

## An analysis of the effect of widespread unemployment on corruption

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**Abstract.** *Background. Unemployment hinders the economic growth of every country, it intensifies levels of illicit activities in every economy. An economy faces many economic as well as social problems due to unemployment and illicit activities.*

*Objective. This study aims to analyse the effects of widespread unemployment on illicit activities.*

*Methodology. This study used panel data from about 158 countries ranging from the year 2003 to the year 2016.*

*Results. Findings show unemployment has a direct and positive impact on corruption-related activities. If the presence of unemployment is high in a particular country, it will increase corruption-related activities and vice versa.*

**Keywords:** unemployment, inflation, corruption, globalization, multivariate analysis.

**JEL Classification:** D72, E31, K42, O15.

## 1. Introduction

Unemployment rates due to weak development of the manufacturing sector. The manufacturing sector in any country holds the potential for tackling high unemployment levels. High unemployment directly contributes towards increasing inequalities in both urban and rural areas, while rural areas are more vulnerable towards rising inequalities. Unemployment and inequalities also have a major impact on poverty levels (Al-Marhubi, 2000, pp. 91-93; Townsend, 1962, pp. 119-200).

Widespread unemployment to rise in illicit activities, creates various difficulties to be tackled by policymakers. Corruption can be defined as diverting public resources for misuse to get some personal gains. Corruption is also responsible for driving poor people as it reduces and diverts the positive effects and gains from the public to personal benefit. These corruption-related activities put heavy pressure on the capacity of financing the expenditure of government, which ultimately forces the governments to adopt the method of seigniorage for financing extensive public expenditure (Ayaydın and Baltacı, 2013, pp. 94-95).

These acts of any particular government to fund public expenditure lead to a rise in inflation, which in the end puts heavy pressure on the spending capacity of common people. These people are not paying higher prices for the same good. In the case of producers, this inflation puts negative pressure through heavy taxes on all investments and in the case of consumers it affects negatively the consumption (Zhao et al., 2003, pp. 41-43).

This inflation also inversely affects the growth of businesses and their capital accumulation. This happens because inflation directly reduces the consumer demand for various goods and services (Agrawal, 2007, pp. 91-93).

This impact of corruption makes inflation an important concept concerning illicit activities happening in different regions of India. There are various difficulties faced by developing countries, corruption-related activities are one of them and it aggravates the situation of inflation and unemployment. Unemployment leads to huge poverty in urban as well as rural areas, which directly leads to a rise in corruption-related illicit activities (Ayaydın and Hayaloglu, 2014, pp. 607-609).

This study aims to analyse the effects of widespread unemployment on illicit activities through inflation, Foreign Direct Investment (FDI), the extent of globalization, various measures of poverty and other variables concerning democracy.

This study also used panel data from about 158 countries ranging from the year 2003 to the year 2016. The outcome of the study showed that unemployment has a direct and positive impact on corruption-related activities. If the presence of unemployment is high in a particular country, it will increase corruption-related activities, On the other hand, if the presence of unemployment is low in a particular country, it will increase corruption-related activities.

This research is divided into various sections. Section two highlights the available relevant review of existing literature, the third section presents the research methodology adopted for the study, section four shows the data analysis and results obtained during the concerned study, and section five concludes this research study.

## 2. Review of literature

In the current scenario, unemployment is not a new evil responsible for intensifying different difficulties faced by developing countries, the majority of the time this unemployment is deeply rooted in the economy for decades (Braun and Di Tella, 2004, pp. 77-80). Policymakers worldwide are focusing on reducing unemployment and resultant poverty, Unemployment has impacted many economic and social dimensions of every economic system such as economic development and growth, skill development, health, employment, education, income and wealth (Rehman and Naveed, 2007). The findings suggest that larger unemployment can cause larger illicit activities (Iwasaki and Suzuki, 2012, pp. 58-60).

Corruption can be attributed to the misuse or diversion of public resources for personal gain. It includes theft, bribery, and abuse of public power and resources. The concept of corruption is becoming a centre of attraction for policymakers and academicians due to the rising level of awareness (Justesen and Bjørnskov, 2014, pp. 110-113).

Studies suggest both positive and negative implications of corruption-related activities, but its positive effects are too narrow and negative effects are too widespread (Koyuncu et al., 2010, pp. 280-283). Public borrowing and the level of inflation have a direct relation to huge unemployment and various activities related to corruption. If a country has a high level of corruption, it will directly attract higher inflation and larger public borrowing (Engle and Black, 2008, pp. 245-249). The reason behind this positive relationship rise in the level of money supply in the market is a huge level of public spending creating narrow public welfare. Some research also indicated that illicit activities and public borrowings have a direct and positive relationship, rising illicit activities and corruption also have a positive and major impact on the level of inflation (Koyuncu and Bhattacharyya, 2007, pp. 20-28). These illicit activities discourage foreign direct as well as portfolio investment and paralyze economic growth (Drury et al., 2006, pp. 128-133). There are other consequences of these illicit activities, such as a weak business sector, innovations in businesses being discouraged, and lower investment opportunities. With these all consequences of illicit activities private sector will get discouraged from production and investment in the long run, these things will lead to economic downfall and consequently leads a country towards recession (Chetwynd et al., 2003, pp. 8-13).

## 3. Research methodology

The association between unemployment and corruption was analyzed through five indicators of unemployment and also used three indicators of corruption and related activities. A hypothesis was formulated that greater unemployment levels will cause greater

corruption activities in a developing country. This study used data from 158 countries ranging from 2003 to 2016, to analyze this data, an unbalanced parallel data approach was used. The model of fixed time effect was analyzed through multivariate analysis. The data was then further analyzed through the Fixed Time Effect model, the estimated regression model:

$$\text{Illicit activities}_n = (a + te_t) + \beta_1 P_n + \beta_2 F_n + \beta_3 O_n + \beta_4 I_n + \beta_5 D_n + u_n \quad (\text{i})$$

$$\text{Illicit activities}_n = (a + te_t) + \beta_1 U_n + \beta_2 F_n + \beta_3 O_n + \beta_4 I_n + \beta_5 D_n + (te_t + u_n) \quad (\text{ii})$$

In the above equations 'n' represents an  $n^{\text{th}}$  observation of sampled country, 'a' represents the adopted intercept, ' $te_t$ ' represents the effects of a particular time which equivalently influences every selected country, and ' $u_n$ ' represents the adopted error term.

The second equation (ii) shown above is estimated based on the multivariate Random Time Effect Model.

Illicit activities are taken as the dependent variable in these regression equations. To analyze the robustness of the estimated regression model, three variables are adopted concerning illicit activities. As there are three variables of illicit activities used, so the outcomes may vary according to the different used variables of illicit activities. If the outcome is found to be consistent in all three variables of illicit activities, it will show the robustness of the adopted variables. Description of all three variables of illicit activities are given below:

**Table 1.** Description of dependent variables

S. No.	Dependent variables	Meaning of variables
1	$C_1$	- 1 * Corruption control
2	$C_2$	- 1 * Index of people's perception of corruption
3	$C_3$	- 1 * Immunity from corruption

\* C – Corruption.

**Source:** Author's analysis.

The first variable of corruption ( $C_1$ ) represents the level of illicit activities in the economy,  $C_1$  is calculated by the multiplication of corruption control and a negative one. It encompasses the perceived level of diversion of public resources for private benefits, it includes both small as well as greater levels of illicit activities. Scores are given to the selected countries and act as an indicator on an aggregate basis, the value in normal distribution ranges between negative 2.5 and positive 2.5, the values near positive 2.5 indicates the lesser presence of illicit activities while a value near negative 2.5 indicates the presence of a greater level of illicit activities.  $C_1$  shows the presence of illicit activities in which greater value shows a greater presence of illicit activities while smaller value shows a lesser presence of illicit activities.  $C_2$  represents the level of illicit activities in the economy. It is calculated by the multiplication of -1 by the index of people's perception of corruption. In the case of  $C_2$ , greater values show a higher presence of illicit activities and lower values show a lesser presence of illicit activities.  $C_3$  also represents the level of illicit activities in the economy, which is calculated by multiplication of -1 with Immunity from corruption. In the case of  $C_3$ , greater values show a higher presence of illicit activities and lower values show a lesser presence of illicit activities.

Independent variables were selected based on the existing literature hypothesis of the study and data availability. Unemployment is measured through 5 variables of poverty. These variables are shown in Table 2.

**Table 2.** *Description of variables of illicit activities*

S. No.	Variables	Meaning of variables
1	Gini Coefficient	It is an index used for the measurement of inequality and its value ranges from zero to one.
2	Human Development Index (HDI)	- 1 * Value of HDI
3	Mean Log Deviation	It is also an index to measure inequality through mean and log.
4	Head Count Ratio	It classifies people concerning the poverty line.
5	Poverty Index of Watts	It uses mean to measure poverty gaps through Log and mean.

**Source:** Author's analysis.

To measure the severity of illicit activities, 4 more independent variables were introduced in this research to determine the robustness of the outcomes of this study. The meaning of these 4 additional independent variables is represented in Table 3.

**Table 3.** *Description of independent variables*

S. No.	Variables	Meaning of variables
1	Foreign Direct Investment	It is an international inward flow of foreign currency in millions
2	Extent of Globalization	Vale of trade as a percentage of GDP
3	Inflation	It is measured through a GDP deflator (yearly)
4	Democracy	The level of democracy ranges between zero to ten

**Source:** Author's analysis.

Some more variables related to illicit activities were also introduced to get more insights on corruption other than variables related to unemployment.

'Extent of Globalization', which shows the degree of globalization of the country, is calculated by the level of trade happened concerning GDP, which acts as openness of the market as a factor. There is an indirect relationship between illicit activities and the extent of globalization.

'Foreign Direct Investment' level of outflow and inflow of foreign currency and capital, shows an inflow of investment from foreign countries into an economy, It increases the competitiveness of firms and reduces their involvement in illicit activities, which indicates there is an indirect relationship among illicit activities and foreign direct investment.

'Inflation' level of inflation present in that country, encompasses three factors, such as economic, and political instability and the level of uncertainty. Higher inflation attracts higher taxes, which discourages producers from paying taxes and getting involved in illicit activities such as tax evasion, which shows there is a positive relationship between illicit activities and the level of inflation.

'Democracy' level of democracy present in that country, a higher level of presence of democracy indicates greater stability of the political and business environment, which shows an inverse relationship between illicit activities and the level of democracy.

#### 4. Data analysis and results

The outcomes of multivariate analysis are shown in Table 4, five and six, which shows separate analysis of different variables representing different indicators of corruption ( $C_1$ ,  $C_2$ , and  $C_3$ ). The Hausman test was utilized to choose among the random time effect model and fixed time effect model. This analysis was performed on a significance level of one per cent. Under the analysis of the test of Hausman, only the second model under table 4 utilized the model of fixed time effect and the rest of all models employed the model of random time effect.

**Table 4.** Estimation of the first corruption variable (corruption control) through multivariate analysis

Indicators of unemployment					
	1 <sup>st</sup> Model	2 <sup>nd</sup> Model	3 <sup>rd</sup> Model	4 <sup>th</sup> Model	5 <sup>th</sup> Model
	Gini Coefficient	Human Development Index (HDI)	Mean Log Deviation	Head Count Ratio	Poverty Index of Watts
Corruption	0.08584	3.12725	0.8721	0.9342	1.3268
Standard Error	0.21361	0.07846	0.9312	0.1614	0.1329
Probability	0.61250	0.00000	0.000	0.0000	0.0000
Unemployment	0.03725	2.77541	0.0213	0.0054	0.0078
Standard Error	0.00315	0.09857	0.0026	0.0008	0.0031
Probability	0.00000	0.00000	0.0000	0.0006	0.0033
Democracy	-0.14294	-0.05689	-0.1376	-0.2113	-0.1782
Standard Error	0.00842	0.00439	0.0084	0.0097	0.0083
Probability	0.00000	0.00000	0.0000	0.0000	0.0000
Inflation	0.02128	0.08742	0.0283	0.0140	0.0283
Standard Error	0.00429	0.00125	0.0042	0.0037	0.0042
Probability	0.00000	0.00000	0.0000	0.0000	0.0000
Extent of Globalization	-0.00327	-0.00329	-0.0041	-0.0031	-0.0041
Standard Error	0.00059	0.00028	0.0005	0.0005	0.0005
Probability	0.00051	0.00039	0.0000	0.0000	0.0000
Foreign Direct Investment	-0.000008	-0.000003	-0.000009	-0.000009	-0.000009
Standard Error	0.000002	0.000002	0.000002	0.000002	0.000002
Probability	0.00000	0.00000	0.00000	0.00000	0.00000
Countries	128	158	128	128	128
Observations	713	1384	714	714	714
F statistics	148.21720	139.4237	0.5281	0.4162	0.5138
Probability of F statistics	0.00000	0.0000	0.0000	0.0000	0.0000
R <sup>2</sup>	0.46601	0.62197	0.5372	0.4208	0.5369
Statistics of Hausman	3.48881	15.725339	3.1705	3.9170	2.1168
Probability Statistics of Hausman	0.58721	0.0058	0.6483	0.4780	0.6184
Model Used	Random Time Effect Model	Fixed Time Effect Model	Random Time Effect Model	Random Time Effect Model	Random Time Effect Model

**Source:** Author's analysis.

The results of multivariate analysis showed that considering  $C_1$  as a dependent variable, data analysis under Table 4 shows that all the variables of unemployment at a one per cent significance level are significant. The positive values in Table 4 under all the models estimated indicate unemployment has a bad impact on illicit activities in a country.

**Table 5.** Estimation of the second corruption variable (index of people's perception of corruption) through multivariate analysis

Indicators of unemployment					
	1 <sup>st</sup> Model	2 <sup>nd</sup> Model	3 <sup>rd</sup> Model	4 <sup>th</sup> Model	5 <sup>th</sup> Model
	Gini Coefficient	Human Development Index (HDI)	Mean Log Deviation	Head Count Ratio	Poverty Index of Watts
Corruption	-3.05323	1.84763	-1.9812	-1.3498	-1.4078
Standard Error	0.36845	0.21258	0.2653	0.0178	0.19762
Probability	0.00000	0.00000	0.0000	0.0000	0.0000
Unemployment	0.05912	7.15673	0.0381	0.0118	0.0378
Standard Error	0.00587	0.34631	0.0029	0.0044	0.0058
Probability	0.00000	0.00000	0.0000	0.0000	0.0000
Democracy	-0.22692	-0.12874	-0.2994	-0.2894	-0.2784
Standard Error	0.02179	0.02272	0.0197	0.0328	0.0112
Probability	0.00000	0.00000	0.0000	0.0000	0.0000
Inflation	0.02345	0.03347	0.0152	0.0201	0.0215
Standard Error	0.00458	0.00397	0.0058	0.0059	0.0058
Probability	0.00154	0.00000	0.0022	0.0142	0.0018
Extent of Globalization	-0.00542	-0.00584	-0.0048	-0.0073	-0.0075
Standard Error	0.00146	0.00083	0.0013	0.0013	0.0013
Probability	0.00074	0.00000	0.0002	0.0000	0.0000
Foreign Direct Investment	-0.000018	-0.000008	-0.000018	-0.000018	-0.000018
Standard Error	0.000003	0.000003	0.000003	-0.000019	0.000003
Probability	0.000000	0.00000	0.0000	0.0000	0.0000
Countries	132	158	132	132	132
Observations	743	1357	744	744	744
F statistics	153.22.550	412.1235	128.6570	124.9273	126.1395
Probability of F statistics	0.00000	0.0000	0.0000	0.0000	0.0000
R <sup>2</sup>	0.48326	0.624482	0.5384	0.3310	0.3482
Statistics of Hausman	4.12524	3.402549	2.9854	6.7533	7.3914
Probability Statistics of Hausman					
Model Used	Random Time Effect Model	Random Time Effect Model	Random Time Effect Model	Random Time Effect Model	Random Time Effect Model

**Source:** Author's analysis.

The results of multivariate analysis on considering  $C_2$  as a dependent variable data analysis under Table 5 show that all the variables of unemployment at a one per cent significance level are significant. The positive values in Table 5 under all the models estimated indicate a rise in the level of unemployment causes a rise in illicit activities in a country.

**Table 6.** Estimation of the third corruption variable (immunity from corruption) through multivariate analysis

Indicators of unemployment					
	1 <sup>st</sup> Model	2 <sup>nd</sup> Model	3 <sup>rd</sup> Model	4 <sup>th</sup> Model	5 <sup>th</sup> Model
	Gini Coefficient	Human Development Index (HDI)	Mean Log Deviation	Head Count Ratio	Poverty Index of Watts
Corruption	-42.18462	17.98541	-18.8249	-12.6547	-14.1157
Standard Error	3.29823	2.34890	2.5489	1.9875	1.8327
Probability	0.000000	0.00000	0.0000	0.0000	0.0000
Unemployment	0.59428	68.78031	0.3123	0.01843	0.3637
Standard Error	0.05821	3.14862	0.0229	0.0275	0.0601
Probability	0.000000	0.00000	0.0000	0.0000	0.0000
Democracy	-3.21374	-1.10174	-2.8745	-2.7468	-2.6583
Standard Error	0.22658	0.08754	0.2587	0.1826	0.1617
Probability	0.000000	0.00000	0.0000	0.0000	0.0000
Inflation	0.12473	0.33120	0.0879	0.2268	0.2473

Indicators of unemployment					
	1 <sup>st</sup> Model	2 <sup>nd</sup> Model	3 <sup>rd</sup> Model	4 <sup>th</sup> Model	5 <sup>th</sup> Model
	Gini Coefficient	Human Development Index (HDI)	Mean Log Deviation	Head Count Ratio	Poverty Index of Watts
Standard Error	0.06127	0.03318	0.0634	0.0500	0.0502
Probability	0.000000	0.00000	0.0000	0.0000	0.0000
Extent of Globalization	-0.06501	-0.06176	-0.0713	-0.0896	-0.0927
Standard Error	0.01185	0.00792	0.0121	0.0121	0.0122
Probability	0.000000	0.00000	0.0000	0.0000	0.0000
Foreign Direct Investment	-0.000300	-0.000087	-0.0000186	-0.000213	-0.000111
Standard Error	0.000027	0.000019	0.000027	0.000027	0.000028
Probability	0.000000	0.00000	0.0000	0.0000	0.0000
Countries	132	156	132	132	132
Observations	774	1349	775	775	775
F statistics	163.52652	352.0834	138.2354	121.8607	119.8344
Probability of F statistics	0.00000	0.0000	0.0000	0.0000	0.0000
R <sup>2</sup>	0.482236	0.637841	0.5356	0.3984	0.4623
Statistics of Hausman	4.44583	6.897457	5.8421	6.0893	5.3112
Probability Statistics of Hausman	0.29612	0.2652	0.3187	0.1904	0.3876
Model Used	Random Time Effect Model	Random Time Effect Model	Random Time Effect Model	Random Time Effect Model	Random Time Effect Model

**Source:** Author's analysis.

The results of multivariate analysis on considering  $C_3$  as a dependent variable data analysis under Table 6 show that all the variables of unemployment at a one per cent significance level are significant. The positive values in Table 6 under all the models estimated indicate a rise in the level of unemployment causes an intense rise in illicit activities in a country.

The outcomes of the extent of globalization variable at a one per cent significant level showed negative signs in the values of all the models in the Tables 4, 5, and 6, which indicates a negative relationship between the degree of extent of globalization and the level of illicit activities in a country, which shows when the level of globalization increase it will cause a decrease in illicit activities. In the same way, the level of democracy also has an inverse relationship with the level of illicit activities, as the level of democracy increases, the level of illicit activities diminishes.

In the case of inflation, there was also found a negative relationship between the level of inflation and the level of illicit activities. When inflation increases, the level of illicit activities will also increase. In cases of foreign direct investment, there was also found an inverse relationship between the level of foreign direct investment and the level of illicit activities in a country, which means, if the level of foreign direct investment increases, then the level of illicit activities will diminish. The results of robustness revealed that findings were found to be robust in terms of the main results of this study will not show any variation irrespective of any variable used in place of unemployment and illicit activities.



## 5. Conclusion

The findings indicated that investigated the relationship between unemployment and illicit activities happening in developing countries. Developing countries are facing crippled economic growth due to the presence of highly illicit activities. This study found that those countries which are extensively use globalization and conduct more trade with foreign countries face a lower level of illicit activities related to corruption. Democratic countries are also immune from illicit activities due to the presence of a higher level of democracy, as it reduces the scope of corruption and establishes stability in the market. Higher inflation causes the intensification of illicit activities and motivates people towards corruption. Foreign direct investment also reduces the level of illicit activities by narrowing the scope for such illicit activities.

## Conflict of interest

All the authors related to this research declare that they have no conflicts of interest concerning the publication and authorship of this research study.

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## References

- Agrawal, P., 2007. Economic growth and poverty reduction: evidence from Kazakhstan, *Asian Development Review*, 24(2), pp. 90-115.
- Al-Marhubi, F.A., 2000. Corruption and inflation, *Economics Letters*, 66(2), pp. 199-202. doi. 10.1016/S0165-1765(99)00230.
- Ayaydın, H. and Baltacı, N., 2013. Corruption, banking sector, and stock market development: A panel data analysis, *European Journal of Research on Education*, 1(2), pp. 94-99.
- Ayaydın, H. and Hayaloglu, P., 2014. The effect of corruption on firm growth: evidence from firms in Turke, *Asian Economic and Financial Review*, 4(5), pp. 607-624.
- Braun, M. and Di Tella, R., 2004. Inflation, inflation variability, and corruption, *Economics & Politics*, 16(1), pp. 77-100. doi. 10.1111/j.1468-0343.2004.00132.x
- Chetwynd, E., Chetwynd, F. and Spector, B., 2003. Corruption and poverty: a review of recent literature, *Management Systems International*, pp. 1-22.
- Drury, A.C., Kriekhaus, J. and Lusztig, M., 2006. Corruption, democracy, and economic growth, *International Political Science Review*, 27(2), pp. 121-136.
- Engle, P.L. and Black, M.M., 2008. The effect of poverty on child development and educational outcomes, *Annals of the New York Academy of Sciences*, 1136(1), pp. 243-256. doi. 10.1196/annals.1425.023.
- Iwasaki, I. and Suzuki, T., 2012. The determinants of corruption in transition economies, *Economics Letters*, 114(1), pp. 54-60. doi. 10.1016/j.econlet.2011.08.016.
- Justesen, M.K. and Bjørnskov, C., 2014. Exploiting the poor: Bureaucratic corruption and poverty in Africa, *World Development*, 58, pp. 106-115. doi. 10.1016/j.worlddev.2014.01.002.

- Koyuncu, C. and Bhattacharyya, G., 2007. Predicting Corrupt Practices in the Public Sector for 23 OECD Countries, *Applied Econometrics and International Development*, 7(1), pp. 15-36.
- Koyuncu, C., Ozturkler, H. and Yilmaz, R., 2010. Privatization and corruption in transition economies: a panel study, *Journal of Economic Policy Reform*, 13(3), pp. 277-284. doi. 10.1080/17487870.2010.503099.
- Rehman, H.U. and Naveed, A., 2007. Determinants of corruption and its relation to GDP (A panel study), *Journal of Political Studies*, 12(2), pp. 27-59.
- Townsend, P., 1962. The meaning of poverty, *The British Journal of Sociology*, 13(3), pp. 210-227.
- Zhao, J.H., Kim, S.H. and Du, J., 2003. The impact of corruption and transparency on foreign direct investment: An empirical analysis, *MIR: Management International Review*, 43(1), pp. 41-62.