

FACTORS WHICH IMPACT ON CORRUPTION IN THE PUBLIC SECTOR (IN THE CASE OF INDEPENDENT STATES OF THE FORMER YELLOW-BLACK MONARCHY)

FAKTORI KOJI UTJEČU NA KORUPCIJU U JAVNOM SEKTORU (NA PRIMJERU NEOVISNIH DRŽAVA BIVŠE ŽUTO-CRNE MONARHIJE)

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Abstract: *In this research our attention was given to factors that define the degree of corruption (in the single state) or what generates corruption. In the case of five independent states of the former Yellow-black monarchy it will be found out how some macroeconomic pointers can influence the degree of corruption (in what part they influence). In this research it was found out with the analysis of the panel data between the years 2003 and 2011 how the degree of corruption is influenced by the GDP, unemployment and the height of the average net revenue. As it was discovered that the right factors have been chosen, because it was found out that all three (3) macroeconomic pointers represent 87.29% of all the influences on the perception of corruption. The most impact on corruption has the degree of unemployment so it can be concluded that the perception of corruption is determined by negative effects on the standard of citizens (lower income, more unemployment).*

Keywords: *corruption, unemployment, GDP, net income, panel data, economics*

Izvorni znanstveni članak

Sažetak: *U ovom istraživanju naša pozornost je bila na faktorima koji definiraju stupanj korupcije (u pojedinačnoj državi) ili što generira korupciju. U slučaju pet nezavisnih država bivše žuto-crne monarhije bit će utvrđeno kako neke makroekonomske pokazatelje mogu utjecati na stupanj korupcije (u kojoj mjeri utječu). U ovom istraživanju utvrđeno je s analizom panelnih podataka između godina 2003. i 2011. kako stupanj korupcije utječe na BDP, nezaposlenost i visinu prosječnog neto prihoda. Otkriveno je da su odabrani odgovarajući faktori, jer je utvrđeno da sve tri (3) makroekonomske pokazatelje predstavljaju 87,29% svih utjecaja na percepciju korupcije. Najveći utjecaj na korupciju ima stupanj nezaposlenosti, pa se može zaključiti da percepcija korupcije određena je negativnim utjecajima na standard građana (niži prihodi, veća nezaposlenost).*

Keywords: *korupcija, nezaposlenost, BDP, neto prihod, panelni podaci, ekonomija*

1. INTRODUCTION

Everybody tries to find out how can corruption impact on economy (when corruption rises, GDP falls) the economic growth is lower, but the question was the impact which determines degrees of corruption in the single state or perception about what generates corruption.

In the case of five independent states of the former Yellow-black monarchy I will be found out how some macroeconomic pointers can influence the degree of corruption (how can they influence and in what part they influence)...

In this research it was discovered with the analysis of the panel data between the years 2003 and 2011 how the height of GDP, unemployment and the average net revenue can influence the degree of corruption.

Hypothesis: GDP, unemployment and the height of the average net revenue instantly and insomuch influence the estimated degree of corruption in the single state.

2. CORRUPTION

2.1. The definition of corruption

Law of integrity and prevention of corruption [1]:
Corruption is the contravention of the treatment of the official authorities in public or private sector, as well as the treatment of the persons who act on their own initiative of contravention or avoid themselves of contravention because of directly or indirectly promised or given, demanded, accepted or unexpected utility for themselves or somebody else.

The international corruption is the corruption where participates at least one legal or illegal representative from the foreign country.

The consequences of corruption:

- reduction of economic growth (consequently the rising the poverty)
- the less of the inland revenue

- reduction of charges, from the view of corruption less interesting (school system)
- trust of citizens in institutions and the principles of legal states is lower.

2.2. Influences and consequences of corruption

The influence of corruption on the operation of society [2] is in the long-term negative, that's why the inland and international community pays much more attention to it. Because of negative effects, that corruption brings, all the states try to influence this area with the certain goal to prevent extending of corruption or at least limit it corruption represents practically all spheres of social and political life. It appears as a bribe, acquaintanceship, relation, nepotism or a privilege. It is not easy to discover corruption. It reduces the economic growth, the rising of poverty, reduces the quality of things being done, it causes the exhaustion of public sources and undermines the authenticity of politics, it effects the processes of judging and destabilizes democratic systems.

2.3. The classification of corruption

- petty or casual corruption (very rare examples)
- not very important examples
- simple systematic corruption. The corruptive relations are long standing and repetitive usually limited on the area of competence of individual officials
- systematic corruption and economic crime includes many active and passive subjects within many years
- systematic corruption and noneconomic crime which relates to organized noneconomic crime that includes the systematic influence of organized crime on the representatives of
- legislation, forensic authorities [3]

3. FACTORS RESPONSIBLE FOR APPEARANCE AND DEVELOPMENT OF CORRUPTION

Political and economic environment: The more regulated and limited is economic business in a state the higher commission and the power of officials on decisions brings greater possibility for appearance of corruption, because individuals are ready to offer payment to avoid limitation. Corruption influences the low salaries of civil servants (state officials) who are trying to improve their position by accepting bribes. **Professional ethics and legislation:** The back of professional ethics and defective laws which regularize the sector of corruption as culpable acts, are the very important cause for appearance and spreading of corruption. The great influence has the no affective sanctions of corruption which in case of being no affective makes a better possibility of continuation of the people involved, there is a great likelihood for the involvement other person because of no affective sanctions. **Customs, tradition:** In different states there is a

different relationship towards corruption. In Europe we can find two extremes to corruption from intolerant north to the warm south where corruption is almost normal, social acceptable appearance. Or the difference between the states having democratic past which traditionally chase corruption and former socialist states, where there was corruption a part of the folklore tradition.

4. NEGATIVE INFLUENCE OF CORRUPTION

4.1. Influence on companies

Research that was accomplished by EBRD and the World Bank [4] makes clear that bribes paid in the small companies represent 5% their annual profit in the medium-sized companies the bribes represent 4% of their annual profit in comparison with bigger companies, where bribes represent less than 3%. So we can get the idea how great influence corruption has on companies or what position they are taken in. It enlarges their costs and reduces their competition and profiteering (ousting the companies for the market, the lower economic growth, more unemployment).

4.2. Influence on investments

Corruption may have influence on entire investments, on the height of public investments, as well as efficacy of investing decisions and projects [5]. On the presence of corruption the investments are smaller, because of awareness of contractors to bribe the officials for the better execution or to guarantee their participation by the profit. Because of the bigger costs contractors are not interested in investments. Employment is not given to somebody who is the most appropriate and classified for a single job, but to somebody who is prepared to pay or return the favour in a different way. Corruption often reduces efficacy of different programmes of financial help (as well as state and international programmes), because financial sources are lost and do not reach the ones who really need it.

4.3. Influence on budget and income taxes

Financial benefits coming from corruption are non-taxable, because they are hidden. So the state loses the part of income from taxes. The public consumption which is the consequence of corruption (because of individual interests) leads to negative effects on the budget.

4.4. Influence on infrastructure and public works

Public works are usually worse quality and more expensive because of corruption. Corruption makes infrastructural projects more expensive, because in public competitive examination the best bidder is not chosen, but the one who got a job by the help of corruption (we get the infrastructure in a smaller amount or inappropriate quality). In both cases there are negative

consequences for the public budget because of elevation of public consumption or the smaller amount of public works (worse quality) and the smaller amount or the worse quality of infrastructure. The citizens are losing trust in the legal state or they are starting to practice corruption (on both sides).

5. THE NEGATIVE FINANCIAL EFFECTS OF CORRUPTION

The negative financial effects of corruption are scary, but notice about the standards has to be given and collected from the media.

- 3. 2. 2014 the European Commission published the report about corruption, where it estimated that corruption costs the European economy about 120 billion a year. In the estimation of the European Commission corruption is present at public orders, financing political parties in some states corruption is in medicine
- The report of the United Nations shows that the cost of corruption in Afghanistan in the year 2012 was 3.9 billion \$ which is twice as much GDP of state on the other land bribes are taken by 50% of citizens.
- The report of UN estimates, that the most part has already taken the fact that the most officials are taken bribes.

Research of the Institute of the World Bank in April 2004 has given evidence that more than 1 billion \$ bribes are paid annually.

Daniel Kaufmann [6], the director of Institute administered (by WBI) makes clear, that these data are the estimation of bribes paid all over the world in rich or not very rich countries. The research has shown that states which fight against corruption and the improvement of their legal state heighten their national incomes on the big term four times and the death-note of children can reduce for 75%.

6. FACTORS WHICH IMPACT ON CORRUPTION (in the case of states constructed from the former yellow-black monarchy)

Independent states constructed from the former yellow-black monarchy were chosen on purpose, because they were a part of the same state up to 1918, they had the only one officialdom and the same values. Of course there were differences between them (above all in development) during the years they have chosen their own way (the second world war, dictation, socialism) and there were differences between them both in legal aid as well as in the unemployment and in the net income. There were the major differences between the states in corruption of state organs, which were sometimes common and famous for their own bureaucratic honesty and referring to the crown (on the basis of officialdom individual states formed their own officialdom immediately offer the first world war,

especially Austria and the former Czechoslovakia). As it was mentioned before the forming of officialdom has chosen its own way especially after the second world war and that was the reason that the table of corruption was used to measure the knowing of corruption in the public sector for 177 states.

In the case of these five countries it will be found out if and how the height of GDP, the stage of unemployment and the average net income influence the corruption in the public sector.

6.1. The chosen states, the noted pointers and the time limit

States: Austria, Slovenia, Hungary, the Czech Republic and Slovakia

The noted pointers:

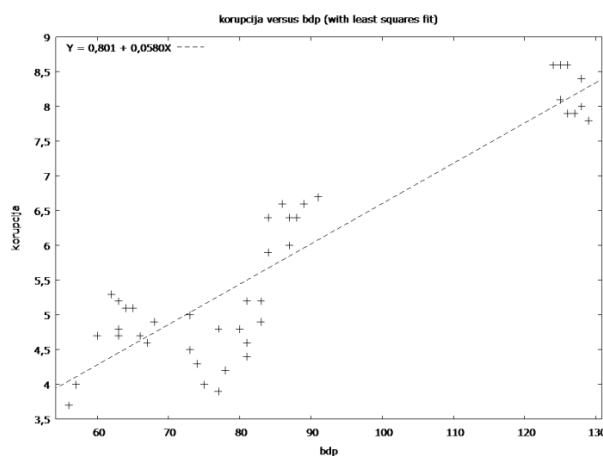
- GDP (in % of the average GDP for 27 states in EU (Source: Eurostat [7])
- The average net income (in e-source Eurostat)
- The rate of unemployment (in %; source: Eurostat)
- The rate of corruption (the first table was used to measure the rate of corruption in public sector for 177 states (source: Transparency International [8])
- The time limit: 2003-2011

6.2. Scatter diagrams

Exploration: By the data of corruption: Mark 0 is a note of full corruption, mark 10 is the zero point of corruption (higher is the mark larger is transparency or lower is the mark, higher is the awareness of corruption).

There are three diagrams:

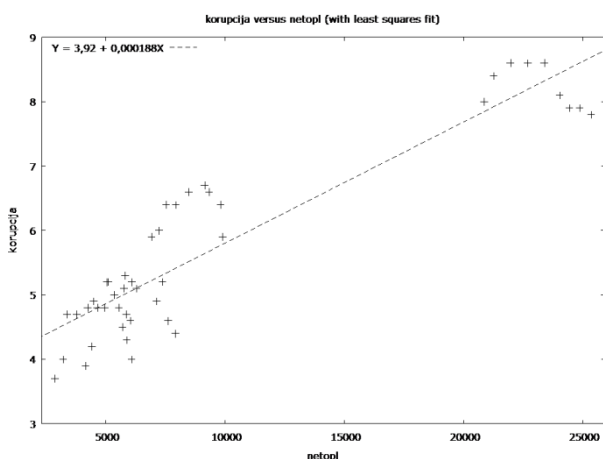
- Corruption towards GDP (dependence on awareness of corruption from GDP)
- Corruption towards average net income (dependence on awareness of corruption from the height of net income)
- Corruption towards the note of unemployment (dependence on awareness of corruption from the note of unemployment)



Picture 1: Corruption (axis Y) towards GDP (axis X)

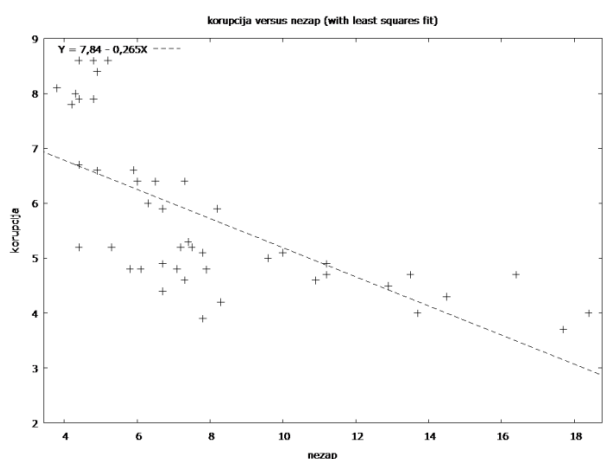
Comment: The scatter diagram shows relation between the rate of corruption (korupcija, axis Y) and the

height of GDP (bdp, axis X). The higher GDP the lower is the rate of awareness of corruption or the better is the index of corruption.



Picture 2: Corruption (axis Y) towards average net income (axis X)

Comment: The scatter diagram shows relation between the note of corruption (korupcija, axis Y) and the average net income (netopl, axis X). Better net income the lower note of unemployment, higher index of corruption.



Picture 3: Corruption (axis X) towards the note of unemployment (axis Y)

Comment: The scatter diagram shows relation between the note of corruption (korupcija, axis Y) and unemployment (nezap, axis X). The lower is the note of unemployment the lower is the note of corruption or higher is the index of corruption.

6.3. The basic statistics

Five states were analysed in nine time periods and four different variables.

One half and more states have lower index of corruption from the average 5.72. There is a big classification between the index of corruption, between 3.7 (a very corruptive state) up to 8.6 (very transparent state). The coefficient of variation shows the low variability.

The basic statistic

Variable	Mean	Median	Minimum	Maximum
korupcija	5,72000	5,20000	3,70000	8,60000
bdp	84,7556	81,0000	56,0000	129,000
nezaposl	8,00667	7,10000	3,80000	18,4000
netoplac	9558,21	6293,04	2878,04	25349,6
Variable	Std. Dev.	C.V.	Skewness	Ex. kurtosis
korupcija	1,46607	0,256306	0,748434	-0,712836
bdp	23,0278	0,271697	0,924458	-0,423395
nezaposl	3,75387	0,468843	1,25084	0,754200
netoplac	7127,82	0,745727	1,34015	0,134520

Table 1: The basic statistic - analysis of the nine-year period for four different variables

The classification of parabola on the right side: lower or the same GDP from 81.00 have the half or more states. There is also a big classification between the lowest (56) and the highest (129) GDP (average 27 is 100, that means that the average of these five states, regardless of Austria which is above average lower from the average GDP EU 27). The variability remains low.

The rate of unemployment is in the half or more states lower or the same 7.1%. This classification of unemployment in the part or active citizens is big from 3.8% up to 18.4%. Variability is of medium height (0.468843). There is classification in the right side too.

The greatest variability is by net income, which is very high. There is a big difference between the lowest average net income (2878.04€ a year) and the highest (25349,6€ a year). In the half or more states there is a lower income or it remains the same 6293.04€ a year. There is the classification of parabola in the right side.

7. ESTIMATION OF MODELS AND THEIR ANALYSIS

7.1. Model of united data

Model 1: Pooled OLS, using 45 observations

Included 5 cross-sectional units

Time-series length = 9

Dependent variable: korupcija

	Coefficient	Std. Error	t-ratio	p-value	
const	4,18032	0,970379	4,3079	0,00010	***
bdp	0,0107575	0,0141048	0,7627	0,45002	
nezaposl	-0,0780349	0,0295306	-2,6425	0,01160	**
netoplac	0,000131063	4,23023e-05	3,0982	0,00351	***

Mean dependent var	5,720000	S.D. dependent var	1,466071
Sum squared resid	12,02093	S.E. of regression	0,541473
R-squared	0,872891	Adjusted R-squared	0,863591
F(3, 41)	93,85279	P-value(F)	2,11e-18
Log-likelihood	-34,15194	Akaike criterion	76,30388
Schwarz criterion	83,53053	Hannan-Quinn	78,99790
rho	0,808297	Durbin-Watson	0,239559

7.2. Model of unit data with robust valuation

Model 2: Pooled OLS, using 45 observations
Included 5 cross-sectional units
Time-series length = 9
Dependent variable: korupcija
Robust (HAC) standard errors

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
const	4,18032	0,85106	4,9119	0,00001	***
bdp	0,0107575	0,0221515	0,4856	0,62981	
nezaposl	-0,0780349	0,0248685	-3,1379	0,00315	***
netoplac	0,000131063	8,25917e-05	1,5869	0,12022	

Mean dependent var	5,720000	S.D. dependent var	1,466071
Sum squared resid	12,02093	S.E. of regression	0,541473
R-squared	0,872891	Adjusted R-squared	0,863591
F(3, 41)	93,85279	P-value(F)	2,11e-18
Log-likelihood	-34,15194	Akaike criterion	76,30388
Schwarz criterion	83,53053	Hannan-Quinn	78,99790
rho	0,808297	Durbin-Watson	0,239559

7.3. Model of fixed effects

Model 3: Pooled OLS, using 45 observations
Included 5 cross-sectional units
Time-series length = 9
Dependent variable: korupcija

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
bdp	-0,0080028	0,0171312	-0,4671	0,64313	
nezaposl	-0,123828	0,0335469	-3,6912	0,00072	***
netoplac	5,31454e-06	4,58241e-05	0,1160	0,90830	
du_1	9,66106	2,00734	4,8129	0,00003	***
du_2	7,74395	1,47519	5,2495	<0,00001	***
du_3	6,12131	1,40533	4,3558	0,00010	***
du_4	6,47786	1,17972	5,4910	<0,00001	***
du_5	6,69048	1,37612	4,8618	0,00002	***

Mean dependent var	5,720000	S.D. dependent var	1,466071
Sum squared resid	3,682033	S.E. of regression	0,315459
R-squared	0,961066	Adjusted R-squared	0,953701
F(7, 37)	130,4764	P-value(F)	4,21e-24
Log-likelihood	-7,530294	Akaike criterion	31,06059
Schwarz criterion	45,51389	Hannan-Quinn	36,44863
rho	0,583973	Durbin-Watson	0,740321

7.4. Model of informal data with robust variables

Model 4: Pooled OLS, using 45 observations
Included 5 cross-sectional units
Time-series length = 9
Dependent variable: korupcija
Robust (HAC) standard errors

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
const	9,66106	2,00924	4,8083	0,00003	***
bdp	-0,0080028	0,0123984	-0,6455	0,52261	
nezaposl	-0,123828	0,0375003	-3,3020	0,00213	***
netoplac	5,31454e-06	5,84057e-05	0,0910	0,92799	
du_2	-1,91711	0,889128	-2,1562	0,03764	**
du_3	-3,53975	1,02702	-3,4466	0,00143	***
du_4	-3,18319	1,11769	-2,8480	0,00714	***
du_5	-2,97057	1,07372	-2,7666	0,00879	***

Mean dependent var	5,720000	S.D. dependent var	1,466071
Sum squared resid	3,682033	S.E. of regression	0,315459
R-squared	0,961066	Adjusted R-squared	0,953701
F(7, 37)	130,4764	P-value(F)	4,21e-24
Log-likelihood	-7,530294	Akaike criterion	31,06059
Schwarz criterion	45,51389	Hannan-Quinn	36,44863
rho	0,583973	Durbin-Watson	0,740321

7.5. Model of coincidental effects

Model 5: Random-effects (GLS), using 45 observations
Included 5 cross-sectional units
Time-series length = 9
Dependent variable: korupcija

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
const	5,61926	1,35836	4,1368	0,00017	***
bdp	0,007092	0,0161109	0,4402	0,66211	
nezaposl	-0,107381	0,0333627	-3,2186	0,00252	***
netoplac	3,76031e-05	4,49179e-05	0,8372	0,40736	

Mean dependent var	5,720000	S.D. dependent var	1,466071
Sum squared resid	32,87373	S.E. of regression	0,884708
Log-likelihood	-56,78749	Akaike criterion	121,5750
Schwarz criterion	128,8016	Hannan-Quinn	124,2690

'Within' variance = 0,0995144

'Between' variance = 0,74829

theta used for quasi-demeaning = 0,878441

Breusch-Pagan test -

Null hypothesis: Variance of the unit-specific error = 0

Asymptotic test statistic: Chi-square(1) = 48,3999

with p-value = 3,47595e-012

Hausman test -

Null hypothesis: GLS estimates are consistent

Asymptotic test statistic: Chi-square(3) = 6,76206

with p-value = 0,0798812

8. COMPARISON OF MODELS AND THEIR CHOICE

8.1. Comparison of models of informal effects and united data

Using Breusch-Pagan test, which estimates if the variance of the specific error is the equal of 0 we choose

the model of united data is chosen if the variance from 0 is different the model of informal effects is used. In this case (p-value is 3.47595e-12), that is the reason that between the models of informal data the united data, the model of informal effects was chosen.

8.2. Comparison of the model of fixed and informal effects

For the comparison of these two models we can use the Hausman's test, it estimates if the GLS marks are consistent, the model of informal effects is presented, if not the model of fixed effects is chosen. Because of relatively high p-value (p-value is 0.0798812) the model of informal effects was used.

8.3. Comparison of the model of united data and the model of fixed effects

The model of united data can be used if there is no difference in constant or if there is not effect of units. If there is one constant different from 0 we can use the model of fixed effects, it means that there is an effect of units present. With the F-test the p-value is being chosen.

$F(7, 37)$: area to the right of 4,2e-020 \approx 1
(to the left: 1,31075e-067)

F-test estimates, that p-value is different from 0 so we can choose the model of fixed effects.

8.4. Model of united data – comment

On the basis of comparison the model of united data was chosen as the most appropriate, because the Breusch-Pagan's test seemed better than the model of informal effects and using F-test better from the model of fixed effects. Between the two models of united data the model without robust valuation was selected.

Comment:

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Corruption = 4.18032 + 0.0107575*GDP – 0.0780349*unemployment + 0.000131063*net income

- 45 observations were analysed in nine different time periods, so five states and four variables.
- Using R- squared 87.29% of all the influence on the rate of corruption is explained, so we can definitely say that GDP, the rate of unemployment and the height of net income in the state have a very strong influence on corruption (87.29% of all the influence on corruption)
- The longer GDP leads to the longer index of corruption (lower corruption) – directional coefficient is positive. Because the rate of unemployment has the negative directional coefficient it shows us that larger unemployment has lower index of corruption or corruption is higher. The smaller effect like augmenting of GDP has the growth of net income (positive coefficient) and has the positive influence on the index of corruption (it lowers the perception of corruption)

- If the GDP rises for 1% (GDP is in % from EU 27=100) the index of corruption enlarges in the average of 0.0107575% by the assumption that unemployment and net income do not change. But it needs to be added, that for GDP we cannot be 95% sure that GDP affects the rate of corruption.
- If unemployment rises for 1% (unemployment is handed in %) the index of corruption is lower for 0.0780349% by the assumption ceteris paribus. The p-value is very low, what is the pointer of statistically typical influence of unemployment on the index of corruption.
- If the net income rises for 1%, index of corruption is larger for 0.000131063%. The p-value is also very low, which shows the statistic influence of net income on corruption.

P(F) is very small, that proves the linear connection of corruption with the other three variables.

9. CONCLUSION

Hypothesis: GDP, unemployment and the height of average net income directly influence on the marked sate of corruption in a single state, was confirmed by this research, because these three factors estimate 87.29% of all the influence on the perception of corruption. GDP does not statistically influence corruption or perception of corruption. Very little (but statistically typical) influence on the perception of corruption has the height of net income, a great influence has unemployment (by the raising of unemployment and lowering the net income we can see the larger perception of corruption), that is more or less expected, because people observe corruption more critically by falling of life standard, we can also say that by higher note of general standard (larger net income, lower unemployment) there is higher tolerance of corruption, which means that people have a very strange relationship with corruption, when we get on well we do not notice it, but when crisis comes we notice it at once or we treat it more critically.

10. SOURCES AND LITERATURE

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