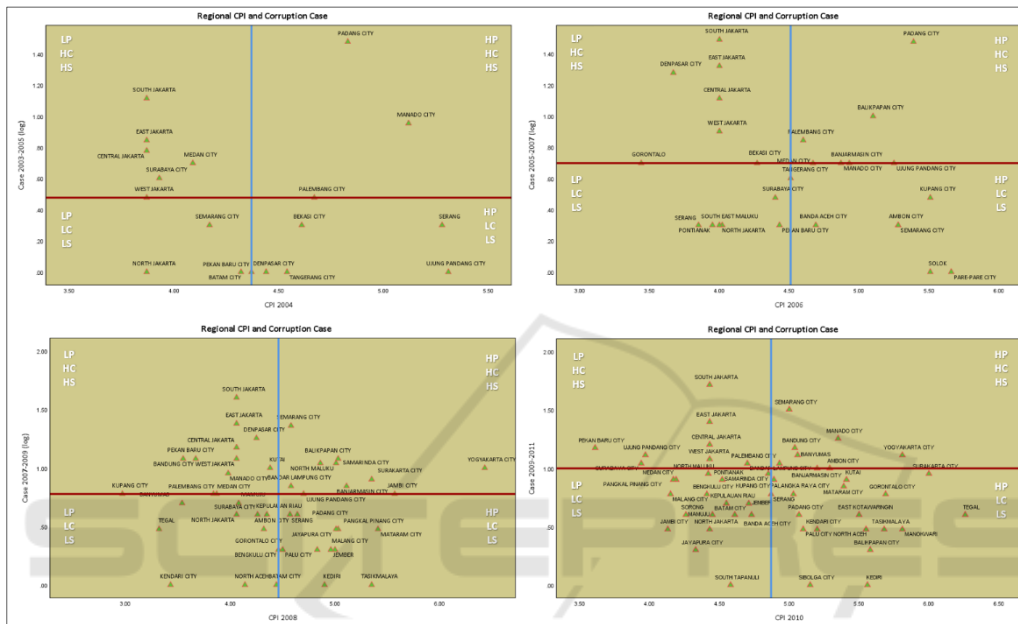
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APPENDIX

1. Reginal CPI and corruption cases

2. Regional CPI and state financial loss