

9. BUREAUCRATIC QUALITY AND FDI INFLOWS NEXUS: A SOUTH ASIAN PERSPECTIVE¹

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Abstract

The traditional factors are important for decision making process of multinationals to invest in host countries, but in developing countries transaction costs result in coordination failures. In this regard, an efficient bureaucracy is pivotal for reducing transaction costs and, thus, for promoting human interactions. For this purpose, this study has examined the relationship between bureaucratic quality and FDI inflows for selected South Asian countries (Pakistan, India, Sri Lanka and Bangladesh) during the time period 1995-2015 by controlling domestic investment, economic development, human capital, exchange rate, financial development and inflation. Using Driscoll and Kraay robust standard errors approach, the results are consistent with the economic theory of bureaucracy and FDI inflows. The study concludes that bureaucratic quality plays an important role in attracting FDI inflows to South Asia. On the basis of these estimates, this study recommends strong and efficient bureaucratic structure that imposes strong enforcement mechanism (without interrupting government policies) which may overcome the domestic coordination failures and promote new economic activities which attract multinational companies to South Asia.

Keywords: bureaucratic quality, foreign direct investment, economic development, human capital and panel data model

JEL Classification: H83; F21; O10; J24; C23

1. Introduction

Efficient bureaucracy⁵ leads to sustainable human interaction and can be far more evocative than radical elite (North, 1990; Abdullahi and Abdulsomad, 2014; Krislov, 2012). This

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⁵ Efficient bureaucracy means an ideal domestic administrative structure that reduces rent seeking attitude and transaction costs of multinationals. Bureaucratic quality is a measure to represent the available bureaucracy in a country. Bureaucratic quality is actually the institutional strength of an economy.

sustainable human interaction causes economic growth (North, 1990). Economic growth is a result of FDI inflows which is a combination of capital and knowledge transfer (Lucas, 1993; Balasubramanyam *et al.*, 1996). Explaining economic transformation is a central concern of economic analysis but the most challenging approach includes the contribution of domestic inefficient bureaucracy in impeding economic growth. Bureaucracy includes trained and specialized personnel recruited on merit to perform particular tasks efficiently within organizations (Abdullahi and Abdulsomad, 2014). Given the FDI led growth, the domestic administrative structure becomes a focal point for success of this hypothesis. For instance, leading economies such as England, Sweden, Japan, Korea and Norway have a professional bureaucratic structure that has a positive impact on their economic growth (Dahlstrom *et al.*, 2011). Among the classical arguments, Weber's explanation of bureaucracy as "a tool of economic growth" holds significance in economic literature. According to Weber, only meritocratic bureaucratic structure and division of labor facilitates economic growth. Bureaucracy can be autonomous and has the power to identify and impose structural arrangements (Breton and Wintrobe, 1975). But the bureaucratic power is not concentrated in one hand. The head itself acquires specialized units for various activities (Gregory, 1990). For instance, all Asian miracles show a direct linkage between bureaucratic quality and economic growth (Amsden, 1992; Wade, 1990). The empirical literature shows that FDI is one of the prerequisites for economic growth (Dar *et al.*, 2016; De Mello, 1997) while domestic administrative structure plays an important role in attracting FDI (Busse and Hefeker, 2007; Evans and Rauch, 1999). Hence, it has been revealed that FDI and domestic administrative infrastructure is an important relationship analyzed in literature (Saidi and Houria-Ghadri, 2013; Alshammari *et al.*, 2015; Mengistu and Adhikary, 2011; Bannaga *et al.*, 2013; Gangi and Abdulrazak, 2012; Fan *et al.*, 2007). The studies by Blanton and Blanton (2007) and Adam and Filippaios (2007) analyzed the role of political and civil liberties on FDI inflows, while democratic rights and FDI inflows nexus were analyzed by Harms and Ursprung (2002) and Li and Resnick (2003). Moreover, the relationship between democratic governance and FDI inflows have been found as positive and significant by Jensen (2003). These empirical studies have exhibited that efficient domestic infrastructure attract multinationals. On the other hand, the impact of black-market premium, tariff over imports ratio, contract enforcement, bureaucratic delay index, property rights, just judicial system and flexible labor regulation on FDI inflows have been analyzed by Gastanaga *et al.*, (1998) and Panjunen (2008). Moreover, studies by Asiedu (2006), Cuervo-Cazurra (2008) and Habib and Zurawicki (2002) found a negative relationship between corruption and FDI inflows while Egger and Winner (2005) and Mudambi *et al.*, (2013) found a positive relationship between corruption and FDI inflows.

Until now, the literature has revealed that domestic administrative structure has an important role in attracting FDI. In this regard, bureaucratic quality is one of the key indicators of domestic administrative structure which provides collective goods such as suitable business environment, assistance, regulations, obstacles on entering industry and suitable infrastructure (Busse and Hefeker, 2007; Weber, 1946, 1968). The empirical studies used bureaucratic quality variable along with other political institutions to explore FDI inflows (Busse and Hefeker, 2007; Schneider and Frey, 1985; Mishra and Daly, 2007; Jude and Leviege, 2015; Knack and Keefer, 1995) but the empirical literature on bureaucratic quality and FDI inflows nexus is rarely found in the case of South Asian countries. Being a developing region, South Asia enjoys a significant share of FDI inflows (UNCTAD, 2015). Understandably, the market size hypothesis and cultural proximity become the center of attraction for foreign investors. Indian economy accounts for US\$ 2 trillion, the only economy

to represent South Asia in BRICS. Pakistan is the 45th largest economy worldwide in absolute dollar terms. Pakistan is a member of the N11 economies and the G-20 developing economies. Sri Lanka is ranked 52nd in global competitiveness. Similarly, it is ranked 42nd in innovation out of 142 economies while Bangladesh is the N11 developing nation with a GDP of US\$ 175 billion. South Asia received US\$ 47 billion as FDI from various multinationals, while only the Indian economy received US\$ 44 billion in 2015, whereas Pakistan, Sri Lanka and Bangladesh received meager amounts of US\$ 822 million, US\$ 933 million and US\$ 2 billion in 2015, respectively (UNCTAD, 2015). On the other hand, South Asia is characterized by poor domestic administrative setup (Wignaraja and Sirivardana, 2004) which makes a strong case to investigate bureaucratic quality and FDI inflows nexus in South Asia. According to ICRG, Indian bureaucracy tops the list in South Asia, while quality of bureaucracy is quite average in other South Asian economies. Getting motivated by the literature and statistics, it is clear that bureaucratic quality led FDI inflows nexus is important and scarce in empirical research, generally, and in South Asia, specifically. As a result, in this study, empirical relationship between bureaucratic quality and FDI inflows for the time period 1995-2015 has been investigated for South Asia.

The rest of the study is organized as follows. Section 2 presents a review of literature which sets the theoretical and empirical foundations for this research. Section 3 describes data and specification of variables. Section 4 describes empirical results and analysis coupled with policy discussion. Section 5 contains the conclusion.

2. Literature Review

Developed countries promoted free trade and enjoyed large flows of capital for decades mainly due to modern liberal economic setup (Tintin, 2012; Dar *et al.*, 2016). The industrial revolution is a prime example of multidimensional role of FDI in developed countries (Hobson, 1914). Given the spillovers from FDI, its evolution in the developing countries still remains a point of concern (Dar *et al.*, 2016). Empirical research converges to the conclusion of local factors being a condition for multidimensional impact of FDI in host country (Borensztein *et al.*, 1998; Dar *et al.*, 2016). The classic explanation of capital flow is linked with profit motive (Nurkse, 1935). The capital flow is motivated by different rate of returns on its movement. This different rate of return is achieved by market size hypothesis. The greater market size ensures more sales which means higher profit. It can also be an indicator of potential profits for multinational enterprises in the host country (Hymer, 1976). Therefore, host country's level of development is a pivotal determinant of FDI inflows (Chenery, 1952; Blomstrom *et al.*, 1994; Resmini, 2000; Bevan and Eastin, 2004). The upsurge of FDI can be complemented by domestic investment of the host country (Arazmuradov, 2012). Coupled with domestic investment, FDI can provide productivity spillovers to the host country (Ndikumana and Verick, 2008). The availability of cheap labor as a necessary determinant for distribution networks, credit facilities, managerial skills and diversification of production to ensure investment decision by a multinational in any host country confirms the role of domestic labor to complement innovative capability of multinationals to promote productive spillovers (Wernerfelt, 1984). Along with the availability of cheap labor, a weaker real exchange rate can raise FDI inflows because multinationals can purchase more facilities in the form of inputs from host country. Froot and Stein (1991) find that weak real exchange rate of host country brings more FDI because depreciation of assets is less expensive in the host country as compared to the home country. Blonigen (1997) also supports the argument of weak real exchange rate of host country to bring more FDI. Similarly, level of prices also

plays a pivotal role in investment decisions by multinationals (Hesmati and Davis, 2007). As prices of commodities are higher, profit maximization objective is easier to achieve in host country. Alfaro *et al.*, (2004), Graham and Krugman (1993) and Lipsey (2004) find that financial development is also an important determinant for attracting FDI inflows and due to financial depth in any country, multinationals can borrow heavily from local market instead of bringing expensive capital from home country.

All traditional factors explained earlier play a potent role in multinational decision, but the developing economies are characterized by transaction costs hindering economic growth. The impact of FDI is manifold (De Mello, 1997) while searching for a dependable solution of slow economic growth in developing countries, FDI appears as a major stimulus for new production methods, technological know-how, management skills and entry to global markets (Jude and Leveuge, 2015). Endogenous growth supports FDI spillovers to local firms in the form of productivity gains and economic growth (Grossman and Helpman, 1991; Barro and Sala-i-Martin, 1997). Mody and Murshied (2005) finds that FDI emerges as a dependable substitute of local investment because developing countries suffer from liquidity constraints. In the developing economies, transaction costs such as search cost, enforcement cost and measurement cost hinders human interaction, thus subsiding economic growth (North, 1990). Transactions are the orderly interaction between people which is a necessity for human functioning while these human interaction reduces transaction costs in an economy through institutions. Institutions are the set of formal rules along with informal norms that structure human behavior through enforcement mechanism. Therefore, the investment decision in the developing economies is more linked with the ease in human interactions rather than traditional factors. The domestic institutional structure complements the transfer of knowledge and capital via multinationals. Therefore, national institutional structure has a direct influence on eclectic paradigm (Dunning and Lundan, 2008).⁶ A more efficient institutional setup also directly affects decision of multinationals about optimal output generation in a market (Brouthers, 2013; Meyer and Nguyen, 2005; Meyer and Peng, 2005). In addition, locational specific institutions also affect multinationals decision of investment in a region (Chan *et al.*, 2006; Yiu and Makino, 2002). The traditional factors as explained by eclectic paradigm theory still holds significance in multinationals decision making but in last few decades, the composition of competition, multinationals capabilities and rational approach have improved significantly leading to intensive knowledge based assets of multinationals (Dunning, 2004). This has increased the importance of FDI as an organizer of economic activity and the determinant shaping multinationals investment decision.

The advantages of multinationals as determined by OLI framework remains pivotal but modern setup of multinationals is linked with hierarchical costs, interdependence production and institutions which determine both the objectives and behavior of multinationals (Dunning and Narula, 2003). Multinationals of modern era are more inspired by enforcement mechanisms of host economy in order to secure their long run objectives (Kostova and Roth, 2002). Therefore, enforcement of institutions directly links with domestic bureaucratic structure or administrative structure because efficient bureaucratic structure reduces rent seeking attitude and transaction costs to multinationals. It means that bureaucratic quality is the institutional strength of an economy. The linkage between bureaucratic quality and FDI

⁶ *Eclectic paradigm theory was presented by John H. Dunning in 1979. It is also known as OLI framework or Ownership, Location and Internalization advantages framework. This theory explains the incentives for MNCs to invest abroad.*

holds greater significance because multinationals prefer regions with efficient bureaucratic structure (Mishra and Daly, 2007). The bureaucratic efficiency is also linked with minimizing information asymmetries encouraging multinationals in an economy. Therefore, efficiency of host economy's bureaucracy is directly linked with investment decisions of multinationals. The efficient working of host country's administration affects the extent of FDI spillovers. The theory by North (1990) about economic interactions among economic actors and actions are bounded with efficient enforcement mechanism and enforcement mechanism rests with the host country's bureaucratic or administrative structure which creates incentive for business practices (Niskanen, 1968; Evans and Rauch, 1999).

For multinationals, it becomes vital to consider the bureaucratic structure of the host country as a major determinant in order to secure its long-term goals (Jude and Levieuge, 2015). The efficient bureaucratic setup ensures protection of property rights for multinationals. In the case of risk of non-enforcement of property rights in the host country, multinationals would transfer low level technology in a fear of leakage. Along with the protection of technological investments, the protection of investors also depends upon the bureaucratic setup of the host country. Therefore, efficient bureaucracy fosters FDI inflows as it lowers administrative hurdles and enhances policy implication (Kalemli-Ozcan *et al.*, 2016) while inefficient bureaucracy can extract personal gains through illegal charges increasing services required by multinationals for operations (Dahlström and Johnson, 2007). This creates rent seeking attitude in formal rules and regulations which makes a setup of corrupt informal norms that provide incentive for arbitrary interpretation of laws becoming a disadvantage for multinationals (Ackerman, 1978; Flatters and MacLeod, 1995).

Empirical studies have also confirmed the positive influence of bureaucratic quality on FDI inflows (Al-Sadig, 2009; Knack and Keefer, 1995; Masron and Abdullah, 2010). Busse and Hefeker (2007) analyzed the panel of 83 countries for the time span of 1984 to 2003. Using Gross National Income (GNI), trade and inflation as explanatory variables, the results of Arellano-Bond Dynamic panel data estimation technique showed that bureaucratic quality positively and significantly affected the FDI inflows. Kinoshita and Campos (2003) examined the locational choices of multinationals in 25 transitional countries for the time span 1990-1998. Their main determinants were bureaucratic quality, education, market size, labor cost and inflation. Using Generalized Method of Moments (GMM), the results supported bureaucratic quality led FDI inflows nexus. Walsh and Yu (2010) analyzed the impact of bureaucratic quality on sector wise FDI inflows for 27 advanced countries. For the time period 1985-2008, openness, log real exchange rate, economic development and inflation were the main determinants along with bureaucratic quality. The results revealed that bureaucratic quality has a positive and significant impact on FDI inflows. Cleeve (2012) analyzed the role of institutional quality on FDI inflows in 40 Sub-Saharan countries. Bureaucratic quality was also included as an institutional variable. Using other explanatory variables such as market size, growth, physical capital and human infrastructure development, the results confirmed that bureaucratic quality led FDI inflows nexus. Kadir *et al.*, (2011) investigated the panel of 31 countries to find the key determinants of FDI in Africa with political risk and institutional variables such as bureaucratic quality and found a positive and significant impact on FDI inflows. Stoian and Filippaios (2008) analyzed the eclectic paradigm given by Dunning on the Greek firms working in Central and Eastern and South-Eastern Europe. By analyzing the 177 manufacturing firms for the time period 1994-1999, the results were supportive to the bureaucratic led FDI inflows hypothesis. Kalemli-Ozcan *et al.*, (2016) made up a sample of 16 countries from Eastern, Central Europe and Turkey for the time span 1999-2013 and examined the relationship between bureaucratic quality and

FDI inflows by controlling inflation, GDP growth, education enrollment, openness, exchange rate risk and infrastructure. Using traditional panel approach, the results confirmed the positive role of bureaucratic quality in attracting FDI inflows. The above discussion has concluded that analyzing bureaucratic quality led FDI inflows nexus in developing region is an important research question.

3. Data and Methodology

3.1. Specification of the Variables

The panel consists of four South Asian economies, namely Pakistan, India, Sri Lanka and Bangladesh for the time period from 1995 to 2015. Data are collected from International Country Risk Guide (ICRG) and World Development Indicators (WDI) to construct the panel. In order to correct the inflationary differences between the cross sections, variables are in 2010 constant US\$ terms. Similarly, all the variables are in natural logarithm form. Foreign Direct Investment (FDI) is available in nominal form and is converted to real terms after dividing it by the 2010 GDP deflator. FDI is a direct investment in a reporting economy which includes capital, reinvestment of profits and the transfer of any form of capital as a cross border investment where the direct investor holds a certain degree of shares or voting power, normally 10 percent or more in the recipient firm (World Bank, 2015). Considering FDI as explained variable is important because it is assumed to be less volatile than other capital flows and more suitable to explain economic progress (Borensztein *et al.*, 1998; Alfaro, 2003; Nunnenkamp, 2004; Azman-Saini *et al.*, 2010; Dar *et al.*, 2016). It is named as LFDI (Log of Foreign Direct Investment). Our main focus is to analyze the impact of bureaucratic quality on net FDI inflows in the case of South Asia. As the primary purpose of Multinational Enterprises (MNEs) is to earn maximum profit, its relation with bureaucratic quality of recipient economy is of prime importance. Poor bureaucratic structure can increase transaction cost hindering the profit motive of MNEs (Dunning and Lundan, 2008). For this purpose, we use bureaucratic quality variable from ICRG. This variable consists of four major points. It represents the capability, objectivity, consistency and shock absorber that marginalizes the changes in policy with the change in governments. The lower points of the indicator of bureaucratic quality represents poor quality of bureaucracy while more points indicate strength and expertise to govern. It means that bureaucratic quality represents the institutional strength of an economy (Busse and Hefeker, 2007). It is named as LBQ (Log of Bureaucratic Quality).

Domestic investment is also an important determinant of FDI inflows (Arazmuradov, 2012). Together with domestic investment, FDI can provide productivity spillovers to the host country. It can also be an indicator of potential profits for multinational enterprises in the host country (Hymer, 1976). The price effect of domestic investment dividing by Gross Fixed Capital Formation (GFCF) with GDP is used for analysis. GFCF represents the land improvements in the form of fences, drains and ditches, etc. It also includes plants, purchase of machinery and equipment, construction of infrastructure, schools, hospitals, offices, residential dwellings, commercial and industrial buildings (World Bank, 2015). It is named as LDI (Log of Domestic Investment).

Nurkse (1935) provides the classical explanation of capital flow to a host economy. The capital flow takes place only to earn maximum profit from the host economy. This maximum profit is dependent upon the market size hypothesis. A greater market size ensures more sales which means greater chances of earning maximum profit that contributes to the economic development of the country. Therefore, the host country's level of economic

development is a pivot determinant of FDI inflows (Chenery, 1952; Blomstrom *et al.*, 1994; Resmini, 2000; Bevan and Eastin, 2000). In this regard, we use real GDP per capita as a measure of economic development (Chunlai, 1997; Cheng and Kwan, 2000; Blattner, 2005). The increase in economic development attracts FDI inflows (Markusen and Venables, 1998). GDP per capita is obtained by dividing gross domestic product with total population of the relative year. GDP is defined as the sum of gross value produced by the residents of a country along with product taxes and excluding the subsidies from the value of the products. It does not deduct the depreciation value of fabricated assets or degradation of any natural resource of a country (World Bank, 2015). It is named as LGDPP (Log of GDP Per Capita).

The availability of human capital is important for distribution networks and diversification of production to ensure FDI in any host country (Borensztein *et al.*, 1998). Wernerfelt (1984) confirms the role of domestic labor to complement innovative capability of multinationals to promote productive spillovers. For this purpose, we used the data of total labor force as a proxy for human capital. Total labor force consists of people aged 15 years and older who supply labor in order to produce goods and services in a specific time span. Both employed and unemployed populations who are willing and able to work are included in the labor force. It excludes homemakers, care givers and workers in the informal sector of a country. It is named as LHC (Log of Human Capital). Similarly, a weaker real exchange rate may raise FDI inflows because multinationals can purchase more facilities in the form of inputs from host country. Froot and Stein (1991) and Blonigen (1997) find that weak real exchange rate of host country brings more FDI because depreciation of assets is less expensive in the host country as compared to home country. The study has utilized official exchange rate as a measure. It is calculated as annual based averages of the exchange rate of the local currency in the exchange market (World Bank, 2015). It is named as LOER. Walsh and Yu (2010), Graham and Krugman (1993) and Lipsey (2004) show that financial development is also an important determinant for attracting FDI inflows. As host country has more financial depth, multinationals can borrow heavily from local market instead of bringing scarce capital from home country. Broad money to total reserve ratio is used as a proxy for financial development. It is the sum of demand deposits of residents not of federal government, savings, and foreign currency deposits, traveler's checks and securities such as certificates of deposit and commercial paper (World Bank, 2015). It is named as LFD (Log of Financial Development). Similarly, level of prices also plays a pivotal role in investment decisions by multinationals (Hesmati and Davis, 2007). As prices of commodities are higher, profit maximization objective is easier to achieve in host country. GDP deflator annual is taken as a measure of inflation. It is the annual growth rate of the GDP implicit deflator. It shows the rate of price change in a country. It is the ratio of GDP in current local currency to GDP in constant local currency (World Bank, 2015). It is named as LINF (Log of Inflation).

3.2 Model Specification

Huber (1967), Eicker (1967) and White (1980) developed covariance matrix estimators to ensure valid statistical inference under the violation of any Ordinary Least Square (OLS) assumptions. These estimators provided consistent results in the presence of heteroscedastic residuals. Given the existence of heteroscedastic residuals, Arellano (1987), Froot (1989) and Rogers (1994) extended Huber's work by relaxing the assumption of homoscedastic residuals. They developed consistent standard error estimator in the presence of heteroscedastic residuals. Similarly, Newey and West (1987) developed heteroscedastic and autocorrelation consistent covariance matrix estimator. This test was the extended version of White's estimator even with zero lag length criteria. All these proposed estimators have a limitation of ignoring cross sectional correlation in panel data

analysis. Spatial dependence can become a problematic feature for empirical models if residuals are correlated in both between and within groups in panel data. To account for both special dependence and heteroscedasticity in cross sectional models, Parks (1967) and Kmenta (1986) proposed the Feasible Generalized Least Square (FGLS) method, but it had two limitations in micro and macro panel data analysis. Firstly, FGLS was appropriate only when cross sections N are higher than time dimensions T ($N > T$). Secondly, Beck and Katz (1995) criticized Parks and Kmenta's method for generating very small standard errors. It becomes inappropriate due to impossibility of having a non-singular matrix as $N > T$.

Beck and Katz (1995) proposed to rely on OLS estimates with Panel Corrected Standard Errors (PCSE). Based on large time dimension, standard errors were corrected for correlation even in small panels but PCSE estimator performed poorly during large cross sectional dimension N as compared to time dimension T . Therefore, during medium and large scale panels, it becomes inappropriate to adopt parametric correlations against spatial dependence. For large cross sectional dimension, parametric correlations should have sound assumptions because cross sectional correlations grow with N^2 and observations increase by N . Consequently, it is appropriate to use non-parametric corrections to tackle cross sectional dependence. Relying on large time dimension T , Driscoll and Kraay (1998) modified general non-parametric time series covariance matrix estimator to robust cross sectional dependence. They applied Newey-West type methodology which guarantees consistent estimator which is independent of cross sectional dimension N through adjustment of standard error estimates. Therefore, Driscoll and Kraay's approach rectify the deficiency which exists during large time dimension T and cross sectional dimension N as existed in PCSE approach which is inappropriate in large panel analysis (Hoechle, 2007). Driscoll and Kraay's covariance matrix estimator is equal to heteroscedasticity and autocorrelation consistent estimator given by Newey and West (1987). By this method, the estimated standard errors are consistent independently on cross sections N while consistency holds for a case where cross sections approach to infinity ($N \rightarrow \infty$) in Driscoll and Kraay's method. Therefore, Driscoll and Kraay's approach yields robust standard errors in the presence of heteroscedasticity, autocorrelation or cross sectional dependence.

Traditional Panel data is usually distinguished between fixed and random effects models. Random effect model is usually appropriate to apply on models where unobserved heterogeneity among cross sections are due to some factors which are constant over the period of time but vary between cross sections. Therefore, random effect models are suitable on those models having large cross sections N where cross sections are randomly drawn from the given large population (Baltagi, 2001; Hsiao, 2014; Arellano, 2003). On the other hand, fixed effect models tend to target omitted variables assumed constant over the period of time for cross sectional heterogeneity. For this purpose, fixed effect model is appropriate in the presence of relatively small cross sections N . These models are estimated through a matrix of dummies of each cross section and applying OLS which provides unbiased and efficient estimates. Here, the cross sections of the panel represents the four South Asian economies ($N=4$), each characterized by seven explanatory variables ($K=7$) over the 21 observations ($T=21$). Given that $N < T$, Hadri (2000) Lagrange Multiplier panel unit root test is applied to check the stationarity of all cross sections but variables came integrated of different order ignoring the Pedroni panel cointegration analysis. Similarly, panel Auto Regressive Distributive Lagged (ARDL) model is also ignored due to more explanatory variables as it leads to near matrix. Moreover, our model is free of cross sectional dependence and as $N < T$, so the possibility of instrumental variable analysis is also forfeited. Therefore, we use traditional panel approach of fixed effect and random effect model in our

analysis. Using the Hausman test, we finalize fixed effect model and test for cross sectional dependence, heteroscedasticity and autocorrelation in our model. The results provide the evidence of heteroscedasticity and autocorrelation using Modified Wald test for groupwise heteroscedasticity and Wooldridge test for autocorrelation. Given that our estimates from fixed effect suffer from heteroscedasticity and autocorrelation therefore we resort to Driscoll and Kraay (1998) standard error approach. For this purpose, fixed effect regression is implemented in two steps. Firstly, all the variables of the model $z_{it} \in \{y_{it}, x_{it}\}$ are transformed as given below;

$$\tilde{z}_{it} = z_{it} - \bar{z}_i + \bar{z} \tag{1}$$

here, $\bar{z}_i = T_i^{-1} \sum_{t=t_i}^{T_i} z_{it}$ and $\bar{z} = (\sum T_i)^{-1} \sum_i \sum_t z_{it}$. (2)

As the within estimator corresponds to OLS estimator

$$\tilde{y}_{it} = \tilde{x}'_{it} \theta + \tilde{\varepsilon}_{it}. \tag{3}$$

Secondly, this transformed regression model 3 is estimated by pooled OLS with Driscoll and Kraay (1998) standard errors.

4. Empirical Results and Analysis

Table 1 represents the summary of descriptive statistics at level specification of all the variables of the model. The variable LFDI has the highest mean value of 16.70 and domestic investment has the lowest mean value of -1.51. The variable human capital has the highest median of 17.88 and domestic investment has the lowest median of -1.48. The standard deviation of all the variables is within acceptable range showing little variations as the variables are in natural logarithm form. Moreover, FDI and bureaucratic quality variables are statistically significant at 1 percent while financial development is significant at 10 percent. The other variables are insignificant. In terms of the values regarding skewness and kurtosis, all the variables are within the acceptable range which shows that the variables do not have a serious problem of outliers (Forson and Janrattanagul, 2014).

Table 1

Descriptive Statistics (at Level Specification)

Variable	Observation	Mean	Median	Standard Deviation	Skewness	Kurtosis	Jarque Bera	Probability
LFDI	84	16.70	16.41	1.92	-0.26	4.99	14.85	0.00
LBQ	84	0.77	0.69	0.22	-0.32	5.10	16.95	0.00
LDI	84	-1.51	-1.48	0.26	-0.26	2.45	2.00	0.36
LGDP	84	6.98	6.88	0.52	0.5	2.55	4.50	0.10
LHC	84	17.87	17.88	1.43	0.05	1.96	3.79	0.15
LOER	84	4.15	4.09	0.36	0.27	2.16	3.43	0.17
LFD	84	1.754	1.68	0.49	0.62	2.92	5.50	0.06
LINF	84	1.92	1.96	0.55	-0.12	3.67	1.80	0.40

Source: Author's own estimates.

Our model is free of cross-sectional dependence, therefore traditional panel data analysis is utilized. The results of various fixed effect models are mentioned in Table 2. The models are differentiated according to time effect, country effect or both. All the models affirm a positive and significant impact of bureaucratic quality on FDI inflows, which are according to the established theory. The coefficient shows a major change due to both time and country effects. For domestic investment, only two models give significant and positive results, thus

showing a mixed impact on FDI inflows. The variable GDP per capita also records similar sign and significance level in all models. Though, the coefficient improves when both time and country effects are included. The existing human capital in South Asia also plays an important role in attracting FDI. The coefficient improves mainly due to time effect in the models. The improvement in the exchange rate can have a detrimental effect on FDI. The coefficient is both insignificant and negative in the presence of both time and country effects. Similarly, the coefficient value is also small due to both effects. Financial development in host region discourages FDI; in case of South Asia. All the models show a negative impact of financial development on FDI. Lastly, all the models show a negative impact of inflation on FDI inflows in South Asia. The value of coefficient improves due to the inclusion of time effect.

Table 2

Fixed Effect Estimates

Variables	FE (1)	FE (2)	FE (3)	FE (4)
LBQ	4.211*** [0.699]	4.898*** [0.706]	4.211*** [0.699]	4.898*** [0.706]
LDI	1.660* [0.911]	0.623 [0.963]	1.660* [0.911]	0.623 [0.963]
LGDP	2.240*** [0.802]	4.813* [2.450]	2.240*** [0.802]	4.813* [2.450]
LHC	3.808*** [1.092]	4.030* [2.342]	3.808*** [1.091]	4.030* [2.342]
LOER	-1.353** [0.561]	-0.094 [1.177]	-1.353** [0.561]	-0.094 [1.177]
LFD	-0.133 [0.173]	-0.354* [0.186]	-0.133 [0.443]	-0.354* [0.186]
LINF	-0.836*** [0.117]	-0.963*** [0.138]	-0.836*** [0.117]	-0.963*** [0.138]
Intercept	-60.29	-87.92	-60.29	-87.92
Observations	84	84	84	84
Groups	4	4	4	4
Time Effect	No	Yes	No	No
Country Effect	No	No	Yes	No
Both	No	No	No	Yes
R ² : Within	0.87	0.92	0.87	0.92
Between	0.73	0.88	0.73	0.88
Overall	0.54	0.65	0.54	0.65

Note: *, ** and *** represents significance level at 10%, 5% and 1%. Values in the parenthesis are standard errors.

Source: Author's own estimates.

The results of diagnostic tests are mentioned in Table 3. In order to choose between fixed effect and random effect, the Hausman test is used. The statistic value is significant and, therefore, the fixed effect model is preferred. Given that fixed effect model is preferable, we test for cross sectional dependence, heteroscedasticity and autocorrelation in fixed effect estimates. Using Breusch-Pagan LM test for independence, the chi-square statistic is insignificant, which means that the fixed effect model is independent of the problem of cross

sectional dependence. Using Modified Wald test for group wise heteroscedasticity, the chi-square value statistic is significant and shows the existence of heteroscedasticity in the fixed effect model. Using Wooldridge test for auto-correlation, the F-statistic is also significant and shows the existence of auto-correlation in the fixed effect model.

Table 3

Diagnostic Tests

Sr. No	Type of test	Statistic value	P-value
1	Hausman test (F.E or R.E)	Chi-square (7):159.70	0.000
2	Breusch-Pagan LM test for Independence	Chi-square: 5.36	0.497
3	Modified Wald test for group wise Heteroscedasticity	Chi-square (2, 4): 20.76	0.000
4	Wooldridge test for Autocorrelation	F(1,3): 85.72	0.002

Source: Author's own estimates.

Given the existence of heteroscedasticity and auto-correlation in our model, we resort to fixed effect model with Driscoll and Kraay (1998) standard errors approach which corrects the problems of heteroscedasticity and auto-correlation. The results of fixed effect model with Driscoll and Kraay's standard errors approach are presented in Table 4.

Table 4

Driscoll and Kraay Standard Errors Estimates

Variables	F.E (Driscoll and Kraay S.E)
LBQ	4.178*** [0.265]
LDI	1.667** [0.352]
LGDP	2.235*** [0.257]
LHC	3.815* [1.213]
LOER	-1.352 [0.723]
LFD	-0.133 [0.087]
LINF	-0.837*** [0.048]
Intercept	-60.35
Observations	84
Groups	4
Time Effect	No
Country Effect	No
Both	No
R ² : Within	0.87
Between	0.73
Overall	0.54

Note: *, ** and *** represents significance level at 10%, 5% and 1%. Values in the parenthesis are standard errors.

Source: Author's own estimates.

The bureaucratic quality coefficient is positive and significant with Driscoll and Kraay's standard errors approach, which is consistent with empirical and theoretical literature of bureaucratic quality and FDI inflows (Al-Sadig, 2009; Mishra and Daly, 2007; Jude and Leviege, 2015; Knack and Keefer, 1995; Masron and Abdullah, 2010; Busse and Hefeker, 2007). It shows that strength and expertise of domestic bureaucracy to govern without interrupting government policies increase net FDI inflows to the South Asian economies. Therefore, the role of bureaucracy is objective, consistent and discrete in attracting FDI inflows (Weber, 1946). It indicates that bureaucracy with characteristics such as irrational, dependable and committed to sustainable growth of domestic economy changes the perception of foreign investors about long-term investment. Efficient bureaucracies help investors to overcome coordination failures to promote new economic activities. The results exhibit that fair, efficient, and expedient South Asian bureaucracy can decrease multinationals' operating cost, which reveals that bureaucratic quality is a necessary determinant for FDI inflows in the case of South Asia. Therefore, bureaucratic structure has a direct influence on investment decisions of multinational in South Asia. A more efficient bureaucratic setup also directly affects decision of multinationals about optimal output generation in a market (Brouthers, 2013; Meyer and Nguyen, 2005; Meyer and Peng, 2005). The bureaucratic efficiency is also linked with minimizing information asymmetries encouraging multinationals in South Asian economies, therefore efficiency of South Asian bureaucracy is directly linked with investment decisions of multinationals (Busse and Hefeker, 2007). The efficient operations of host country's administration affect the extent of FDI spillovers. In this regard, economic interactions among economic actors and actions are bounded with the efficient enforcement mechanism and these enforcement mechanism rest with the host country's bureaucratic or administrative structure (North, 1990), which is proved by the coefficient of bureaucratic quality variable in this study. Moreover, the protection of property rights for multinationals are ensured by efficient bureaucratic setup like protection of technological advancements, the protection of investors and the protection of incentives to create business activities (Meyer and Sinani, 2009). Therefore, efficient bureaucracy fosters FDI inflows as it lowers administrative hurdles and enhances policy implication (Kalemli-Ozcan *et al.*, 2016). The upsurge of FDI can be complemented by domestic investment of the host country (Arazmuradov, 2012). Together with domestic investment, FDI can provide productivity spillovers to the South Asian economies. Domestic investment can also be an indicator of potential profits for multinationals in the host countries (Hymer, 1976; Ndikumana and Verick, 2008). The positive coefficient of domestic investment states that level of domestic investment in various sectors in South Asian economies encourage foreign investors. The host country's level of economic development is a pivotal determinant of FDI inflows (Chenery, 1952; Blomstrom *et al.*, 1994; Resmini, 2000; Bevan and Estrin, 2000). The multinationals are attracted to the South Asian region due to greater market size, as it is evidenced by the coefficient of economic development, which is positive and significant at 1%. Domestic labor is an essential determinant to promote innovative spillovers in host economies (Wernerfelt, 1984) because multinationals look for cheap labor in the host country to ensure their higher profits, which is not possible if multinationals have to bring labor by themselves to the host economies. Borensztein *et al.*, (1998) also confirms the availability of labor as a determinant to attract FDI in a host country, which means that the transfer of knowledge and capital via multinationals are very important for better domestic human capital. In this regard, the estimate of human capital is both positive and significant. The other determinants for attracting FDI to South Asia are financial development and real exchange rate, which are negative but insignificant. It reveals that

multinationals only look to maximum profits through other determinants, as explained above. They are not highly concerned about the level of financial depth and exchange rate conditions in South Asia, which is also confirmed by the studies of Walsh and Yu (2010) and Dutta and Roy (2011). The inflation estimate indicates that multinationals are discouraged by the high prices in the South Asian economies because higher prices in the host economies may affect the objective of higher profits, which is only possible by using cheap inputs. The increase in domestic price levels will hinder the decisions of multinationals about investment in host economy (Busse and Hefeker, 2007).

5. Conclusion

This paper investigated the relationship between FDI inflows and bureaucratic quality in South Asia by controlling for domestic investment, economic development, human capital, official exchange rate, financial development and inflation for the time period 1995-2015. Using traditional panel data approach, fixed effect model on the basis of Hausmann specification test statistic is applied. The diagnostic tests identified the problem of cross sectional dependence, heteroscedasticity and autocorrelation in fixed effect estimates which have been corrected by using Driscoll and Kraay (1998) standard errors approach. The results revealed a positive and significant impact of bureaucratic quality on net FDI inflows in the South Asian economies. This result is consistent with the available theoretical and empirical literature (Dunning and Lundan, 2008; Busse and Hefeker, 2007; Schneider and Frey, 1985; Mishra and Daly, 2007; Jude and Levievge, 2015; Knack and Keefer, 1995). This paper highlights the role of state bureaucracy in eliciting foreign investment in the domestic economy (North, 1990). It shows that bureaucracy with characteristics such as non-rent seeking, dependable and committed to sustainable growth of domestic economy changes the perception of foreign investors about long-term investment. Efficient bureaucracies help investors to overcome coordination failures to promote new economic activities. Moreover, provision of essential and limited information regarding domestic economic structure by bureaucracies to new investors can increase the likelihood of investment in domestic economies (Busse and Hefeker, 2007). The result confirms that multinationals as determined by OLI framework remains pivotal, but modern FDI setup is linked with hierarchical costs, interdependence production and institutions which determine both the objectives and behavior of multinationals (Dunning and Narula, 2003). They are more inspired by enforcement mechanism of host economy in order to secure their long run objectives (Kostova and Roth, 2002). On the basis of above-mentioned discussion, this study concludes that bureaucratic quality and FDI inflows nexus require more empirical attention in the case of South Asian countries, specifically, and in the developing world, generally. On the basis of results, this paper recommends to focus on bureaucratic structure in the case of South Asia. Despite this research, this study stresses that it is only a beginning on understanding the relationship between domestic bureaucratic quality and FDI inflows in South Asia. An ambitious step forward is to use data of weberianness scale which can be generated via survey data analysis.

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