THE ECONOMIC JOURNAL OF NEPAL, VOL. 45, No. 3 & 4, July-December, 2022 (Issue No. 158) © CEDECON-TU | 55
DOI: https://doi.org/10.3126/ejon.v45i3-4.63149

Impact of Political Instability on Economic Growth of Nepal

Ram Briksh Mandal[1]

Abstract

This study examines the impact of political instability on the economic growth in Nepal for the period from 2002 to 2021. The study analyzes the existence of the long run relationship between political indicators such as control of corruption, government effectiveness, political stability and absence of violence/terrorism, rule of law, regularity quality and micro economic indicator inflation and the GDP per capita. The study utilized time series data analysis, using annual data covering the period of 2002 to 2021 of Nepal. The empirical results of the study, using the ARDL model, highlight the impact of different political instability indicators on economic growth. Moreover, these results indicate that there is a long run relationship between the political indicators on the economic growth. More specifically, the results show that the inflation and regulatory quality indicators have a negative impact on economic growth, while the political stability and absence of violence/terrorism has the minimal impact in the long run. Similarly, the result of control of corruption shows a positive impact on the economic growth in the short run.

Keywords: *Political instability, Economic growth, Co-integration, ARDL model, Nepal.*

JEL Classification: *D72, O43, C22, C40.*

Introduction

The concept of political instability is measured in a way that can be used in empirical research. Political instability can be viewed in two ways. The first one indicates the uncertainty and instability related to executive instability and the second one is related to social unrest and political violence (Alesina & Perotti, 1996). The effects of political instability on economic performance are widely discussed topics among economists and policy makers. The uncertainty associated with political instability creates an unfavorable environment for investment and economic growth. A politically unstable environment leads to

1 Mr. Mandal is a Ph. D. Scholar in Economics at Tribhuvan University, Kirtipur, Kathmandu. Email: mandalrb024@gmail.com, ORCID: https://orcid.org/0009-0007-7534-7681.

frequently changes in policies which cause volatility and negatively affect the macroeconomic performance of the economy.

A politically unstable environment is associated with rising risks which create unfavorable conditions for investments. Political stability and economic growth are interrelated (Alesina et al., 1996). The uncertainty connected with instability has a negative impact on the speed of economic growth due to reduced investment and poor economic performance. From the other perspective, poor economic conditions might lead to governance problems. Therefore, the reverse relationship is also possible. Economic problems of a country may create pressure in the political system and become a major factor causing political instability. Economists regard political instability as a serious disease that destroys economic performance. Political instability has a strong impact on economic vulnerability (Mulder & Bussière, 1999). A weak political society, an unstable government, and indifference of political parties create a politically unstable situation (Rani & Batool, 2016). Consequently, inflation is also considered as one of the most significant economic indicators relative to the international intensity of the nation. This has a direct impact on the international trade of a country and thereby enhances economic growth.

Most of the studies argued that poverty, lack of resources, bad economic performance, income inequality, and other economic problems are usually causes of political instability. In other words, political instability affects economic growth by influencing its dynamics, affecting foreign direct investment (FDI), financial markets, and effectiveness of economic policies, etc. It also affects the development and inclusion of economic growth, affecting human capital development, and income inequality and distribution which can lead to further social and political distortions that lead to a vicious cycle of political instability and poor economic performance. The paper is organized as follows. The section two discusses the review of literature; section three describes the data and methodology; section four explains the data analysis and results; and section five provides conclusion and discussion.

Statement of the Problem

Generally, political instability was seen as one of the main obstacles facing Nepal to achieve economic growth and development as domestic politics has been undergoing a turbulent and significant shift. The unstable structures of the government and its inclination to collapse in a short period have been a regular feature of Nepalese politics. Some studies have investigated the impact of political instability on economic growth in Nepal, but it hasn't been properly examined yet and no agreement has been reached as to what this relationship really looks like. So, this study has been made to investigate the relationship between political instability and economic growth in Nepal. However, the

research question of this study is as following. What kind of impact does the political instability make economic growth of Nepal?

Objective and Hypothesis of the study

The purpose of the study is to examine the impact of political instability on economic growth of Nepal. Based on given objective, the hypothesis of the study is that there is a significant impact of political instability on the economic growth of Nepal.

Review of Literature

Fosu (1992) and Abessolo (2003) have said that political conflict refers to political changes that occur through violence and changes in law. It can be understood along three axe like unstable regimes including resistance, serious conflicts affecting relationships like protests, armed or unstable violence including political violence, civil war, and guerrilla warfare. Barro (1991) has argued that various political interventions like military coups can negatively affect economic growth.

Cervantes and Villasenor (2015) considered that political stability influences economic growth through investment, savings, labor market disruption, levels of productivity / output of private agents, monetary and fiscal policies of government. Ben and Rahali (2018) considered that the transition to a more democratic political regime may be accompanied by political instability manifested by strikes, riots, and abrupt governmental changes that negatively effect on investment and economic growth.

Alesina et al. (1996) have argued that political instability reduces economic growth. This study used Amemiya's generalized least squares method on a data set of 113 countries. The finding of the study was that financial growth will diminish because of the high possibility of the government collapsing.

Asteriou and Price (2001) tested the influence of political instability on economic growth for the United Kingdom for the period of 1961 to 1997 using time-series data. They use GARCH and GARCH-M models, and OLS regression method. The researchers found a strong negative correlation between political instability and GDP per capita growth of United Kingdom.

Campos and Karanasos (2008) analyzed the impact of political instability on the economic growth of by using time series data for Argentina over a long time period of 1896 to 2000. They use the Power-ARCH platform for their research. They found a strong negative impact of political instability on economic growth in Argentina. It is to be concluded that political instability exclusively hampers economic growth.

Nadeen et al. (2010) examined the impact of political instability and economic development of Pakistan by taking the sample of 1971 to 2008 and using simple OLS technique of time series data. The study found that there is a negative relationship between political instability and economic development of Pakistan.

Aisen and Veiga (2013) examined the impact of political instability on economic growth using data from 169 countries from 1960 to 2004. They found that political instability reduces growth both statistically and economically. They suggested that the governments in the politically unstable nations should address the root causes and mitigate its effects on the economic design in order to achieve durable economic policies which may lead to higher economic growth.

Tabassam et al. (2016) examined the effect of political unrest on the economy of Pakistan by using annual time series data. ARCH and GARCH models have been used to examine the outcome of political uncertainty on economic progress. The results imply that political instability has a significant negative effect on economic growth so that the government should take corrective measures to bring political stability.

Farjallah and Abdelhamid (2017) examined the effect of institutional instability policies on economic growth in Tunisia by using annual data from the period of 1984 to 2014 and ARDL model in the Tunisian economy. They found that political stability, democratic accountability, law and order, and ethnic tensions have made positive effects on economic growth.

Diken et al. (2018) investigated the long run relationship between political stability and economic growth of Turkey during 2002 and 2016 by using ARDL method. The study found that there is no long run relationship between political stability and macroeconomic variables like GDP of Turkey when applying Bound Test. On the other hand, the outcome of other stages of methodology reveals that gross domestic national income is positively affected by political stability in the long run.

Ayessa and Hakizimana (2021) analyzed the impact of political instability on economic growth by using ARDL model taking the study period from 1986 to 2017. The results of this evaluation showed that political instability hinders economic growth. The study concluded that implications for strengthening policies to promote political stability were formulated.

Arjona and Eglantina (2021) examined the impact of political instability on economic growth in 13 central and eastern European countries (CEE countries). The study applied 'Fixed Effects Model' for panel data analysis where the dependent variable is the real growth of GDP per capita. The study period is from 2006 to 2016. The study found that the political stability index has a positive effect on economic growth but political instability is often considered to have a negative influence on economic growth.

Koirala et al. (2005) examined the relationship between political instability and economic growth of Nepal by using the principle component analysis approach. The study used the annual data series from 1975 to 2003 in order to examine the effect of political instability on economic growth of Nepal. This study reveals that growing political tensions and unrest in the economy is lowering the total factor productivity, decreasing growth in investment, producing disincentives for savings, increasing unproductive government expenditures, decreasing development expenditure and that decelerating growth in infrastructure capital, and widening the gap of the trade deficit. The study found that a significant negative relationship exists between political instability and economic growth of Nepal.

Sharma (2006) explained that political instability of Nepal has been impacting its socio-economic status. The study analyzed descriptively and extensively. The study determined that current socio-economic status of Nepal is dire with high poverty levels.

Paudyal and Abraham (2010) examined the impact of political instability on economic and social sustainability of Nepal with qualitative data analysis from subjective approach. The study describes various economic programmes implemented in Nepal during 1990 to 2010 to ensure social and economic sustainability in the life of poor people. Besides, the study analyzed how those programmes are affected from political instability and corruption. The study found that the programmes implemented by outsiders (other than government) is more effective than the programmes implemented by the government to achieve their goals due to political interference.

Pathak (2012) examined the root cause of the breakdown of democracy in Nepal. The study basically analyzed the second democratic period (1990-2002) with descriptive method and also explores the prospects of democracy in Nepal. The study concluded that stability of democracy in Nepal depends on both economic development and political institutions.

Research Gap

Political stability has been considered as one of the main difficulties that hampered economic growth. Various studies attempt to identify the pathways and explore the relationship through which political instability can affect economic growth. However, few studies have investigated the impact of political instability on economic growth in Nepal. Some researchers in this field have yielded different findings but that have been properly examined yet. So, this study has been made to investigate the relationship between political instability and economic growth in Nepal.

Data and Methodology

Research Design, Study Period and Sources of Data

The study used quantitative analysis with deductive method using annual time series data of the selected variables (Appendix-I) for 20 years from 2002 to 2021. The collected data were converted into natural log for data analysis (Appendix-II). The required data and information were collected from the official websites of the Worldwide Governance Indicators and World Bank Development Indicators.

Tools and Methods

The study used ADF and PP approach, auto-regressive distributed lag (ARDL) model, unit root tests, bounds test, co-integration test, error correction model, diagnostic test, stability test using CUSUM and CUSUMSQ test.

Model Specification

As the purpose of this study is to investigate the impact of political instability on economic growth in Nepal, the study employed the following econometrics model based on the different time series literature on political instability and economic growth like -

$$GDPPC = F (INF, CC, GE, PSAV, RL, RQ) \ldots\ldots(1)$$

Converting the given functional equation into linear equation, the model can be written as-

$$GDPPC_t = \alpha_0 + \beta_1 INF_t + \beta_2 CC_t + \beta_3 GE_t + \beta_4 PSAV_t + \beta_5 RL_t + \beta_6 RQ_t + \varepsilon_t \ldots. (2)$$

Where,

GDPPC = Gross domestic product per capita.

INF = Inflation.

CC = Control of corruption.

GE = Government effectiveness.

PSAV = Political stability and absence of violence / terrorism.

RL = Rule of law.

RQ = Regularity quality.

β = Coefficient of variables, and

ε = Error term.

Taking natural log on both sides, the equation (2) becomes as given below.

$$\ln GDPPC_t = \alpha_0 + \beta_1 \ln INF_t + \beta_2 \ln CC_t + \beta_3 \ln GE_t + \beta_4 \ln PSAV_t + \beta_5 \ln RL_t + \beta_6 \ln RQ_t + \varepsilon_t \ldots (3)$$

This study applied ARDL bound test approach which is popularized by Pesaran and Shin (1995). This model has several advantages. First, the ARDL bound test approach does not involve pretesting variables, which means that the test for the existence of relationship between variables are applicable irrespective of whether the underlying regressors are purely I (0), purely I (1) or mixture of both. Second, while conventional co-integration methods estimate the long run relationship within the context of a system of equations, the ARDL method employs only a single reduced form equation. Third, the ARDL technique generally provides unbiased estimates of the long run model and valid t-statistics, even when some of the regressors are endogenous (Odhiambo, 2011). Fourth, while other co-integration techniques are sensitive to the size of the sample, the ARDL test is suitable even when the sample size is small. Thus, the ARDL test has superior small sample properties compared to the co-integration test (Pesaran & Shin, 1995). Consequently, the approach is considered very suitable for analyzing the relationship and it has been increasingly used in empirical research using ARDL model. The basic ARDL model can be written as:

$$y_t = \alpha_0 + \beta_1 y_{t-1} + \ldots\ldots + \beta_n y_{t-n} + \delta_1 X_t + \delta_2 X_{t-1} + \ldots\ldots \delta_p X_{t-p} + \varepsilon_t \ldots\ldots\ldots\ldots (4)$$

The above ARDL model representation is as follows:

$$\Delta \ln GDPPC_t = \alpha_0 + \sum_{t=i}^{p} \beta_1 \Delta \ln GDPPC_{t-i} + \sum_{t=i}^{p} \beta_2 \Delta \ln INF_{t-i} + \sum_{t=i}^{p} \beta_3 \Delta \ln CC_{t-i} + \sum_{t=i}^{p} \beta_4 \Delta \ln GE_{t-i} + \sum_{t=i}^{p} \beta_5 \Delta \ln PSAV_{t-i} + \sum_{t=i}^{p} \beta_6 \Delta \ln RL_{t-i} + \sum_{t=i}^{p} \beta_7 \Delta \ln RQ_{t-i} + \delta_1 \ln GDPPC_{t-1} + \delta_2 \ln INF_{t-1} + \delta_3 \ln CC_{t-1} + \delta_4 \ln GE_{t-1} + \delta_5 \ln PSAV_{t-1} + \delta_6 \ln RL_{t-1} + \delta_7 \ln RQ_{t-1} + \varepsilon_t \ldots (5)$$

The bounds test is mainly based on the joint F-statistic which its asymptotic distribution is non-standard under the null hypothesis of no co-integration. The first step in the ARDL bounds approach is to estimate by ordinary least squares (OLS). The estimation (5), β_1, β_2, β_3, β_4, β_5, $\beta 6$, and β_7 represent short run dynamic and δ_1, δ_2, δ_3, δ_4, δ_5, δ_6 and δ_7 represents the long run relationship. The null hypothesis of long run relationship is $\delta_1 = \delta_2 = \delta_3 = \delta_4 = \delta_5 = \delta_6 = \delta_7 = 0$. The calculated F-statistic is compared with critical value tabulated by Pesaran et al. (2001).

If the calculated F-statistic value comes more than upper bound values I (1), it assumes that all the variables in the ARDL model are I (1). It means, there is co-integration among the underlying variables. On the other hand, if the calculated F-statistic value comes less than lower bound value I (0), it assumes that all the variables in the ARDL model are I (0). It means, there is no co-integration among the underlying variables. For each application, there is a band covering all the possible classifications of the variables into I (0) and I (1).

The null and alternate hypotheses to test are as following,

H_0: $\delta_1 = \delta_2 = \delta_3 = \delta_4 = \delta_5 = \delta_6 = \delta_7 = 0$ (There is no long-run relationship) and

H_1: $\beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq \beta_5 \neq \beta_6 \neq \beta_7 \neq 0$ (There is a long-run relationship)

The null hypothesis (H_0) of no co-integration is rejected when the value of the test statistic exceeds the upper critical bounds value, while it is accepted if the F-statistic is lower than the lower bounds value. After measuring the existence of a long run relationship among variables, then choosing optimal lag length by using Akaike Information (AIC) or standard criteria like Swartz Bayesian (SBC). Prediction of long run and short run coefficients is done afterwards. ARDL long run method is shown as follows:

$$\ln GDPPC_t = \alpha_0 + \sum_{t=i}^{p} \beta_1 \ln GDPPC_{t-i} + \sum_{t=i}^{p} \beta_2 \ln INF_{t-i} + \sum_{t=i}^{p} \beta_3 \ln CC_{t-i} + \sum_{t=i}^{p} \beta_4 \ln GE_{t-i} + \sum_{t=i}^{p} \beta_5 \ln PSAV_{t-i} + \sum_{t=i}^{p} \beta_6 \ln RL_{t-i} + \sum_{t=i}^{p} \beta_7 \ln RQ_{t-i} + \varepsilon_t \quad \ldots\ldots (6)$$

An unrestricted error correction model (ECM) is used to find short run estimation of model. So, the equation is identified and given below.

$$\Delta ln GDPPC_t = \alpha_{0+} \sum_{t=i}^{p} \beta_1 \Delta lnGDPPC_{t-i} + \sum_{t=i}^{p} \beta_2 \Delta lnINF_{t-i} + \sum_{t=i}^{p} \beta_3 \Delta lnCC_{t-i} + \sum_{t=i}^{p} \beta_4 \Delta lnGE_{t-i} + \sum_{t=i}^{p} \beta_5 \Delta lnPSAV_{t-i} + \sum_{t=i}^{p} \beta_6 \Delta lnRL_{t-i} + \sum_{t=i}^{p} \beta_7 \Delta lnRQ_{t-i} + \lambda ECT_{t-I} \quad \ldots\ldots (7)$$

Where, ECT_{t-i} = Error correction model and λ measure the speed of adjustments.

Diagnostic and stability tests are performed to determine the goodness of fit of the ARDL model. Diagnostic tests examine serial correlation, normality, and heteroscedasticity associated with the model. Tests for structural stability are performed using the cumulative sum of recursive residuals (CUSUM) and the cumulative sum of squares of recursive residuals (CUSUMSQ).

Description of Variables

GDP Per Capita Growth:- GDP per capita is the sum of gross value added by all resident producers in the economy plus any product taxes (less subsidies) not included in the valuation of output, divided by mid-year population (Musgrove, 2011).

Inflation (INF):- Inflation is the rate of increase in prices over a given period of time.

Political Stability and Absence of Violence / Terrorism (PSAV):- Political stability and absence of violence/terrorism is capturing perceptions

of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically motivated violence and terrorism (Kaufmann et al., 2011).

Government Effectiveness (GE):- Government effectiveness is measure of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies (Kaufmann et al., 2011).

Regulatory Quality (RQ):- Regulatory quality is taking perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote privates sector development (Kaufmann et al., 2011).

Rule of Law (RL):- Rule of law is capturing perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence (Kaufmann et al., 2011).

Control of Corruption (CC):- Control of corruption is capturing perceptions of the extent to which public power is exercised for private gain including both petty and grand corruption, capture of the state by elites, and private interests (Kaufmann et al., 2011).

Data Analysis and Interpretation

This section presents the empirical portion of the study where the data related to Nepal are analyzed by conducting the necessary econometrics tests through time series co-integration analysis. At first, this study presents the descriptive analysis, then tests the stationarity of each variable using unit root tests with ADF and PP approaches. Then it examines the long run and short run relationship between the under study variables with proper method of estimation.

Descriptive Analysis

Descriptive statistics is the initial stage of analysis used to describe and summarize data. It helps to understand the nature and characteristic of the variables, distribution, interpretation, and behavior of data series used in the study through the measurement of central tendency and dispersion etc. in a given set of data. The given descriptive statistics are based on 20 observations of given variables that are shown in the given table 1.

Table 1: Descriptive Statistics of GDP Per Capita Growth in Nepal

Variables	GDPPC	INF	CC	GE	PSAV	RL	RQ
Mean	3.1267	6.6540	27.5630	19.7079	14.5010	29.0130	27.2186
Median	3.3615	6.8780	27.2735	18.7500	8.2940	30.2885	25.5365
Maximum	7.7310	11.0950	40.2120	32.9730	41.5090	37.3130	38.9190
Minimum	- 4.0870	2.2690	18.2270	13.4620	1.9420	17.5360	22.1150
Std. Dev.	2.7305	2.7215	5.3613	4.3930	11.9950	5.4456	4.2690
Skewness	- 0.8926	- 0.1212	0.5236	1.4304	0.9501	- 0.5568	1.0584
Kurtosis	3.9447	1.6733	2.8364	5.4101	2.7303	2.3446	3.7341
Jarque-Bera	3.3992	1.5159	0.9361	11.6602	3.0699	1.3913	4.1831
Probability	0.1828	0.4687	0.6262	0.0030	0.2155	0.4988	0.1235

Source: Author's calculation using E-views 11 based on WGI and WDI data.

Table 1 show that the highest value of mean and median is of rule of law (RL) whereas the lowest value of them is GDPPC. Similarly, the highest standard deviation is in political stability and absence of violence / terrorism (PSAV), and the least standard deviation is in inflation (INF) over the observation period. With regard to the normality of the series, the descriptive statistics show that only the variables of GDPPC growth, inflation (INF), control of corruption (CC), government effectiveness (GE), political stability and absence of violence / terrorism (PSAV), rule of law (RL) and regularity quality (RQ) are normally distributed (probability of the Jarque-Bera statistic > 5%). The government effectiveness (GE) variable has a probability of the Jarque-Bera statistic less than 5 percent which means that they do not follow a normal distribution. Most of the variables are normally distributed (probability of the Jarque-Bera statistic > 5%) so that it seems normally distributed of the study data.

Unit Root Test

Before applying the ARDL approach to co-integration, unit roots of all the series are tested. The application of ARDL bound testing approach requires that none of the variables are integrated of order 2 (Pesaran et al., 2001). Therefore, first it is necessary to confirm the order of integration for each variable. For this purpose, this study uses Augmented Dickey-Fuller (ADF) test as proposed by Dickey and Fuller (1979) and Phillips Perron (PP) test proposed by Phillips and Perron (1988).

Table 2: Results of Unit Root Test

Variables	ADF Test (Intercept)		ADF Test (Trend and Intercept)		Conclusion
	Level	First Difference	Level	First Difference	
GDPPC	- 4.3381 (0.0035)	-	- 4.7101 (0.0016)	-	I(0)
INF	- 2.7170 (0.895)	-4.8828 (0.0014)	- 2.6457 (0.1017)	- 8.3119 (0.0000)	I(1)
CC	- 5.4011 (0.0004)	-	- 3.8416 (0.0098)	-	I(0)
GE	- 4.7284 (0.0015	-	- 5.0065 (0.0009)	-	I(0)
PSAV	0.3499 (0.9746)	- 4.4948 (0.0030)	1.4725 (0.9984)	- 4.8566 (0.0013)	I(1)
RL	- 3.5141 (0.0199)	- 4.5978 (0.0025)	- 2.5553 (0.1195)	- 3.8852 (0.0095)	I(1)
RQ	- 1.6669 (0.4310)	- 7.5661 (0.0000)	- 1.4988 (0.5125)	- 6.8254 (0.0000)	I(1)

Variables	PP Test (Intercept)		PP Test (Trend and Intercept)		Conclusion
	Level	First Difference	Level	First Difference	
GDPPC	- 4.7101 (0.0016)	-	- 4.4004 (0.0129)	-	I(0)
INF	- 2.6457 (0.1017)	- 8.3119 (0.0000)	- 2.5502 (0.3034)	- 12.3307 (0.0000)	I(1)
CC	- 3.8416 (0.0098)	-	- 8.0849 (0.0000)	-	I(0)
GE	- 5.0065 (0.0009)	-	- 9.8054 (0.0000)	-	I(0)
PSAV	1.4725 (0.9984)	- 4.8566 (0.0013)	- 1.9506 (0.5896)	- 10.7455 (0.0000)	I(1)
RL	- 2.5553 (0.1195)	- 3.8852 (0.0095)	- 2.3346 (0.3978)	-	I(1)
RQ	- 1.4988 (0.5125)	- 6.8254 (0.0000)	- 1.4296 (0.8175)	- 33.2092 (0.0001)	I(1)

Source: Author's calculation using E-views 11 based on WGI and WDI data.

In this study, both tests of trend and intercept as well as the intercept of the regression test have been evaluated. Table 2 shows the results of the ADF and PP unit root tests with intercept only, trend and intercept, and the results of the Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) tests at the level and first difference. The results of both tests show that in GDPPC, CC and GE are fixed at the 1 percent level of significance while INF, PSAV, RL, and RQ are fixed at the first difference at the 1 percent level of significance. In this situation, ARDL approach to co-integration can be applied.

Results of Co-integration and ARDL Model

In this section, It is used the ARDL bounds testing procedure to investigate the long-term relationships between variables in a general ARDL model. The first step in this process is to obtain the appropriate lag order for the first difference variable in equation (1) using the Akaike Information Criterion (AIC) and Schwarz Information Criterion (SIC).

Table 3: Lag Order Selection

Lag	Log L	LR	FPF	AIC	SIC	HQ
0	- 355.5121	NA	8816392	38.1592	38.5071	30.2181
1	- 267.666	101.7165*	2182155*	34.0701*	36.8537*	34.5112*

Source: Author's calculation using E-views 11 based on WGI and WDI data.

Note: *Indicate lag order selected by the criteria; LR = Sequential modified LR test statistics (each test at 5% level); FPE = Final prediction error; AIC = Akaike information criteria, SIC = Schawarz information criteria; and HQ = Hannan-Quinn information criteria.

The results of choosing the appropriate delay sequence are shown in Table 3. The lag selection using both information criteria produces the same results for the ARDL model. The optimal lag length selected for the ARDL model with no serial correlation is 1. Before estimating the coefficients for long run and short run relationship, it is necessary to confirm the existence of long run relationship among the variables under consideration. Therefore, in the second step, this study uses ARDL bounds test to confirm the existence of cointegration relationship among variables under study. The ARDL bounded F-test results are shown in Table 4. Following the estimation of the ARDL model and the use of AIC or SIC for optimal lag-length selection, the AIC-based ARDL (1, 1,1,1,0 0, 0) model was selected because it is more parsimonious than the SIC-based model.

Table 4: F-Statistics for Testing the Existence of Long-Run Relationship

F-Bounds test	H_0: No Levels relationship			
Test statistics	Value	Significant.	I (0)	I (1)
Asymptotic: n = 1000				
F-statistic	20.6271	10%	20.12	3.23
K	6	5%	2.45	3.61
		1%	3.15	4.43
t-Bounds test	**H_0: No Levels relationship**			
Test statistics	Value	Significant	I (0)	I (1)
t-statistic	- - 15.7320	10%	- 2.57	- 4.04
		5%	- 2.86	- 4.38
		1%	- 3.43	- 4.99

Source: Author's calculation using E-views 11 based on WGI and WDI data.

Table 4 shows that F-statistic for ARDL bounds test is 20.62 which are greater than upper bound critical value at 5 percent level (2.45, 3.61). It implies that there is sufficient evidence to reject the null of no co-integration. The t-statistics also support their long run relationship because the absolute value of t-statistics is higher than I (1). Thus, the results of the ARDL bounds F-test suggest that there exists a long run relationship between GDP per capita growth with inflation (INF), control of corruption (CC), government effectiveness (GE), political stability and absence of violence / terrorism (PSAV), rule of law (RL), and regularity quality (RQ) in Nepal during the study period. It shows that those variables tend to balance over the long run and move together over the long run. However, this result should be considered preliminary and simply indicates that there is a long run relationship among variables under investigation. Hence, ARDL model can be applied to estimate the long run and short run coefficients. After confirming the existence of a long run relationship, the next is to estimate the long run and short run coefficients of the selected ARDL model.

Table 5: Results of ARDL (1, 0, 0, 0, 1, 0) Model

Long Run Coefficients				
Variables	**Coefficients**	**Std. Error**	**t-Statistic**	**P-Values**
INF	- 1.1039	0.2002	- 5.5126	0.0006
CC	0.0108	0.0667	0.7623	0.4977
GE	0.2278	0.1202	1.8953	0.0946
PSAV	- 0.1180	0.0285	- 4.1418	0.0032
RL	- 0.1768	0.0671	- 2.6372	0.0298
RQ	- 0.7630	0.0954	- 7.9954	0.0000

Source: Author's calculation using E-views 11 based on WGI and WDI data.

Table 5 reveals that variables of inflation (INF), political stability and absence of violence/terrorism (PSAV), rule of law (RL) and regularity quality (RQ) have negative coefficients value within the acceptable level of significance whereas control of corruption (CC) has a positive coefficient value with an insignificant p-value. Similarly, government effectiveness (GE) has a coefficient value of 0.22 at a significant level of 10 percent. The positive coefficient values with a satisfactory level of significance indicate that political indicators will support accelerating economic growth in Nepal. The long run results related to the influence of other variables show the mixed results. Therefore, political indicators have positively maintained economic growth.

Table 6: Error Correction Representation of the Selected ARDL (1, 1, 0, 0) Model,

Dependent Variable D (GDPPC)				
Short Run Coefficients		**Case 3: Unrestricted Constant and No trend**		
Variables	**Coefficients**	**Std. Error**	**t-Statistic**	**P-Values**
C	50.2942	3.1729	15.8510	0.0000
D (INF)	- 0.9574	0.0872	- 10.9811	0.0000
D (CC)	0.3505	0.0410	8.5571	0.0000
D (GE)	- 0.2409	0.0489	- 4.9260	0.0012
Coint. Eq (-1)*	- 1.5552	0.0978	- 15.8960	0.0000
R^2 = 0.9554; Adj. R^2 = 0.9427; F-Statistic = 75.0665 (0.0000); D-W Stat. = 2.6311				

Source: Author's calculation using E-views 11 based on WGI and WDI data.

Table 6 contains the results of error correction representation of the selected ARDL model. The short run ARDL estimation shows that the coefficient of error correction term is significant at one percent level. It is observed from the Table 6 that D (INF) and D (GE) have negative impact on economic growth except D (CC) which is found positive. The significant negative sign of the error correction term reinforces the existence of long run relationship among the variables. However, the speed of adjustment from previous years is disequilibrium in GDP per capita. But, the equilibrium in the current year is only 1.55 percent. It can be concluded from the results that there exists a negative relationship between political stability indicators and economic growth.

Diagnostic Tests

Diagnostic tests were also applied to verify the adequacy of model performance. The results of diagnostic tests of the ARDL (1, 1, 1, 1, 0, 0, 0) model are shown in the Table 6.

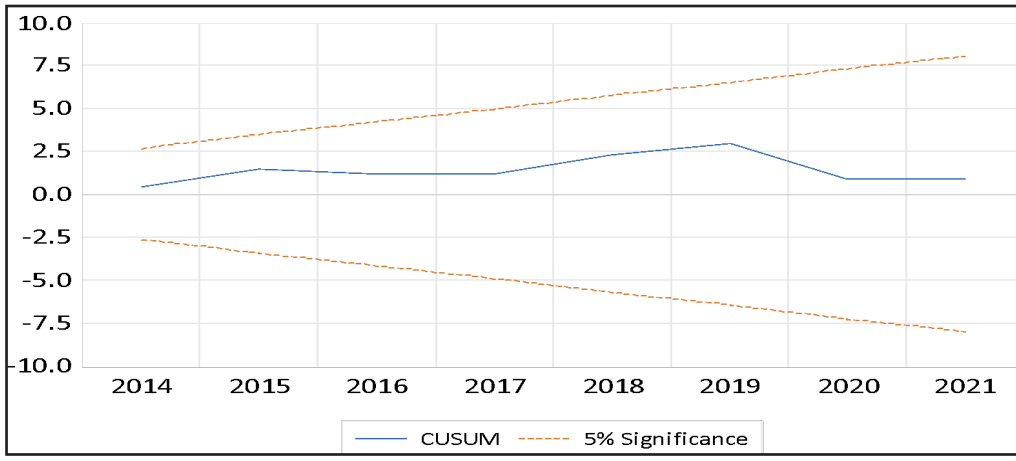
Table 6: ARDL (1, 1, 1, 1, 0, 0, 0) Model Diagnostic Test

Diagnostic Test	F-statistic	Obs* R-squared
Serial Correlation	Prob. F(1,7) = 0.2298	Prob. Chi-Square(1) = 0.0532
Heteroscedasticity	Prob. F(10,8) = 0.5794	Prob. Chi-Square(10) = 0.4417
Normality	Jarque-Bera = 0.1633	Probability = 0.9216

Source: Author's calculation using E-views 11 based on WGI and WDI data.

The results of diagnostic tests suggest that long run and short run estimates are free from serial correlation, heteroscedasticity of the short run model, and non-normality of the error term that can be shown with the help of given figures.

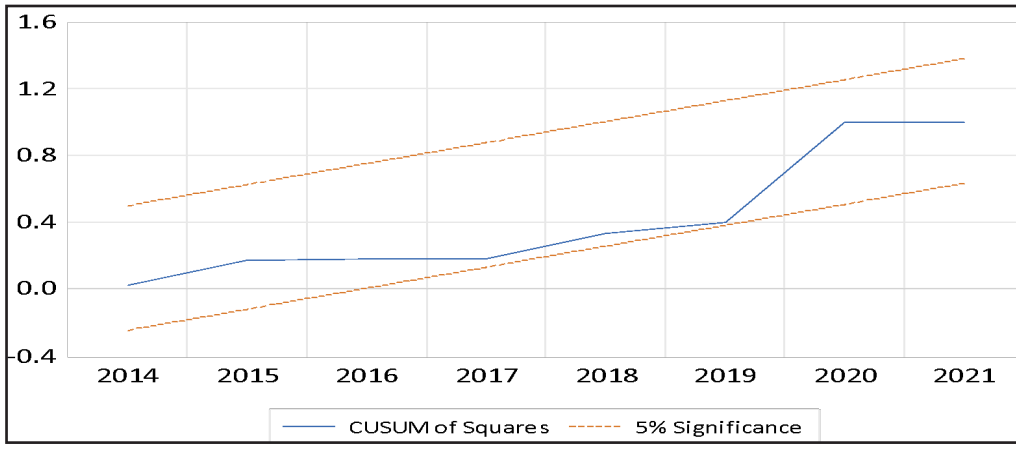
Figure-1: CUSUM Test



Source: Author's creation using E-views 11.

As Hansen (1992) argued that the potential bias of the model should be avoided when testing the stability of long run parameters. Therefore, the stability of the ARDL parameters was tested by applying the cumulative sum of recursive residuals (CUSUM) and cumulative sum of squares of recursive residuals (CUSUMSQ) tests developed by Brown et al., (1975) The figures 1 and 2 show plots of the CUSUM and CUSUMSQ respectively.

Figure 2: CUSUM Square Test



Source: Author's creation using E-views 11.

These results show that the ARDL parameters are stable. Because, graphs of the CUSUM and CUSUMSQ are within the critical bounds at the 5 percent level of significance. Thus, the model is stable and it confirms the stability of the long-run coefficients of the repressors.

Conclusion and Discussion

The purpose of this study is to investigate the impact of political instability on economic growth of Nepal employing ARDL model and time series annual data covering the period of 2002 to 2021. The study examines the existence of the long run relationship of GDP per capita with different political indicators like control of corruption (CC), government effectiveness (GE), political stability and absence of violence / terrorism (PSAV), rule of law (RL), regularity quality (RQ) and micro economic indicator inflation (INF). The empirical results of the study show that coefficients of INF, PSAV, RL and RQ are negative and statistically significant at 5 percent level implying the existence of a negative long-run impact on GDP per capita in Nepal. There is a long run relationship between the political indicators upon the economic growth. More specifically, the results show that the inflation (INF) and regulatory quality (RQ) indicators have the negative impact on economic growth while the PSAV has the lowest impact in long run.

Similarly, the result of CC shows that there is a positive impact on economic growth in the short run. The study confirmed that overall political instability indicator has a significant negative impact on economic growth both in short and long term. All the other variables are driven and follow the changes in political instability. In summary, it shows that political instability has a negative impact on economic growth in Nepal. This finding is supported by Campos and Karanasos (2008), and Tabassam et al., (2016). In short run, most of the variables have negative impact on the economic growth in Nepal.

But the results suggest that political instability is statistically significant both in short and long term. Therefore, the government should control political instability in order to achieve higher economic growth in Nepal.

Limitations of the Study

The study used only 20 years of time series data from 2002 to 2021 as there is lack of availability of data especially the selected independent variables of the study. Total number of political instability variables used in the current study consists of seven. The current study has a build in assumption that these seven indicators of instability are appropriate in the context of Nepal. The increasing number of variables would provide a better picture on the impact of political instability on economic growth.

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Appendix I: Raw Data Set of the Variables under Study

Years	GDPGR	INF	CC	GE	PSAV	RL	RQ
2002	0.120143	3.029399	40.21164	32.97297	5.291005	37.31343	30.81081
2003	3.945038	5.707009	34.92064	24.86486	4.522613	32.83582	38.91892
2004	4.682603	2.841811	18.2266	16.41791	2.912621	27.40385	31.34328
2005	3.479181	6.836333	23.90244	22.05882	1.941748	23.92344	31.86275
2006	3.364615	6.920336	28.78049	19.02439	4.347826	31.10048	32.35294
2007	3.411560	2.269219	23.30097	26.21359	4.347826	34.92823	28.64078
2008	6.104639	9.90783	21.84466	21.84466	6.730769	30.76923	28.15534
2009	4.533079	11.09482	26.31579	17.70335	7.582938	20.85308	25.35885
2010	4.816415	9.326504	27.14286	20.57416	7.582938	17.53555	23.92344
2011	3.421828	9.227075	23.22275	18.00948	8.056872	21.59624	25.59242
2012	4.670122	9.45981	22.74882	17.53555	8.530806	27.69953	23.69668
2013	3.525153	9.040163	28.90995	18.95735	14.69194	29.10798	22.27488
2014	6.011483	8.364155	33.17308	18.7500	21.42857	30.76923	22.11539

2015	3.976053	7.868909	33.17308	13.46154	14.28571	29.80769	24.03846
2016	0.433114	8.790343	22.59615	20.19231	17.14286	21.63461	23.55769
2017	8.977279	3.627096	24.51923	18.7500	25.71428	27.88461	25.48077
2018	7.622376	4.061163	27.88461	17.78846	26.41509	34.61538	24.51923
2019	6.657055	5.568685	27.40385	13.94231	28.77358	32.21154	25.0000
2020	-2.369621	5.052367	29.80769	17.30769	41.50943	33.65385	26.44231
2021	4.246940	4.08791	33.17308	17.78846	38.20755	34.61538	30.28846

Appendix II: Log Data Set of the Variables Used under Study

Years	lnGDPGR	lnINF	lnCC	lnGE	lnPSAV	lnRL	lnRQ
2002	- 2.11907	1.108364	3.694156	3.495688	1.666008	3.619353	3.427866
2003	1.372459	1.741695	3.553078	3.213456	1.50909	3.49152	3.66148
2004	1.543854	1.044442	2.902882	2.798373	1.069053	3.310683	3.445
2005	1.246797	1.922251	3.173981	3.093713	0.663588	3.174859	3.461437
2006	1.213313	1.934464	3.359698	2.945722	1.469676	3.437223	3.476705
2007	1.22717	0.819436	3.148495	3.266278	1.469676	3.553295	3.354831
2008	1.809049	2.293325	3.083956	3.083956	1.906689	3.426515	3.337737
2009	1.511401	2.406479	3.270169	2.873754	2.025901	3.037502	3.233128
2010	1.57203	2.23286	3.301114	3.024036	2.025901	2.86423	3.174859
2011	1.230175	2.222142	3.145132	2.890898	2.086525	3.072519	3.242296
2012	1.541185	2.247052	3.124513	2.86423	2.143684	3.321415	3.165335
2013	1.259924	2.201677	3.364186	2.942192	2.687299	3.371012	3.10346
2014	1.793671	2.123955	3.501739	2.931194	3.064725	3.426515	3.096274
2015	1.38029	2.062919	3.501739	2.599837	2.65926	3.394766	3.179655
2016	-0.83675	2.173654	3.11778	3.005302	2.841582	3.074295	3.159452
2017	2.194697	1.288432	3.199458	2.931194	3.247047	3.328075	3.237924
2018	2.031088	1.401469	3.328075	2.87855	3.273936	3.544298	3.199458
2019	1.895677	1.717159	3.310683	2.634928	3.359458	3.472325	3.218876
2020	#NUM!	1.619857	3.394766	2.851151	3.725921	3.516127	3.274965
2021	1.446199	1.408034	3.501739	2.87855	3.643033	3.544298	3.410767