CORRUPTION IN EASTERN EUROPE AND CENTRAL ASIA: DO MANUFACTURING FIRMS SUFFER THE MOST?

HALIL D. KAYA
DEPARTMENT OF ACCOUNTING AND FINANCE, COLLEGE OF BUSINESS AND TECHNOLOGY, NORTHEASTERN STATE UNIVERSITY, BROKEN ARROW, OK 74014
PHONE: 1-918-449-6572
e-mail: kaya@nsuok.edu

Abstract

This paper investigates corruption in Eastern Europe and Central Asia. Using World Bank's BEEPS IV and BEEPS V surveys, we investigate the degree of corruption in these countries for different industries. We focus on the manufacturing sector, the services sector, and the core sector, and focus on corruption related to customs/imports, courts, and taxes/tax collection. We find that the overall degree of corruption for all three sectors is somewhere between "seldom" and "never". Our results show that, for all three sectors, the degree of corruption is the highest in taxes/tax collection and the lowest in courts. Again, for all three sectors, shareholding firms with shares traded in the stock market and limited partnerships suffer the most. While for the manufacturing and services sectors, larger firms suffer the most, for the core sector, medium-sized firms suffer the most. When we compare the manufacturing sector to the other sectors, we find that while the overall level of corruption is similar in the manufacturing sector and the other sectors, manufacturers face a higher degree of corruption in transactions related to customs/imports and taxes/tax collection when compared to the other sectors. We do not find any significant difference between the manufacturing sector and the other sectors with respect to the degree of corruption related to courts. Overall, our findings indicate that policymakers in the region need to protect manufacturers from requests/demands for additional payments or gifts by customs authorities and/or by tax collectors and auditors.

***Keywords*:** corruption, bribery, bribe, manufacturers, Eastern Europe, Central Asia

Clasificare JEL : *E01, D72, D73, L25, L26*

1. INTRODUCTION

In this study, we investigate corruption in Eastern Europe and Central Asia. We focus on the burden of corruption on manufacturers, service sector, and core industries. More specifically, we compare the burden of corruption on manufacturers which are larger firms with more complex operations to the burden on the service sector and core industries. We look into the general level of corruption as well as corruption related to customs/imports, taxes/tax collection, and courts.

Previous research (i.e. Tanzi and Davoodi (1997), Leite and Weidmann (1999), Henderson and Kuncoro (2004), Kronenberg (2004), Kenny (2007), Tonoyan, 2010, Osei-Tutu et al. (2010), and Kapur and Vaishnav (2013)) shows that corruption is more common in developing nations. In this study, we focus on the transition economies in Eastern Europe and Central Asia where corruption is abundant.

While many studies (i.e. Bardhan (1997) and Ngunjiri (2010)) show that corruption has a negative influence on the business environment, other studies like Gould and Amaro-Reyes (1983), Svensson (2005), Jain (2001), Wang and You (2012)**,** Ayaydın and Hayaloglu (2014), and Fisman et al. (2024) contend that there is a positive relationship between corruption and entrepreneurial or economic growth. This second group of papers argue that corruption has a positive impact on firm growth and economic development because it eliminates bureaucratic delays and makes processes more efficient, and also because it incentivizes government employees to work faster.

While there are many studies like the above-mentioned ones that focus on the impact of corruption on firm growth, there are quite a few studies that look from a different perspective. These papers examine whether firm size has a positive or negative impact on the size of the bribes. The answer to this question is not clear because while there are earlier papers that show no relationship between firm size and bribery (i.e. Banfield and Banfield (1985), Becker and Stigler

(1974), and Klitgaard (1988)), later studies show either a positive impact (i.e. Nguyen (2020)) or a negative impact (i.e. Bennison et al. (2009), Bai et al. (2019), and Goel et al. (2022)). Nguyen (2020) argues that the previous studies ignore the endogeneity problem (i.e. firm size may affect bribery, but at the same time, bribery may affect firm size). After controlling for the endogeneity problem, Nguyen (2020) finds that when firm size increases, the size of the informal payment increases.

In this current study, based on this previous research that examines the relationship between firm size and bribery, we test to see larger and more complex firms in the region are more likely to pay bribes compared to smaller firms. It is important to note that we do not look into the size of the bribes in dollars or as a percentage of the firm's revenue like some of the previous studies do. We only examine the likelihood of paying bribes by each sector.

We make two main contributions. Our first contribution is to show whether larger, more complex businesses in the region suffer more from corruption when compared to the smaller, more simple structured businesses. As far as we know, most of the previous studies mainly focus on the size of the bribe rather than the likelihood of bribery. Our second contribution is to examine corruption in customs/imports, courts, and taxes/tax collection separately. If manufacturing firms deal with corruption more, are they suffering more in transactions related to customs/imports, courts, or taxes/tax collection?

The next section goes over the previous literature. The following section describes our data and methodology. Then, we present our results and we conclude.

2. LITERATURE REVIEW

There are two main streams of research on corruption, firm size, and growth. The first stream of research deals with the relationship between corruption and firm growth (or economic growth). The previous research on this issue is inconclusive. Studies like Bardhan (1997) and Ngunjiri (2010)) show that corruption has a negative influence on the business environment. On the other hand, Gould and Amaro-Reyes (1983), Svensson (2005), Jain (2001), Wang and You (2012), Ayaydın and Hayaloglu (2014), and Fisman et al. (2024) contend that there is a positive relationship between corruption and entrepreneurial or economic growth. For example, Wang and You (2012) examine China and show that corruption likely contributes to firms' growth. They argue that corruption is not a vital constraint on firm growth if financial markets are underdeveloped. They also argue that, in countries with more developed financial markets, pervasive corruption deters firm growth. Ayaydın and Hayaloglu (2014) examine 41 manufacturing firms in Turkey during the 2008-2011 period and show that there is a significantly positive relation between the growth of private firms and corruption level. They argue that this is due to the elimination of bureaucratic delays and incentivizing government employees to work faster. Fisman et al. (2024) examine 88,000 firms across 141 economies in 2006-2020 and show that firms that do not make any informal payments tend to grow slower than bribers. Among bribers, growth is decreasing in the size of informal payments meaning that larger bribes do not have the same effect. Overall, this second group of papers argue that corruption has a positive impact on firm growth and economic development because it eliminates bureaucratic delays and makes processes more efficient, and also because it incentivizes government employees to work faster.

The second stream of research deals with the relationship between firm size and corruption. This stream of research is related to the other one because if firm size is related to the size of bribes, and if the size of bribes is linked to firm growth, then firm size is indirectly linked to firm growth through this "corruption" channel. The focus of this current paper is to contribute to this second stream of research; therefore, we focus more on the discussion of the papers here.

In this second stream of research which focuses on the relationship between firm size and corruption, there is no consensus. There are three camps. The earlier papers including Banfield and

Banfield (1985), Becker and Stigler (1974), and Klitgaard (1988) argue that there is no significant relationship between firm size and corruption. In other words, these papers contend that firm size is not a determinant of corruption.

On the other hand, more recent papers show that larger businesses that have a more complex and heterogenous structure are more likely to pay bribes. For example, Kronenberg (2004), Kenny (2007), Osei-Tutu et al. (2010), and Tanzi and Davoodi (1997) show that businesses dealing with natural resources or land use and capital projects or construction are more prone to corruption. The more heterogeneous and complex the business is, the more likely it is to deal with "unofficial requests" from government officials.

Nguyen (2020) shows that there is a positive relationship between firm size and bribery. Nguyen (2020) finds that "a one standard deviation increase in sales leads to 0.33 standard deviation increase in bribes, and to 0.36 standard deviation increase in management time spent dealing with public officials". Although corruption burden increases with increasing firm size, this relationship becomes weaker (although still positive) when we shift from small firms to larger firms. In other words, Nguyen (2020) shows that there is a positive relation but that this relation is not linear. When firm size gets bigger and bigger, at some point, the impact on the size of the bribe starts to get smaller.

When we examine all of these papers, we can see the source of the problem: The confusion here is due to the variable that is used to measure corruption. Some studies look at the likelihood of corruption, while others look at the size of the bribe in dollars or the size of the bribe as a percentage of firm size.

For example, Bennison et al. (2009), Bai et al. (2019) and Goel et al. (2022) look at the relation between firm size and size of bribes as a percentage of firm size. They find that larger firms pay smaller bribes as a percentage of their size because they tend to use their political power and their power to resist to the demands by government officials. Bennison et al. (2009) show that stronger, larger firms use their influence on the government and pay smaller portion of their revenue as bribes, meanwhile smaller and weaker firms are forced to pay a higher proportion of their revenues as bribes. Bai et al. (2019) examine 10,000 Vietnamese firms and show that firm growth reduces bribes as a percentage of revenues. Goel et al. (2022) examine more than 80 countries and find that larger firms reduce the perceptions and experiences of corruption.

However, Nguyen (2020) argues that these studies ignore the endogeneity problem and therefore their results are not valid. After controlling for the endogeneity problem, as explained above, Nguyen (2020) finds that when firm size increases, the size of the bribe increases.

Therefore, we can contend that, depending on the different corruption variables that are used, studies can and do find different results. In this current study, we focus on the likelihood of firms making informal payments, rather than the size of bribes in dollars, or the size of bribes as a percentage of firm size. Therefore, we avoid the issue of "size in absolute value" versus "size as a relative value".

In two recent studies, Kaya and Engkuchik focus on corruption in Eastern Europe and Central Asia. Kaya and Engkuchik (2021a) examine the impact of the 2008-2009 Global Crisis on the informal payments made by manufacturing firms in the region. They show that the incidence of corruption for this group significantly declined post-crisis. In a different study, Kaya and Engkuchik (2021b) examine the how the global crisis affected bribery for retailers in the region. They show that corruption became significantly less common for retailers a few years after the crisis.

3. DATA AND METHODOLOGY

In this paper, we use World Bank's BEEPS IV and V survey data. The surveys focus on Eastern Europe and Central Asia and classify firms in the region into three sectors: the manufacturing sector, the services sector, and the core industries sector. The manufacturing sector includes firms that produce food, textiles, garments, chemicals, plastics and rubber, non-metallic mineral products, basic metals, fabricated metal products, machinery and equipment, electronics, and other manufacturing products. The services sector includes firms in retail. The core industries are wholesale, IT, hotel and restaurants, services of motor vehicles, construction, and transport subsectors.

The countries that are included in the survey include Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, FYR Macedonia, Georgia, Greece, Hungary, Kazakhstan, Kosovo, Kyrgyz Republic, Latvia, Lithuania, Moldova, Mongolia, Montenegro, Poland, Romania, Russia, Serbia, Slovak Republic, Slovenia, Tajikistan, Turkey, Ukraine, and Uzbekistan.

The first survey question that we focus on is as follows:

"It is common for firms in my line of business to have to pay some irregular "additional payments or gifts" to get things done with regard to customs, taxes, licenses, regulations, services, etc."

The answers range from 1 to 6. "1" is Never, "2" is Seldom, "3" is Sometimes, "4" is Frequently, "5" is Usually, and "6" is Always.

The second survey question asks the same question but for customs/imports only. The third question asks the same question for courts only. The third question asks the same question for courts only. For all questions, the answers range from 1 to 6 with "1" meaning Never, etc.

First, for the manufacturing sector, we show the overall degree of corruption as well as the degree of corruption related to customs/imports, courts, and taxes/tax collection. Then, for this sector, we look into how different types of firms (shareholding firms, partnerships, etc.) and different sizes of firms differ with respect to their perception of corruption in their line of business. Is there a "size" effect or a "firm type" effect? Then, we do the same for the services sector as well as the core sector. What is the overall degree of corruption and what is the degree of corruption related to customs/imports, courts, and taxes/tax collection? Again, is there a "size" effect or a "firm type" effect for these two sectors?

Finally, we compare the degree of corruption for manufacturers and the degree of corruption for the other sectors. Are manufacturers more prone to requests/demands for additional payments or gifts when compared to the other sectors? To compare the manufacturing sector and the other sectors, we use non-parametric tests (i.e. the Mann-Whitney-Wilcoxon tests).

In the next section, we show our findings.

4. EMPIRICAL RESULTS

Table 1 shows the summary statistics for the responses given to the four questions (i.e. overall corruption, corruption in customs/imports, corruption in courts, and corruption in taxes/tax collection) by manufacturers in the region. We coded "Never" as 1, "Seldom" as 2, "Sometimes" as 3, "Frequently" as 4, "Usually" as 5, and "Always" as 6.

Table 1. Informal Payments/Bribes (Manufacturing Firm)

	N	Mean	Stdev
Overall	7,548	1.9641	1.2298
Customs/imports	7,189	1.5795	1.0688
Courts	7,135	1.4835	0.9829

Taxes/Tax collection	7,432	1.7009	1.0988

The table shows that the mean score for overall corruption is 1.9641. This is very close to "Seldom". Therefore, on average, manufacturers believed that bribes were seldomly necessary. Regarding bribery in customs/imports, the mean is 1.5795, which is between "Never" and "Seldom". Regarding bribery in courts, the mean is 1.4835, which is also between "Never" and "Seldom", but slightly closer to "Never". Finally, regarding bribery in taxes/tax collection, the mean is 1.7009, which is higher (i.e. more frequent) than bribery in customs/imports and bribery in courts.

Overall, we are seeing that bribery is more common in taxes/tax collection, then comes customs/imports, and then comes bribery in courts. Manufacturers in the region face this problem in taxes/tax collection more seriously, and not that much in courts-related transactions.

Table 2 shows the summary statistics for the responses given by manufacturers grouped according to size, and also grouped according to the type of the firm.

Table 2. Informal Payments by Firm Size and Type (Manufacturing Firm)

	N	Mean	Stdev
Very small	117	1.7607	1.1345
Small	2,870	1.9432	1.1901
Medium	2,735	1.9832	1.2525
Large	1,826	1.9814	1.2613
Shareholding firm traded in the stock market	608	2.1217	1.3517
Shareholding firm traded privately	5,415	1.9313	1.2025
Sole proprietorship	914	2.0011	1.2502
Partnership	131	1.8244	1.1601
Limited partnership	293	2.1195	1.3044
Other	181	2.0718	1.3541

We are seeing that large (i.e. with more than 99 employees) and medium manufacturers (i.e. between 20 and 99 employees) have the highest mean score for overall corruption. The lowest mean is for the very small firms with less than five employees. The mean score for large manufacturers is 1.9814, which is "Seldom". The mean score for medium manufacturers is 1.9832, which is also "Seldom". The mean score for small manufacturers (between 5 and 20 employees) is 1.9432, which is slightly lower. The mean score for very small manufacturers is 1.7607, which is between "Never" and "Seldom" (although closer to "Seldom").

When we look at the results for the different types of manufacturers, we see that shareholding firms with shares traded in the stock market and limited partnerships had the highest means (2.1217 and 2.1195, respectively). Then, comes the "Other" group and the sole proprietorships (2.0718 and 2.0011, respectively). These means are between "Seldom" and "Sometimes". Shareholding firms with shares traded privately and partnerships have the lowest means (1.9313 and 1.8244, respectively). These two groups fall between "Never" and "Seldom".

Overall, we conclude that larger manufacturers and manufacturers that are limited partnerships or shareholding firms with shares traded in the stock market tend to suffer more from corruption.

Table 3 shows the summary statistics for the responses given to the four questions (i.e. overall corruption, corruption in customs/imports, corruption in courts, and corruption in taxes/tax collection) by service firms (i.e. retailers) in the region. We coded "Never" as 1, "Seldom" as 2, "Sometimes" as 3, "Frequently" as 4, "Usually" as 5, and "Always" as 6.

Table 3. Informal Payments/Bribes (Service Firm)

	N	Mean	Stdev
Overall	5,624	1.9820	1.2492
Customs/imports	5,298	1.5425	1.0741
Courts	5,285	1.4865	1.0049
Taxes/Tax collection	5,481	1.7037	1.1436

The table shows that the mean score for overall corruption is 1.9820. This is very close to "Seldom". Therefore, on average, retailers believed that bribes were seldomly necessary. Regarding bribery in customs/imports, the mean is 1.5425, which is between "Never" and "Seldom". Regarding bribery in courts, the mean is 1.4865, which is also between "Never" and "Seldom", but slightly closer to "Never". Finally, regarding bribery in taxes/tax collection, the mean is 1.7037, which is higher (i.e. more frequent) than bribery in customs/imports and bribery in courts.

Overall, for retailers, we are seeing that bribery is more common in taxes/tax collection, then comes customs/imports, and then comes bribery in courts. Retailers in the region face this problem in taxes/tax collection more seriously, and not that much in courts-related transactions.

Table 4 shows the summary statistics for the responses given by retailers grouped according to size, and also grouped according to the type of the firm.

We see that large (i.e. with more than 99 employees) and medium retailers (i.e. between 20 and 99 employees) have the highest mean score for overall corruption. The lowest mean is for small firms (between 20 and 99 employees). The mean score for large retailers is 2.0301, which is slightly more frequent than "Seldom". The mean score for medium retailers is 2.0290, which is also slightly more frequent than "Seldom". The mean score for very small retailers (fewer than five employees) is 1.9593, which is slightly lower. The mean score for small retailers is 1.9471, which is between "Never" and "Seldom" (although closer to "Seldom").

Table 4. Informal Payments by Firm Size and Type (Service Firm)

	N	Mean	Stdev
Very small	246	1.9593	1.2578
Small	3,025	1.9471	1.2394
Medium	1,621	2.0290	1.2668
Large	732	2.0301	1.2451
Shareholding firm traded in the stock market	313	2.1725	1.3783
Shareholding firm traded privately	3,781	1.9545	1.2271
Sole proprietorship	854	2.0176	1.2677
Partnership	169	1.8876	1.2171
Limited partnership	295	2.1559	1.3688
Other	202	1.8663	1.1447

When we look at the results for the different types of retailers, we see that shareholding firms with shares traded in the stock market and limited partnerships have the highest means (2.1725 and 2.1559, respectively). Partnerships and "Other" type of retailers have the lowest means.

Overall, we conclude that larger retailers and retailers that are limited partnerships or shareholding firms with shares traded in the stock market tend to suffer more from corruption.

Table 5 shows the summary statistics for the responses given to the four questions (i.e. overall corruption, corruption in customs/imports, corruption in courts, and corruption in taxes/tax

collection) by core industry firms in the region. We coded "Never" as 1, "Seldom" as 2, "Sometimes" as 3, "Frequently" as 4, "Usually" as 5, and "Always" as 6.

Table 5. Informal Payments/Bribes (Core Industry Firm)

	N	Mean	Stdev
Overall	5,149	1.9950	1.2427
Customs/imports	4,861	1.5458	1.0585
Courts	4,888	1.4894	0.9634
Taxes/Tax collection	5,036	1.6620	1.0879

The table shows that the mean score for overall corruption is 1.9950. This is very close to "Seldom". Therefore, on average, core industry firms believed that bribes were seldomly necessary. Regarding bribery in customs/imports, the mean is 1.5458, which is between "Never" and "Seldom". Regarding bribery in courts, the mean is 1.4894, which is also between "Never" and "Seldom", but slightly closer to "Never". Finally, regarding bribery in taxes/tax collection, the mean is 1.6620, which is higher (i.e. more frequent) than bribery in customs/imports and bribery in courts.

Overall, for core industry firms, we are seeing that bribery is more common in taxes/tax collection, then comes customs/imports, and then comes bribery in courts. Core industry firms in the region face this problem in taxes/tax collection more seriously, and not that much in courts-related transactions. The results here are similar to the results for manufacturers and retailers.

Table 6 shows the summary statistics for the responses given by core industry firms grouped according to size, and also grouped according to the type of the firm.

Table 6. Informal Payments by Firm Size and Type (Core Industry Firm)

	N	Mean	Stdev
Very small	105	1.9429	1.2847
Small	2,454	1.9389	1.2008
Medium	1,710	2.0673	1.2752
Large	880	2.0170	1.2820
Shareholding firm traded in the stock market	364	2.2088	1.4221
Shareholding firm traded privately	3,770	1.9695	1.2204
Sole proprietorship	557	1.9354	1.1857
Partnership	113	1.6726	1.0560
Limited partnership	206	2.4466	1.4295
Other	129	1.8837	1.1499

We see that medium-size core firms have the highest mean score (2.0673). Next comes large firms with a mean of 2.0170. Very small firms have a mean of 1.9429 and small firms have a mean of 1.9389.

When we look at the results for the different types of core firms, we see that limited partnerships have the highest mean (2.4466) which is between "Seldom" and "Sometimes" and higher than the means that we have seen for manufacturers and retailers. Shareholding firms with shares traded in the stock market also have a high mean (2.2088). Partnerships have the lowest mean at 1.6726, which is between "Never" and "Seldom".

Overall, we conclude that medium-size core firms and core firms that are limited partnerships or shareholding firms with shares traded in the stock market tend to suffer more from corruption.

Table 7 shows the results of our non-parametric tests (i.e. Mann-Whitney-Wilcoxon tests) that compare manufacturers to the other groups (i.e. retailers and core industry firms combined).

We see that manufacturing firms and the other firms are not significantly different in terms of the degree of overall corruption. The mean value is 1.9641 for manufacturers and 1.9882 for other firms (p=0.1520).

Table 7. Informal Payments by Manufacturing vs Other Firms

	Manufacturing		Other		Mann-W.
Variables	**N**	**Mean**	**N**	**Mean**	**p-value**
Overall	7548	1.9641	10773	1.9882	0.1520
Customs/imports	7189	1.5795	10159	1.5441	0.0003
Courts	7135	1.4835	10173	1.4879	0.3152
Taxes/Tax collection	7432	1.7009	10517	1.6838	0.0187

However, when we go into more detail, we see that manufacturers have a significantly higher score compared to other firms with respect to the degree of corruption in customs/imports and degree of corruption in taxes/tax collection. For customs/imports, the mean value for manufacturers is 1.5795, while the corresponding value for other firms is 1.5441. The mean value for manufacturers is significantly higher than the mean value for other firms (p=0.0003). Similarly, for taxes/tax collection, the mean value for manufacturers is 1.7009, while the corresponding value for other firms is 1.6838. In this measure, the mean value for manufacturers is again significantly higher than the mean value for other firms (p=0.0187). On the other hand, manufacturers' scores in courts are not significantly different from other firms' scores in courts. The mean value for corruption in courts for manufacturers is 1.4835, while the corresponding value is 1.4879 for other firms. This difference is not statistically significant (p=0.3152).

Overall, we conclude that manufacturing firms suffer more from corruption in the areas of customs/imports and taxes/tax collection.

5. CONCLUSION

In this study, we focus on corruption in Eastern Europe and Central Asia. Using World Bank's BEEPS surveys, we examine the degree of corruption that manufacturing sector, services sector, and core industry sector faces when dealing with different aspects business. More specifically, we focus on the degree of overall corruption, corruption in customs/imports, corruption in courts, and corruption in taxes/tax collection.

We first examine manufacturers. For manufacturers, we find that the overall degree of corruption is somewhere between "seldom" and "never". We also find that, for this group, the degree of corruption is the highest in taxes/tax collection and the lowest in courts. Then, we examine how firm size and firm type affects the results. We find that larger manufacturers, manufacturers that are limited partnerships and manufacturers that are shareholding firms with shares traded in the stock market tend to suffer the most (i.e. the degree of corruption is higher).

Then, we focus on service firms (i.e. retailers). For retailers, the results are similar. We find that the overall degree of corruption is somewhere between "seldom" and "never". We also find that, for this group, the degree of corruption is the highest in taxes/tax collection and the lowest in courts. We find that larger retailers, retailers that are limited partnerships and retailers that are shareholding firms with shares traded in the stock market tend to suffer the most (i.e. the degree of corruption is higher).

When we examine the core industry firms, we find that some of the results are not similar to the findings for manufacturers and retailers. Again, we find that the overall degree of corruption is

somewhere between "seldom" and "never". We also find that, for this group, like the other groups, the degree of corruption is the highest in taxes/tax collection and the lowest in courts. However, for this group, we find that medium size firms and firms that are limited partnerships tend to face the highest degree of corruption.

To examine the differences between manufacturers and the other sectors, we run nonparametric tests. Our tests show that while the manufacturing sector is not significantly different from the other sectors in terms of the overall degree of corruption, there are differences with respect to the degree of corruption in customs/imports and taxes/tax collection. Manufacturers suffer more due to corruption in these areas when compared to other firms. They are more forced to make additional payments to the authorities in customs/imports and taxes/tax collection. On the other hand, we do not find any significant difference between the manufacturing sector and the other sectors with respect to the degree of corruption related to courts. Overall, our findings indicate that policymakers in the region need to protect manufacturers from requests/demands for additional payments or gifts by customs authorities and/or by tax collectors and auditors.

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