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Do Remittance Outflow and Exchange Rate Wavering Distress Domestic Private Investment in ASEAN? A Conceptual Panel Cointegration

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ABSTRACT

The need for private investment is located in both developing and developed world economies. In this regard, Association of South East Asian Nations are always seen where the private investment is well hosted and is found to increase in ready course of time. However, the needs and requirements for private investment have changed drastically in the growing world of today where the race is to fetch economic growth and development at the back of sound and consistent flow of private investment. This research paper states the current scenario of private investment in the ASEAN and suggests for the tackle of its modules such as worker remittance and their outflow as well as exchange rate wavering to affect nature of private investment. Being conceptual in nature, empirical and theoretical views are highlighted together with the panel data analyses for conduction of regression results.

1. Introduction

Falling length of private fixed investment, since crisis at global front – with negligible recovery, is being viewed as a result of lack of economic activities, financial retrenchment, and policy uncertainty that is crucial to be addressed for its restoration. One of the suggestions made are of encouraging firms toward persistent spending of capital[1]. Despite of 25 percent of fall in private investment in advanced economies, following the trends by mid-2000 and afterwards, private investment has narrowed down in developing economies (IMF, 2015).

Beliefs of private investment in acquisitioning of affirm profit and consistent state of withheld of business is found uncertain, if the investment climate is clouded by the perceptions of worse future state of macroeconomic statue (Guimaraes & Unteroberdoerster, 2006). Thus, need that is felt in this scenario is to disprove such beliefs and to ascertain corporate level profitability for the sustained stay of private investment. Stimulation of private investment relaxes when the public sector is hesitant or

[1] Suggestions made for defining risk sharing strategies among public and private sector investment activities, *Global Financial Report*, IMF, (October, 2014).

has insufficient resources to complement private investment. Hence, offering of essential services by the public sector investment is not insufficient in pushing up the private sector confidence in the race of doing business with undisrupted flow of investment capital (Hassan, Othman, & Karim, 2011).

A view of the Southeast Asia, in being specific to overseas investment, makes it to wonder that; flow of international investment, in relative to economic growth, is not that comparative of similar move in each nation in the slab. Although bearing average economic growth rate of 5.4 percent by Southeast Asian Nations (ASEAN)[2] since last two decades is quite appealing as to be opted as role model for other developing nations, however, the benefits of such position of economic growth are not equal in terms of braking out the economic nuisances that countries in that region share. Flow of Foreign Direct Investment (FDI) to that region exceeded from that of in China, by 2013, and declared as the region with gushing flows of FDI, by 2012 which reached at 20 percent from 7 percent since mid of 1980's, in respect of ASEAN share of FDI in developing countries Organization of Economic Cooperation and Development (OECD, 2014). However, from investors' perspective, the ASEAN further needs to assemble a mechanism so as to ease off the businesses for the trouble-free carry of investment within the region and to narrow down the gaps of economic development within their own.

Employment generation is an outcome of investment (Keynes, 1936). Investment of funds in ASEAN of which US shares for one half, facilitates the people by offering jobs. It is likely noticed that investors choice of doing business relies upon the market size that is to facilitate for export of products – once finished in production. Table 1 clarifies that employment contribution in each of ASEAN member is more than 100,000 affiliated, in terms of work, with foreign investors[3], with over 776000 in-total.

TABLE 1

Employment of Foreign Citizens in ASEAN

Country	Total Foreign Work Force (In Million)
Singapore	1.30
Thailand	2.87
Malaysia	2.30
Indonesia	0.10
Philippines	0.14
ASEAN5	**6.71**

Source: ILO Regional Office of Asia and the Pacific, The World Bank, Paul Hype Page & Co., ABS-CBN News. Year of record for each data base is for the year 2019.

From OECD prospect of doing business, if ASEAN is grouped into two, Singapore is first choice of investors and subsequently Thailand, Malaysia, and Indonesia, at the secondary selection

[2] Countries included are Cambodia, Brunei Darussalam, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand and Viet Nam.

[3] US majority-owned affiliates.

(ASEAN4)[4]. It is none other than the variation in transformation of macroeconomic state to foreign investors that differentiate among the ASEAN countries on account of choice of the capitalists to take their investment of funds into particular nation. One of the main factors that make Singapore as first choice of investors is due to its rating of doing business. Table 2 clarifies that Singapore and Malaysia are the top ranked countries in ASEAN region to enforce the foreign investors to pose towards, nevertheless, with Myanmar at the nastiest scenario.

TABLE 2

Ranking at Ease of Doing Business in ASEAN5

Country	Ranking (2018)	Ranking (2019)
Singapore	84.97	85.24
Malaysia	78.3	80.60
Thailand	77.39	78.45
Indonesia	66.54	67.96
Myanmar	44.21	44.72

Source: Doing Business Facts Sheet for Asia and Pacific, World Bank Group (2019)

The basic accelerator model suggests that economic growth in return brings positive effects on the investment, either public or private. It opens the debates to visualize the importance of macroeconomic states and their effects on the private investment and in reversal, on economic indicators. Bullish or either bearish trends of foreign investment signify that job creation and balance of payments are the macroeconomic statures that ought to change by its base. However, it is noticeable that either the jobs are earned by locals or by the immigrants. In sighting past, researches were done to explore for the worker remittances' effect of private investment into the country where these inflows are being accrued. The matter of concern is; what possibly it may pose an effect on the country of immigrant – is still requires to be illuminated.

The motivational factor behind this study is traced from basic Keynes' (1936) model of Employment, Interest and Money suggests that employment remains unaltered if it is followed by consistency in investment as well as consumption. Noticing this notion, it makes sense to develop a hypothesis that if emigrants are sending big bulk of money to their parent state and keeping less in the country of Asylum, is to none other than explaining a version of less liquidity of money and thus, depressing the state of local demand for product, which is one of the stimulators of investment. Apart from this, exchange rate fluctuations are also the key determinant of investors' decisions in deciding for their future business position and settlement of business plans that are to encourage their profit and market share. Thus, noticing these facts develop a charm to probe for empirical analysis for exploring and later suggesting for how could such dynamics are to be dealt and what strategies are

[4] This study attempts to focus on Singapore, Thailand, Malaysia and Indonesia.

to be opted for the refining of measures to readjust the thinking of domestic policies for smooth flow of private investment into the particular region.

2. Review of Literature

2.1 Empirical View

Studies are in sufficient number that looked for the state of private investment's effects of the public investment[5]. Results that were published mostly stated positive relationship of the two. Though differencing in the methodologies used i.e. Erden and Holcombe (2005) went with Two Stage Least Squares (2SLS), however, Bende-Nabende and Slater (2003) worked with method of panel co-integration. Tending to consider ASEAN countries for the period of analysis ranged from 1965 to 1999, the results indicated for negative association of private and public investment (Bende-Nabende & Slater, 2003). Despite of this, fewer researchers explored, within a specific country, industry effects of public and private investment interactions (Zugasti, García, & Maldonado, 2011; Hassan *et al*., 2011).

It is accepted on the ground of universality that; most of the researches on analyzing private investment begin with neoclassical investment theory's anchored conceptual framework[6]. Capturing the private investment against its determinants, Ghura and Goodwin (2000) theoretically considered the same, however, financial development (proxies by credit in respect of GDP to private sector and capitalization of stock market to GDP), public investment, and exchange rate (either at its own or in terms of inflation rate) are some of the key determinants of private investment (IMF, 2015).

FDI being component of private foreign investment stands to be sensitive to its host country's policies and perspectives (taxes imposition and liberalization). Multinationals establish business ground to offer subsidized products and on the other hand settle ground for their absolute competitiveness (Banga, 2013), however, tend to expand with-ease if the host country follows liberalized approach towards FDI[7]. Nations that provoke privatization policies invite economic growth in terms of upraise of GDP (Mehmood & Faridi, 2013a). Therefore, it is appreciably noted that investment, in shape of FDI, exhibits charm of pulling up the economic growth (Mehmood & Hassan, 2015).

In the same context, Duggan, Rahardja and Varela (2013), employing FDI index, found eight percent of increase in total factor productivity of Indonesian manufacturers in result of service sector liberalization for FDI. Private investments are more progressive, if national legal system on one block is established on ground of commonality. This reduces the transaction costs of the foreign investors that operate in a particular region (Darsa, 2012; Wong, 2013).

Private sector nullifies the beliefs on its narrowed horizon of job creation. Rather, if peeped into ASEAN case, US affiliated firms are excessively hiring the people of given state (OECD, 2014).

[5] Ahmed and Miller (2000); Greene and Villanueva (1991); Erden and Holcombe (2005); Bende-Nabende and Slater (2003).

[6] See Akkina and Celebi (2002), Kannapiran (2001), Naqvi (2002), Oshikoya (1994), Pelgrin, Sebastian, and Serres (2002), Haiyan, Zinan, and Ping (2001).

[7] See Mehmood and Faridi (2013b). Liberalization accounts for the proper address of macroeconomic issues like; exchange rate stability, ease of credit, export promotion strategies, inflation control, access of cheap labor and least barriers on importation of machinery etc.

In supplement, private sector when contributes in creating worker remittance, exhibits role of enabling its host to develop sound base of economic growth. Rahman (2015) found, through pounding Johansen cointegration technique, long run tie ups of worker remittance, economic growth, and private investment.

Light on same natured results was thrown by Okodua (2015), however, analyzing for the effect of worker remittance on private investment – establishing linear dynamic panel model under the method of Generalized Method of Moments (GMM). Income of emigrants is of multilateral characteristics. If it contains positive relation with private investment, does endorse to settle other macroeconomic aspects too, like of poverty (Faridi & Mehmood, 2014). Extending the verdict further, basing on the flexible accelerator model of Fry (1998), Khatib, Altaleb, and Alokor (2012) tempted to test Gross Domestic Investment (GDI) of Jordan for macroeconomic determinants[8] and had an outcome that GDP and export were positive and significantly contributed to GDI, though with FDI too, however, with less strength.

Development of domestic financial sector and human capital also stood as positive to GDI. Change in annual Exchange rate (Annual) is suggested as a proxy measure for macroeconomic stability. As suggested by Mavrotas (1997) and later brought into empirical finding by Naqvi (2002), was enabled to demonstrate – using Vector Autoregressive Model (VAR) that real exchange rate fluctuations (uncertainty) effected private investment, in negative. Same results were published by Solimano (1989); Dixit and Pindyck (1994); Rodrik (1991); Hubbard (1994); Servén (1999).

2.2 Theoretical View

2.2.1 Marginal Efficiency of Capital of Keynes and Fisher

Eklund (2013) reviewed Keynes and Fisher to argue that investment decisions are reliant upon present value of the expected future revenues. As far as the opportunity cost of capital equates the expected future revenue, the present value turns out to be zero and investment decisions are thus to pertain. Future cash flow, symbolically *C (t)*, is generated after investment activity takes place. The net present value can be expressed as in Eq. [1]

$$NPV = -K_0 + \int_0^{\infty} C(t)e^{(g-r)t}dt \qquad [1]$$

Whereas, the growth rate is expressed by g and the discount rate which is the opportunity cost of capital is reflected by symbol *r*. By the time *r* equals *i*, the *NPV* stands to be zero. The PV of investment is written as $C_1/(r-g)$ which implies that $PV/I = 1$. According to Keynes and Fisher, the marginal efficiency of capital of the former and internal rate of return of the later are denoted by *i*, which the return on investment. Baddeley (2003) quoted that as per Keynes' verdict, the investment extends into its course unless the marginal efficiency of any capital assets no longer exceeds the currently prevalent rate of interest. The *NPV* becomes principal determinant towards investment decisions. Wherein, the humans, according to Keynes, are entangled in irrational and volatile

[8] Real GDP growth rate, FDI as ratio of GDP, exports as ratio of GDP, financial intermediation (proxied by M2 as ratio of GDP), human capital (proxied by secondary school enrollment), domestic credit availability as ratio of GDP.

expectations towards the decision process of carrying out investment activities, and for particular, in futile economies.

2.2.2 Investment in Lens of Neoclassical

Neoclassical believed investment decision of firm synonymies to the optimization problem. To Jorgenson (1963, 1967, and 1971), a business firm tends to optimize her stock of capital only after the maximization of profit within the given course of time. Herein, the conventional Cobb-Douglas production function can be written as in Eq. [2].

$Y(t) = f(K, L)$ which equals $AK^{\alpha}L^{1-\alpha}$ [2]

The profit function of firm is expressed in Eq. [3].

$$\lambda(t) = \phi(t)Y(t) - \partial(t)I(t) - \chi(t)L(t) \quad [3]$$

Whereas, profit λ is achieved after cost of capital ∂ and labor χ are settled. The current value of firms is extracted out in Eq. [4].

$$V_0 = \max imizing E_{\Phi} \int_0^{\infty} \eta(t)e^{-rt}dt = E_{\Phi} \int_0^{\infty} \left[\phi(t)Y(t) - \partial(t)I(t) - \chi(t)L(t)e^{-rt}dt\right] \quad [4]$$

The term *E* is operator of expectations which is conditional on the set of information set of Φ.

After the adjustment of Lagrangian, the expression turns out to be as given in Eq. [5].

$$L = \int_0^{\infty} \left[\phi(t)Y(t) - \partial(t)I(t) - \chi(t)L(t) + \lambda(I - \delta K) - \lambda \dot{K}\right] e^{-rt}dt \quad [5]$$

Moreover, the opportunity cost that relates to the capital being invested must equate the shadow price. Thus the Eq. [6] can be written as;

$$\frac{\delta H}{\delta \lambda} = \frac{\delta K}{\delta t} = I - \varphi K = zero \quad [6]$$

Which is to explain zero net investment at the equilibrium state and the depreciation of capital being equal to gross investment, thus Eq. [7] can be furbished.

$$\frac{\delta H}{\delta \lambda} = \phi f'_K - \lambda\delta = zero \quad [7]$$

Moving back to Cobb-Douglas Production with the addition of technology factor, the marginal product of capital, after multiplied by profit (ϕ) turns to be the one as expressed in Eq. [18].

$$\frac{\delta H}{\delta K} = \phi \frac{\alpha Y}{K} = c \quad [8]$$

Solving for K, the optimal stock of capital is found in Eq. [9].

$$K^* = \frac{\phi \alpha Y}{c} \quad [9]$$

Whereas, the stock of capital depends upon the output, the price of output as well as the cost of capital.

2.2.3 The Accelerator Theory

Clark (1917) suggested the accelerator principle and later by Samuelson (1939a, 1939b), it became well conversant of its applicability. In this model, the well-spoken assumption is the fixed price. Therefore, given that price is turned closer to constant, the s and r variables of Jorgenson (1963) get reduce to what it is highlighted in Eq. [10].

$$K^* = \alpha Y \qquad [10]$$

Whereas, the Eq. [11] illuminates the eminent principal that investment in any period depends upon the growth of output.

$$I = \alpha \dot{Y} \qquad [11]$$

Nevertheless, investment in each phase of production relies upon price of an output. Not only this the input cost and interest rate which are some of the well-known determinants of cost of capital are also to play their role in materializing the description of investment. Simultaneously, the adjustment of capital stock is assumed to be complete and instantaneous. Together with the borrowing of concept related to stock of capital, Accelerator Theory somehow turns to be indistinguishable from that of Neoclassical Theory (Eisner & Nadiri, 1968).

Furthermore, the principal of accelerator also synonymies to that of Keynesian approach of investment determination. However, Keynes is critical towards the beliefs of approaching adjusted equilibrium. It is due to transitioned expectations of businesses which lead to no permanent point of stay for the further investment. Therefore, the capital stock is unsaid as an ultimate determinant of investment and more precisely from the side of private sector.

3. Methodological Issues

The panel data are mostly known as longitudinal or cross-sectional (time series) data, having observations of same unit in different periods of time (Kennedy, 2008). If panel data is measured for group effect (individual) or either time effect or even both, such attributes are analyzed by the mean of fixed and random effect models. The researchers are found interested in panel data modeling due to more and more availability of data and for particular, exploration of diverse issues by the mean of variability in the longitudinal data unlike in cross-sectional and time-series alone. However, panel data modeling require sophisticated handling of the data format. Mostly, the problems usually come from panel data itself, interpretation of the results, and at foremost, the selection of modeling technique.

3.1 Types of Panel Data

Panel data consists of *n* entities. Each of the entity includes *T* no. of observation to be measured in time *t*. The panel data has to be analyzed with caution. The class of panel data varies among balanced and unbalanced panel as well as fixed and rotating.

3.1.1 Long and Short Panel Data

The long panel has large time period (*T*) but fewer entities (*n*). Whereas, large entities (*n*) with small time period (*T*) is said to be as short panel data (Cameron & Trivedi, 2009). On the similar note, short panel data is said to be wide in cross sections however short in length. On the other hand, long term panel is narrower in width but time extended. The researcher needs to be careful enough while measuring either of the forms of panel data for scientific analyses.

3.1.2 Unbalanced and Balanced Panel Data

Whenever data set has entities with different number of observation, the panel data are considered to be as unbalanced. Thus, some of the cells of data sheet are with zero frequency and therefore, total observations are not *nT* in unbalanced panel. On the contrary, balanced panel contains entities with measurements in time periods. Each cell has only one frequency thus total observations are treated as *nT*.

3.1.3 Rotating and Fixed Panel

If the set of individuals are to vary from one period to next, the set of data is said to be rotating. Whereas, if each period contains same entities, the set of panel data is known as fixed panel (Greene, 2008).

3.2 Quality of Panel Data

The quality of panel data is ensured after the cleaning of the data. It is because panel data is reflected in proper mode after well-arranged cross-sectioned and time-series variables. Any other form of arrangement is to forego format of panel data and shall no longer have any econometric sense. Some of the check points located by Park (2011) for researcher handling panel data are described as;

1. To ascertain longitudinal data with some fixed and random effects.

2. To check the consistency of the entities and subjects.

3. To observe that the time periods are inconsistent but changing. In some sets of data, the time periods are fixed but still are used as multiple time periods i.e. yearly or weekly sets of data.

4. To examine more than one observation in one time period.

5. To be careful in selecting consistent method of measurement. The measurements are not commensurable if some of the entities are measured in one method and other in another method. Mixed methodological measures are to be avoided for satisfactory and interpretable results.

3.3 Basic Models for Regression Estimates

Panel data models are examined for individual effects, time effects, or even both. These effects are distinguished to be either fixed effects or random effects. The former accounts to examine whether the intercepts vary across the group or period of time the data are being analyzed. The later explores for the differentials in error variance across the groups or period of time the data are being considered for the analyses.

3.3.1 *Pooled OLS*

Greene (2008) writes that; if the individual effects say (u_i) is not to exist (u_i = zero), the Ordinary Least Square (OLS) is to produce consistent estimates of parameters. The functional form of which is given in Eq. [12].

$$y_{it} = \alpha + X'_{it}\beta + \varepsilon_{it} \quad [12]$$

where (u_i = zero).

To Greene (2008) and Kennedy (2008), OLS have five core assumption and are detailed as;

1. The assumption of **Linearity** is to ensure that: the dependent variable must be formulated in form of linear function of the set of independent variables as well as the error term.

2. The assumption of **Exogeneity** is to confirm that: the expected value of error terms are to be non-correlated with any of the regressors in the given model.

3. The disturbance should have same variance (**homoskedastic**) and not related with one another (**no autocorrelation**).

4. The series of observation on each independent variable are to be **non-stochastic** however, fixed in the repeated samples with no measurement errors.

5. The assumption of **full rank** suggests of no exact linear relationship among the independent variables. Therefore, the variables in each model should be free from mulicollinearity.

In case if individual effect (u_i) does equal zero in particularly the longitudinal data, the heterogeneity may affect the assumption 2nd and 3rd part a. Moreover, if the error term is characterized by variation in the variance and also vary across the individuals, it leads to the problem of heteroskedasticity and thus violates the assumption 3rd part b. As far as assumption 2nd is not reinstated, estimates of random effect are considered biased. In that case, OLS will no longer be unbiased.

3.3.2 Fixed Verses Random Effects

The core difference between random effect and fixed effect model is the prevalence of dummy variables. The intercept of fixed effect model as well as the disturbance term is the parameter estimates of dummy variable. However, the slope across the groups and time periods remain the same whether it is fixed or random effect model. The functional forms of both are written in Eq. [13] and Eq. [14].

Random Effect Model: $y_{it} = \alpha + X'_{it}\beta + (u_i + v_{it})$ [13]

Fixed Effect Model: $y_{it} = (\alpha + u_i) + X'_{it}\beta + v_{it}$ [14]

The u_i is fixed/random effect which is specific to group or the time period which is excluded in the regression. The errors are independently and identically distributed $v_{it} \sim \text{IID}(0, \sigma_v^2)$. Given that the specific individual effect is not time variant and is considered to be as part of an intercept, therefore, u_i is to correlate with that of other regressors in specific model. Thus the 2nd assumption of OLS is held to be non-violated and thereby estimates of fixed effect model are executed by least square dummy variable regression which is simple OLS with set of dummies.

The random effect is examined by the mean of Lagrange multiplier (Breusch & Pagan, 1980). The *F* test is incorporated to testify fixed effect. If the null hypothesis is failed to be rejected in either

of the test, the pooled OLS regression is to be incorporated for desired estimation of model. Further to that, Hausman (1978) test is incorporated to publish comparison between fixed and random counterparts. Particularly, if null hypothesis (individual effects are uncorrelated) is failed to be rejected, the random effect model shall be prioritized over the fixed effect.

4. Conclusion

At a global front, growing race between developing and developed countries essentially needs to distinguish that economic growth and development targets are never achieved without the ability of investment of a country and optimal usage of productive resources. In this regard, the role of private sector investment cannot be neglected because this only sector exhibits to promote efficient use of available resources and comes up to certain the trend of quality gross domestic product of specific country.

However, it is obvious that in the world of today, the needs for investment together with the business environment have altogether changed drastically. Keeping in view the investment needs in supplement to the determinants of investment where exchange rate and remittance outflow are some of the well-known components that vary the price level as well as the nature of demand for good in the host country at the back of slippage of the foreign capital, it is therefore, needed to establish sound platform for private sector investment so that the national targets of growth and development remain unaltered.

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