Impacts of Political Stability on Shadow Economy: Evidence from Bay of Bengal Initiative for Multi-sectoral Technical and Economic Cooperation Countries

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Abstract

The issue of political stability and the shadow economy is the most vital concern for sustainable development. However, the relationship between them is yet to be explored. Particularly, in the context of Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation Countries (BIMSTEC) countries, there are no studies that have examined the influence of political stability on shadow economy. This study fills these gaps. Using panel data from 1998 to 2015, this study empirically investigated whether and how political stability affects shadow economy. Findings indicate that political stability has significant negative effects on the size of shadow economy. We also observed that regulation freedom, fiscal freedom, business freedom, trade freedom, government integrity, government spending and gross domestic product (GDP) growth have significant negative effects, while unemployment has significant positive effects on the shadow economy. Findings of this study imply that governments and policymakers should make efforts to ensure greater political stability in their countries, which will lessen the size of shadow economy that, in turn, will accelerate economic growth. The present study adds to empirical literature of the analogous issue by confirming (or else) the findings of past studies carried out across the world. The findings indicate that there exists a positive association between the extent of political stability and the shadow economy for BIMSTEC countries.

Key Words

Shadow Economy, Political Stability, Regulation Freedom, Financial Crisis, Cross-sectional Dependence, Unit Root

Introduction

In recent times, one of the rigorously studied issues in economics is the shadow economy (SE) across the world. Most economies in the domain have substantial shadow economies, especially in the developing world. The SE has varied impacts on the country's social and economic aspects, which portend the country's immovability and growth scenarios. Policymakers laid special emphasis on the upswing of SE as thriving the SE may cause severe complications for governments such as distortion in unemployment, labour force, income, gross domestic product (GDP) and consumption (Schneider & Enste, 2013). However, the issue of measuring the SE was difficult till now, and the negotiators of the SE efforts remain invisible. The extent of the SE is inspired by the political

relevance over time. Besides, Maulida and Darwanto (2018) reported that the rapport between political stability and the SE is the most vital concern for sustainable development. Considering the necessities, in recent years, researchers have gained renewed interest in the connection concerning political stability and the SE and their emergence from informal activities all over the globe.

With an ambition to pursue mutual trade, connectivity, cultural, technical and economic development within South East Asia and South Asia region, in 1997, the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) was founded. Rahman and Kim (2016) reported that BIMSTEC countries have developed strategies and policies on several mutually agreed issues such as economic cooperation, social development and cultural exchange and aims towards

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harnessing the supremacy of emerging markets across the area. However, in this developing region, the magnitude of SE is larger along with the non-conducive political stability. In addition, the political instability of developing countries pushes people to get involved in SE. Hence, this study sketches the effects of political stability on the extent of SE in BIMSTEC countries.

There is a continuing argument on whether political stability influences SE. There is empirical evidence that shows there is a negative association between political stability and SE (Elgin, 2010; Maulida & Darwanto, 2018; Mazhar & Jafri, 2017; Obando & Wahner, 2014; Ouedraogo, 2017). Scholars argued that political stability leads to foreseeable economic policies. It is important for the effective and steadfast government-sanctioned services and efficacy, an independent judiciary, employment opportunity, and attractiveness to investors. Besides, SE undermines policy results and political stability. In other words, political instability directly increases the magnitude of SE.

Compared to previous studies, there are relatively few empirical studies which focus on linking political stability and the extent of the SE. Some authors have examined the effect of the political stability on the extent of SE from their interested aspects (Elbahnasawy et al., 2016; Farzanegan & Badreldin, 2014; Razmi & Jamalmanesh, 2014). While it is a known fact that most BIMSTEC economies are involved to a great degree a in SE in addition to weak political conditions, no study, according to authors' knowledge, has examined the effect of political stability on the size of SE in the BIMSTEC region. This generates a greater avenue for researchers to explore the association between these two issues. Hence, the present study attempts to fill this gap by scrutinizing the impact of political stability on SE in the BIMSTEC region. The contributions of this study are twofold. First, this is the first study to investigate whether political stability impacts the magnitude of SE in the developing economies, also known as the BIMSTEC region. Second, this study contributes to by confirming (or otherwise) findings of the previous researches.

Literature Review

Conceptualizing Political Stability and Shadow Economy: Theoretical Underpinnings

Political stability is a multifaceted issue that have significant effects on the economy. Several authors have defined political stability in several ways based on different context and scope, whereas political scientists have studied political stability from a behavioural point of view. Among many approaches, first, according to Margolis (2010), political stability refers to the presence of lawful order of constitution, the deficiency of structural fluctuations, ministerial strength or longevity, as well as the absence of internal political conflict or violence. In the second approach, Ake (1975) described a stable political situation as the consistency of the flow of political interchange. Alternatively, a stable political situation is the extent that people in society limit themselves to the behavioral patterns that does not fall beyond the bounds of political role expectations. Therefore, the more the number of political exchanges the more the political stability. In the present study, political stability is an anticipated political environment where society's policymaking and regime transformation are maintained under functional and institutional processes, excluding unconstitutional violence and internal conflict. Moreover, the community is non-violent and law-abiding, consistent with its constitution. However, strictly, law-abiding societies reduce the risk of internal conflict and violence. Therefore, a lower risk of internal conflict and violence makes a healthy political environment that conveys higher political stability.

There is no specific, unique and rigorous definition of SE. Nonetheless, different terminologies are used for SE such as the grey, ghost, occult, hidden, invisible, marginal, second, parallel, informal, unofficial and underground economy. According to Smith (1997), SE is the illegal market-based production of goods and services which cannot be easily detected and does not come under the formal assessments of GDP. Medina and Schneider (2018) provided an extreme definition of SE as 'completely market centred lawful manufacture of services and goods are intentionally hidden from communal authorities' to escape paying taxes or social safety or obedience with legitimate labour marketplace and governmental forms. Likewise, Obando and Wahner (2014) and Schneider et al. (2010b) have provided a similar definition of SE in their study. We employ the concept provided by Medina and Schneider (2018). The following section describes theories related to the present research.

Institutional Theory

Institutional theory is an extensively recognized theory that emphasizes the legitimacy, legal and formal perspectives of government structures (Peters, 2019). Institutions play a significant redistributive role in economies that ensure proper allocation of resources and encourage faith by the justice system, and maintain law and order. Receiving more efficient institutional support makes a stable political situation that leads to a reduction of the size of SE.

Convergence Theory

Under the convergence theory, developing countries grow rapidly as compared to industrialized countries. From the sociopolitical perspective, developing countries' social patterns converge where the political change relates to socio-economic platforms (Williamson, & Fleming, 1977). In the case of BIMSTEC countries, social pattern converges when an increase or decrease of SE depends on the social security and overall tax. This theory reflects the BIMSTEC

countries' situations because they follow same social pattern to ensure political stability which could reduce the size of SE.

Growth Theory

Growth theory endeavours to elucidate the conditions that are required for development to occur and weighs up the relative significance of certain conditions. Political instability has become a threatening and serious problem, which hinders the economic growth process, especially in developing and underdeveloped countries (Fosu, 2001). According to growth theory, the bigger the size of SE, slower is the pace of economic growth. Aizenman and Jinjarak (2008) have reported that political instability reduces the efficiency of tax revenue, which makes formal sectors weaker. Conversely, SE spurs economic structure since the formal sectors foster productivity and growth. Theoretical explanation confirms that a good economic performance leads to a stable political condition, which, in turn, lessens the size of SE.

Previous Empirical Studies

Using a panel data consisting of more than 70 countries from 1999 to 2005, Farzanegan and Badreldin (2017) found that political stability had a significant positive impact on SE. Authors argued that SE may be like a safety net for states people, creates scope of jobs for unemployed people in the economy and abates political hazard and raises peoples' activity. However, higher levels of SE may reduce government revenues and impact the competency to deliver public services like security. Elgin (2010) reported that political stability has negative links to the size of the informal sector. Moreover, political stability increases tax burden, thereby increasing government tax revenue, which is then used for the productive sector in the formal economy, thereby relatively reducing SE.

Employing the data from 1979 to 2009, Elbahnasawy et al. (2016) observed that higher levels of democracy are connected to lower levels of political instability in addition to lowering the extent of informal economy. In addition, while the transformation of government models from authoritarian to democratic regimes can expand SE activities due to increasing political instability, lower political instability stimulates to the capacity to procure taxes. Ouedraogo (2017) observed that political stability is adversely allied with the size of SE and argues that lower public and political violence represents stronger quality of government, increases confidence of entrepreneurs in political institutions and reduces political and economic risk to loss of investment, which leads to a decline in the size of SE.

Using the data from 2002 to 2007, Friedman (2014) investigated the adverse link between governance and underground economy and found that greater levels of political stability reduce corruption, and regulatory excellence is concomitant with a smaller size of informal economy. Using a panel data involving 34 countries, from 2000 to 2007, Razmi and Jamalmanesh (2014) observed that political stability, voice and accountability, regulating corruption, and good regulatory qualities lead to a reduction in the extent of SE and changing informal to formal economy improves the political indices and enhances the official economy and reduces the size of SE. Nikopour et al. (2009) and Torgler and Schneider (2009) analysed a statistically adverse linkage between the magnitude of SE and political stability and found that a stable political situation demonstrates a higher degree of institutional quality, which leads to lowering the level of the magnitude of the informal economy.

Based on the literature discussed earlier, we found a relative dearth of studies examining the issue of SE, and, in particular, no study has focused on the BIMSTEC region. Thus, this is the first study that fills the gap by exploring the impact of political stability on BIMSTEC's SE.

Research Methodology

Data, Sources and Their Description

In this research, we inspect the potential influence of political stability on SE. To achieve the objectives of this study, using the available time series data covering the period from 1998 to 2015, we have selected BIMSTEC member economies that reflect developing nations. Using the available data, we have collected SE data based on the one produced by Medina and Schneider (2018), using the currency demand approach (CDA) as well as multiple indicators multiple causes (MIMIC). The largest cross-country dataset is the World Governance Indicator (WGI) and World Development Indicators (WDI), which are produced by The World Bank. From these sources, we also accumulated data for a similar period on variables such as the index of political stability, rule of law, regulatory superiority, government efficacy, voice and answerability and control of corruption along with GDP growth. Similarly, we have collected the dataset on variables based on the index of economic freedom, which is produced by Heritage Foundation, that include fiscal freedom, business freedom, trade freedom, financial freedom and government spending. Table 1 presents the data descriptions and their sources.

Variables' Selection

Dependent Variable

The key effort of this research is to scan how and whether political stability has an impact on the extent of SE. Therefore, we incorporated the portion that describes the size of SE to GDP as the dependent variable, which is calculated as the share of the size of SE to GDP, by using MIMIC as well as CDA method that have been used by

Table 1. A Summary of Employed Variables, Descriptions and Their Sources

Variable	Measurement	Legend	Source
Shadow economy	The percentage of shadow economy to GDP	SE	Medina and Schneider (2018)
Political stability	Political stability and absence of violence or terrorism	PS	World Governance Indicator (WGI)
Regulation freedom	The index of regulation freedom	RF	Fraser Institute
Fiscal freedom	The index of fiscal freedom	FF	Heritage Foundation
Business freedom	The index of business freedom	BF	Heritage Foundation
Trade freedom	The index of trade freedom	TF	Heritage Foundation
Unemployment	Unemployment rate (proportion of total labour force)	UMP	World Development Indicators (WDI)
Government integrity	The index of government integrity	GI	Heritage Foundation
Government spending	The index of government spending	GS	Heritage Foundation
GDP growth rate	GDP growth as annual percentage	GDP	World Development Indicators (WDI)

Source: The authors.

many previous studies (Almenar et al., 2020; Nikopour et al., 2009; Razmi & Jamalmanesh, 2014). Thus, in the present study, we have considered Medina and Schneider's (2018) dataset on SE.

Independent Variable

Political stability, our prime variable of interest, has been considered as an independent variable as this study examines the connection between political stability and the extent of SE. Political stability has been measured by the index of probability of disorderly government change, social disruption, conflicts, international pressure, terrorism, violent movements, regional or religious conflicts. The index ranges approximately from −2.5 to 2.5, which explains that the higher the value of this index, smaller is the risk of violence or greater is the level of political stability. Friedman (2014); Farzanegan and Badreldin (2017); and Razmi and Jamalmanesh (2014) used this variable and observed that higher levels of political stability reduce the extent of SE. Arguing similarly, we presume that there is a negative influence of political stability on the magnitude of SE.

Control Variable

In this study, we have incorporated some control variables, which separately link political stability with the extent of SE. To begin with, the index of regulation freedom is composed of three sub-components, that is, credit market regulations, labour market regulations and business regulations. This index scores range from 0 to 10, where a higher number indicates that market forces determine price with lower levels of regulation. Berdiev et al. (2018) found that regulation freedom has a significant adverse effect on the extent of SE. Thus, we incorporated regulation freedom in this study as a control variable with a negative sign.

Another variable, fiscal freedom index, FF, measures tax burden, have been considered in this study. Mazhar and Méon (2017) found that the tax burden has a noteworthy negative effect on the extent of SE. Arguing similarly, we, therefore, used fiscal freedom index in this study and expect a negative sign.

The index of business freedom (BF) is an important element of the efficient operation of businesses that measure the constraint in infrastructure and regulatory environments. Business freedom index scores range from 0 to 100. The higher value of this index represents the autonomy of the business environment. Economic freedom indicators, including business freedom, have adversely linked to the scope of SE along with a decreased spread of SE (Berdiev et al., 2018; Koyuncu & Ünal, 2019). Thus, we considered BF as a control variable in this study and expect a negative sign.

The index of trade freedom (TF) measures the absence of non-tariff and tariff obstacles that has an impact on export and import of goods and services. This index scores range from 0 to 100. Berdiev et al. (2018) and Koyuncu and Ünal (2019) observed that the efficient indicator of economic freedom, including TF index, decreases the extent of SE. Arguing similarly, we, hence, incorporated TF in this study and assigned the variable a negative sign.

The share of government spending (GS), including transfers and consumptions to GDP, has been incorporated as a control variable for this study. Malaczewska (2013) observed that higher GS influences wage in formal economy, thereby diminishing the extent of SE. Consequently, similar to Malaczewska (2013), we have assigned a negative sign to this variable.

Corruption reduces security and certainty in the economy. Government integrity (GI) index measures the level of corruption. The index scores range from 0 to 100, where 0 indicates that the government is highly corrupt and 100 indicates no corruption. As a result, a good control over corruption basically reduces the size of SE (Friedman, 2014; Razmi & Jamalmanesh, 2014). Thus, we considered corruption index, which ranges from −2.5 to 2.5 as control variable in this study, and we have assigned it a negative sign.

The percentage of unemployment (UMP) rate to total labour force is another control variable considered in this study. UMP is a situation where workers have the ability to do work, but they are unable to find jobs (Agrawal, 2003). Sahanoun and Abdennadher (2019) observed a noteworthy

optimistic influence of unemployment on the size of SE. Thus, similar to authors, we have assigned a positive sign for the coefficient of UMP in our study.

Furthermore, we considered growth rate of GDP, which measures a country's economic performance (Sharma et al., 2018), as a control variable for this study. Nikopour et al. (2009) observed that GDP has an adverse effect on the extent of SE. Berdiev et al. (2018) argued the higher economic growth declines the size of SE, owing to create further chances to contribute to the official sectors. In the present study, we predict analogous negative sign to authors.

The Model

Since the aim of this study is to examine whether political stability has an impact on SE, using the study performed by Elbahnasawy et al.(2016) and Razmi and Jamalmanesh (2014), we specify a baseline model as follows:

$$\text{SE}_{it} = \alpha_0 + \beta_{it}\text{PS}_{it} + \beta_{it}X_{it} + \varepsilon_{it} \tag{1}$$

Here, the size of the shadow economy (SE_{it}) is the dependent variable. Our main variable of interest is political stability (PS_{it}) measured by political stability and absence of violence or terrorism, and α is the corresponding coefficient, which measures its impacts on the extent of SE. X_{it} is the matrix of control variables, that is, the index of regulation freedom (RF_{it}), fiscal freedom (FF_{it}), business freedom (BF_{it}), trade freedom (TF_{it}), government spending (GS_{it}), government integrity (GI_{it}), unemployment rate (UMP_{it}), GDP growth (GDP_{it}) and ε_{it} is the error term.

In order to incorporate the effects of global financial crisis on the SE of BIMSTEC countries, in regression Equation (1), we include a dummy variable as follows:

$$\text{SE}_{it} = \alpha_0 + \beta_{it}\text{PS}_{it} + \beta_{it}aX_{it} + \lambda\text{GFC}_t + \varepsilon_{it} \tag{2}$$

In Equation (2), GFC_t is the time dummy variable that takes a value of 1 for the financial crisis during 2007 and 2008, and 0 otherwise, and λ is the coefficient that measures the effects of global financial crisis on SE of BIMSTEC. Moreover, we conduct country and time fixed-effects regression in Equation 1 and country fixed-effects with global financial crisis regression in Equation (2), using

Hausman test and data from studies performed by Kahyalar et al. (2019).

Empirical Results and Their Discussion

Descriptive Statistics

In Table 2, the applied variables provide some strategic perception, which is presented as descriptive statistics. Meanwhile, Table 3 presents descriptive statistics for all the variables and are included separately for all the countries in our sample. In the case of dependent variable, the size of SE we found a mean of 37.48, indicating that BIMSTEC countries experienced a considerable size of SE with a standard deviation at 10.14, which explains that there is a huge difference between these BIMSTEC countries in their size of SE. India has the lowest SE at 22.64 and Thailand has the highest SE at 49.70. We found political stability—the main independent variable of interest—has a maximum score of 1.07 with a minimum score of −2.15 and a mean of −1.12 with a lower standard deviation, which indicates that the sampled countries experienced lower levels of political stability—in other words more political instability during the period of study. Nepal has the lowest mean of political stability at −1.51, while only one country—Bhutan—experienced a positive score of 0.85 and thus the highest score in terms of political stability. An interesting finding is that mean value of political stability for the total sample is negative, which

Table 2. Descriptive Statistics

Variable	Mean	Std. Dev.	Min.	Max.
SE	37.48	10.14	17.89	52.60
PS	−1.12	0.59	−2.15	1.07
RF	6.28	0.91	3.70	7.63
GS	86.57	9.81	38.80	98.70
BF	55.47	16.49	20.00	78.00
FF	79.25	4.94	72.50	88.90
TF	60.06	16.87	0.00	77.80
UMP	2.75	1.94	0.49	8.76
GI	26.94	11.45	4.00	63.00
GDP	6.18	2.90	−0.61	13.84

Source: The authors.

Table 3. Country-wise Mean Value for All the Variables

	SE	PS	RF	GS	BF	FF	TF	UMP	GI	GDP
Bangladesh	32.58	−1.28	6.47	93.27	52.81	76.76	41.32	3.91	20.13	5.70
Bhutan	25.70	0.85	7.54	56.01	60.50	83.37	49.11	2.58	55.40	7.55
India	22.64	−1.18	6.44	77.40	48.48	75.84	42.00	2.74	30.36	6.60
Sri Lanka	43.73	−1.04	6.56	81.02	72.41	76.39	70.89	6.48	38.86	5.44
Myanmar	47.87	−1.17	4.45	95.01	29.83	81.67	69.11	1.00	13.48	10.37
Nepal	36.30	−1.51	6.45	89.92	57.67	85.94	59.66	1.63	18.29	4.14
Thailand	49.70	−0.75	6.89	89.29	71.13	75.79	73.08	1.43	33.59	3.47
Total	36.93	−0.87	6.25	85.73	55.70	79.01	58.72	2.83	27.59	6.18

Source: Authors' own elaboration based on the results of country-wise mean value.

indicates that, on average, sample countries have experienced negative political stability, which means more political instability. Likewise, we observed mean value of regulation freedom is 6.28 with a lower standard deviation of 0.91, and Bhutan achieved the highest value, while Myanmar achieved the lowest. For government spending, we found a mean value of 86.57, which is good, with a standard deviation of 9.81. Myanmar has the highest mean value in terms of government spending, while Bhutan has the lowest mean value at 56.01. For business freedom, we found a mean value of 55.47 with a higher standard deviation of 16.49, which means that there are differences in business freedom among countries. We found that Sri Lanka scored the highest in terms of business freedom with a mean value of 72.41, which was 2.42 times higher than the lowest mean of 29.83 scored by Myanmar. The mean unemployment rate was found to be at 2.75 with a lower standard deviation of 1.94. Sri Lanka had the highest unemployment rate with a mean of 6.48, while Myanmar had the lowest mean value score at 1.00. Furthermore, we observed a mean of 6.18 for GDP growth with a lower standard deviation of 2.90. Myanmar has achieved the highest mean value of 10.37 GDP growth, while Thailand has the lowest mean value of 3.47. Overall, descriptive statistics imply that variables are appropriate to conduct further observation.

Multicollinearity Test

We analysed data of seven BIMSTEC countries over the period from 1998 to 2015 and found high levels of multicollinearity among variables. In order to test multicollinearity, we first checked the correlations among variables. In the second method, we conducted variance inflation factor (VIF) analysis. Following is the discussion about the findings of these tests.

Correlation Analysis

We examined pairwise correlations among independent variables to check for multicollinearity for which results are presented in Table 4.

Wooldridge (2016) argued that more than 0.7 correlation coefficient indicates high correlation among variables.

As shown in Table 4, we observed low correlation among independent variables applied on the right side of the baseline model, which indicates a very low level of multicollinearity.

Variance Inflation Factor, Test

As a second method of multicollinearity test, we conducted VIF analysis. Nachane (2006) suggested that VIF values of not more than 10 are accepted as low levels of multicollinearity. Based on findings presented in Table 5, the higher value of VIF is 4.750, which denotes lower multicollinearity. Therefore, the lower level of multicollinearity allows us to conduct further empirical analysis.

Cross-sectional Dependence Test

To deal with panel data, it is vital to inspect the cross-sectional dependence (CD) amid the series because overlooking CD may yield biased and inconsistent outcomes. To observe the existence of cross-sectional dependency, we conduct Pesaran (2004) CD test as shown in equation (3):

$$\text{CD} = \sqrt{\frac{2T}{(N-1)N}} \left(\sum_{i=1}^{N-1} \sum_{j=i+1}^{N} \hat{\rho}_{ij} \right) \tag{3}$$

In Equation (3), time period is T; N represents panel index and $\hat{\rho}_{ij}$ signifies link between the ith as well as jth error terms. In addition, it has a zero average for the fixed values of T and N. Here,

Table 5. Results of Variance Inflation Factors (VIF) Test

Variable	VIF	I/VIF
RF	4.750	0.211
GI	4.580	0.218
BF	3.330	0.300
GS	3.150	0.317
GDP	2.120	0.472
PS	1.580	0.634
TF	1.480	0.674
UMP	1.450	0.689
FF	1.370	0.732
Mean VIF	2.650	

Source: Authors' own elaboration based on results of VIF test.

Table 4. Correlation Analysis

	SE	PS	RF	GS	BF	FF	TF	UMP	GI	GDP
SE	1.000									
PS	−0.067	1.000								
RF	−0.344	0.189	1.000							
GS	0.525	−0.440	−0.502	1.000						
BF	0.086	0.126	0.744	−0.222	1.000					
FF	0.033	−0.081	−0.227	0.141	−0.294	1.000				
TF	0.566	0.128	−0.166	0.184	0.070	−0.046	1.000			
UMP	−0.121	0.001	0.266	−0.259	0.374	−0.361	−0.146	1.000		
GI	−0.176	0.524	0.594	−0.710	0.546	−0.358	0.161	0.342	1.000	
GDP	0.084	0.010	−0.683	0.252	−0.505	−0.028	0.072	−0.095	−0.322	1.000

Source: The authors.

Table 6. Results of Cross-sectional Dependency Test

Test	Statistics	Probability
Pesaran CD	2.565752	0.0103*

Source: Authors' own elaboration based on results of Pesaran CD test.
Note: * Indicates significance at the 5% level.

$$\hat{\rho}_{ij} = \sum_{t=1}^{T} \frac{\kappa_{it}\kappa_{jt}}{(\sum_{t=1}^{T} k_{1t}^2)^{1/2}(\sum_{t=1}^{T} k_{jt}^2)^{1/2}} \qquad (4)$$

where, k_{it} clarifies the ordinary least square (OLS) error terms based on T observation for every $i = 1, …, N$. Table 6 exhibits the outcomes of the Pesaran CD test, which strongly rejects the null hypothesis at the 5% level of significance that implies no CD.

Unit Root Test

Choi (2001) considered the limitations of panel unit root test suggested Levin et al. (2002), known as LLC and Im et al. (2003), known as IPS. The LLC and the IPS require an infinite sum of groups as well as its do not accept that some panels have unit root and others do not have unit root. To overcome these limitations, authors proposed an alternative strategy of testing, which is a nonparametric Fisher-type test that combines individual unit root test's *p*-values. Fisher (1934) unit root test is allowed for unbalanced panel data along with solving the limitations of aforementioned panel unit root tests. We have used Fisher unit root test to check for stationarity or non-stationarity of our unbalanced panel data, which is as follows:

$$\gamma = -2\sum_{i=1}^{N} \log(\mu_i) \qquad (5)$$

In Equation (4), γ denotes testing variable, and μ_i signifies the *p*-values of individual unit root test for i panel in N time. Therefore, the null hypothesis H_0 and alternative hypothesis H_a for all panels are used in the unit root test.

According to augmented Dickey–Fuller (ADF)–Fisher unit root test, the null hypothesis H_0 may reject for a fraction, and one or all panels. The findings of particular unit root test states the alternative hypothesis.

Table 7 presents the outcomes of the Fisher unit root test. We found all variables, except for the SE, regulation freedom and government integrity, strongly reject the null hypothesis, including intercept only at the 1% and 5% level of significance, indicating that variables are stationary. However, when we include both intercept and time trends, we found the null hypothesis is rejected at 1% level of significance for financial freedom, trade freedom and GDP. On the other hand, columns 6–8 of Table 7 presents the outcome of the test at the first difference for ADF–Fisher unit root test, including intercept, intercept and time trend. We found that all series strongly reject the null hypothesis in both cases at the 1% level of significance, which implies all variables are stationary after the first differencing.

Regression Results and Their Discussion

In deciding on fixed-effect or random-effect investigations, we resort to Hausman (1978) test, which advocates whether the null hypothesis displays a statistical metamorphosis. If it shows such statistical differences, the fixed effect ensembles the examination. Based on results of Hausman (1978) test, we applied fixed-effects regression exploration. In Table 8, the outcome of fixed-effects regression analysis has been presented. The fixed-effects regression explains 62.66% of the variations in SE of BIMSTEC countries, while fixed-effects regression with global financial crisis explains 63.46% of the variations. The empirical result shown in column 2–5 of Table 8 implies that political stability has a significant negative effect on the extent of SE after controlling for country as well as time fixed effects. A stable political situation mitigates cause of internal conflict and violence. The smaller risk of internal

Table 7. Results of ADF–Fisher Unit Root Test

	Level				First difference			
	Intercept		Intercept and Trend		Intercept		Intercept and trend	
Variable	Statistics	Prob.	Statistics	Prob.	Statistics	Prob.	Statistics	Prob.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
SE	5.867	0.970	19.559	0.145	72.369	0.000	66.028	0.000
PS	31.196	0.005	18.341	0.192	46.245	0.000	39.640	0.000
RF	12.702	0.391	10.332	0.587	47.234	0.000	45.897	0.000
GS	29.595	0.009	12.103	0.598	77.333	0.000	61.885	0.000
BF	24.476	0.040	12.294	0.583	59.746	0.000	42.991	0.000
FF	32.417	0.004	32.562	0.003	76.990	0.000	58.414	0.000
TF	43.655	0.000	34.204	0.002	96.021	0.000	71.024	0.000
UMP	17.928	0.210	12.335	0.579	56.361	0.000	45.340	0.000
GI	7.512	0.913	19.963	0.131	61.890	0.000	40.039	0.000
GDP	60.654	0.000	52.861	0.000	81.594	0.000	66.760	0.000

Source: Authors' own elaboration based on results of unit root test.
Note: Lag order selected by AIC and maximum lag order to be 4.

Table 8. Results of Fixed-effects Regression

Variable	Model (1)				Model (2)			
	Coef.	Std. Err.	T	p > t	Coef.	Std. Err.	T	p > t
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
PS	−1.350	0.543	−2.490	0.015**	−1.103	0.574	−1.920	0.058*
RF	−2.784	0.682	−4.080	0.000***	−2.510	0.712	−3.530	0.001***
GS	−0.155	0.069	−2.250	0.027**	−0.161	0.069	−2.350	0.021**
BF	−0.111	0.034	−3.230	0.002***	−0.114	0.034	−3.330	0.001***
FF	−0.199	0.080	−2.490	0.015**	−0.196	0.080	−2.470	0.016**
TF	−0.094	0.022	−4.230	0.000***	−0.089	0.022	−3.970	0.000***
UMP	1.181	0.326	3.620	0.001***	1.285	0.335	3.840	0.000***
GI	−0.101	0.046	−2.210	0.030**	−0.115	0.047	−2.450	0.016**
GDP	−0.212	0.122	−1.740	0.086*	−0.183	0.123	−1.490	0.140
GFC					0.794	0.617	1.290	0.202
_cons	95.174	11.338	8.390	0.000***	93.729	11.345	8.260	0.000***
No. obs		93				93		
F		14.36***				13.20***		
R square		0.6266				63.46		
Hausman		70.81***				82.15***		

Source: Authors' own elaboration based on fixed effects regression results.
Note: ***, ** and * Indicate variable significance at 1%, 5% and 10% levels, respectively.

conflict and violence ensures a healthy political environment, and thereby political stability reduces the magnitude of SE. Accordingly, the outcome indicates that political stability decreases the size of SE in BIMSTEC economies. The outcome supports the theory and is similar to the findings of Farzanegan and Badreldin (2017); Friedman (2014); Ouedraogo (2017); and Razmi and Jamalmanesh (2014).

In the case of control variables, similar to Berdiev et al. (2018), we found regulation freedom has the largest noteworthy negative consequence on the size of SE. Schneider and Enste (2000) argued that SE activities are handled by regulations, thereby regulation freedom diminishes the size of SE. Another finding indicates that government spending has a noteworthy destructive influence on SE. The higher government spending raises wage in the formal sector, which leads to a decline in the size of SE activities. This result is consistent with Malaczewska (2013). We also found BF has a destructive impact on SE. However, the efficient business operations, infrastructure and regulatory environment create opportunity to new business, which leads to condense SE. Our observed outcome is steady and similar to the results of Koyuncu and Ünal (2019) and Schneider et al. (2010). Empirical results also indicate that fiscal freedom is negatively connected with the scope of SE. Higher tax rate, which is imposed by government, is related to a smaller size of SE. This is consistent with the study by Friedman (2014). Consistent with findings of Berdiev et al. (2018) and Koyuncu and Ünal (2019), we found trade freedom has a significant negative impact on SE. This outcome infers that without tariff and non-tariff hindrance conducted to increase import and export goods and services which leads reduce the size of SE. Another noteworthy result of this

study is that there are significant affirmative effects of unemployment on the magnitude of SE, which is similar to the findings of (Bajada & Schneider, 2009; Sahanoun & Abdennadher, 2019). This finding indicates that less flexible and more regulated labor market increases unemployment which leads to increase the scope of the SE (Schneider, 2010). Moreover, we observed that government integrity has a significant adverse impact on the extent of SE, which is consistent with findings of Friedman (2014). This outcome implies that good practices to control corruption declines the magnitude of SE. We found antagonistic effect of GDP growth on SE. It may be due to the fact that, higher economic growth decreases the magnitude of the SE.

Column 6–9 of Table 8 presents the results of fixed-effects regression with global financial crisis as shown in Equation (2). Similar to our baseline model, we found significant negative effects of political stability on SE. However, we found positive but insignificant effects of global financial crisis on size of SE of BIMSTEC countries. The likely reason for such insignificant effects may be that the origin of global financial crisis was the USA and its notable effect was in the USA and Europe. BIMSTEC countries also faced its consequences but that was insignificant as compared with the USA and European economies.

Conclusions

In the present study, we have empirically investigated the linkage concerning political stability and the extent of SE in developing economies, specifically in BIMSTEC countries using latest available data from 1998 to 2015, which was conducted for the first time as per the knowledge of the researchers. The outcome of the research implies that

political stability has an adverse influence on the magnitude of SE. Thus, a stable political condition abates terrorisms, disorderly government power change, violence, social unrest as well as armed, regional and religious conflicts. The lower change of internal conflict and violence along with low-abiding society presents a healthy political environment. Nevertheless, political stability decreases the extent of the SE in BIMSTEC economies. Therefore, we argue that the more the political stability in developing regions, the lower will be the SE. We also found that regulation freedom and SE are adversely associated. However, the SE activities are controlled by regulations, thereby regulation freedom reduces the size of SE. We observed that government spending has a noteworthy adverse result on SE, in that it implies that a larger government spending increases wages in the official sector, thereby reducing the SE activity. We examined the negative relation between BF and the SE. Thus, the efficient business processes, infrastructure and regulatory environment generate an opportunity to run new businesses, which point to declining SE. We found fiscal freedom has a negative effect on SE, which indicates that imposing tax reduces the magnitude of the SE. The terms of relations between BF and SE have a negative and significant impact when reducing non-tariff and tariff obstacle of businesses to import and export goods and services. In addition, the growing rate of unemployment increases SE activities. Findings of this research also suggest that the impact of government integrity on SE is significantly negative, meaning that a good control over corruption abates illegal activities. The outcome of this study exhibits a significant adverse influence of GDP on unofficial sector, which implies that further utilization of formal sector leads to decline in the magnitude of SE. In this study, these outcomes are robust for using different techniques.

The major contribution of this study is that it establishes an empirical relationship between political stability and the size of SE. Robust findings indicate that higher values of political stability contribute to mitigate the size of SE.

Implications of the Study

The present study adds to the existing comprehension of knowledge for researchers on establishing a link between political stability and the size of SE with a special focus on developing regions.

This study will encourage policymakers of developing economies to formulate such policies and strategies for promoting political stability, which, in turn, would lessen the magnitude of SE and increase operations of formal sectors, leading to acceleration of economic growth. For example, findings of this study will encourage policymakers to create public awareness so that they can ensure public service and empower consumers to control clandestine transaction. Therefore, we urge the policymakers to control all sorts of internal conflicts and violence as well as

encourage people to be devoted to constitutional rules and regulations.

Although the present study made an effort to investigate whether political stability influences SE, data inadequacy was the main challenge of this study. Hence, once data become available, future studies can be carried out using a greater number of indicators to construct a comprehensive index of political stability and then test the relationship between political stability and SE, which will produce a more robust and comparable results. In addition, we have incorporated no other political issues except political stability to observe the link it has with SE, whereas political polarization and authority patterns are utmost vital concerns in political science. Hence, future researchers can consider political polarization and authority patterns along with political stability to investigate the effects on the size of the SE, which will produce a more robust and comparable results.

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