



Theory and Methodology for Financial Infrastructure of Foreign Direct Investment in Developing Countries: The BRICS Case

Lei Wang¹, Artur R. Nagapetyan^{2*}, Elizaveta A. Lutsenko³, Viktor N. Pakhmutov⁴

¹Center for BRICS Studies, Fudan University, Shanghai, China, ²Far Eastern Federal University, Vladivostok, Russia, ³Far Eastern Federal University, Vladivostok, Russia, ⁴Far Eastern Federal University, Vladivostok, Russia. *Email: art9309@mail.ru

ABSTRACT

Global investment imbalance is suggested to be one of three main global economic problems. The purpose of this paper is to analyze possible solutions of global investment imbalance with methods of behavioral economy. The existing models of financial valuation tools that proved to be effective in the developed economies cannot be used effectively for the developing ones. The emphasis of the study is on BRICS countries as a special agent of emerging economies' interests. By means of an analytical model and panel data, the paper is to modify financial assessment tools with a regard for developing countries' specific features. The main contribution of this paper is to deepen the concept of pricing deformation, which is characterized in that the behavioral abnormalities are considered as the basis of deformations. The results are to reveal how to employ risk return trade-off concept on investing in rapidly developing countries.

Keywords: BRICS, Foreign Direct Investment, Financial Assessment Tools

JEL Classifications: N2, O16

1. INTRODUCTION

Foreign direct investment (FDI) has a vast amount of definitions in the existing literature. For instance, the international monetary fund gives a following insight into this term. FDI is a long-term relationship based on the investment reflecting a lasting interest of investor from one country in an entity resident in an economy other than that of the investor. Lipsey (2001) defines FDI as a intermarket kind of investment that is willing to companies resident in one country to participate in business activities on the territory of the other residences (Lipsey, 2001). Griffin and Pustay (2007) argues that FDI refers to the ownership or control of 10% or more of an enterprise's voting securities or the equivalent interest in an unincorporated business (Griffin and Pustay, 2007). Farrell (2008) regards FDI as a package of capital, technology, management, and entrepreneurship, which allows a firm to operate and provide goods and services in a foreign market (Farrell, 2008).

The determinants of FDI need to be put under scrutiny, if FDI is to be explored as a system. Some scholars examine political variables

(Root and Ahmed, 1979; Schneider and Frey, 1985; Stevens, 1969) such as corruption, political risk and stability (Gastanaga et al., 1998; Moosa, 2002; Jensen, 2003). Others see as a dominant index of inward FDI distinctive economic features. Hence, Wei et al. (1999) came to the conclusion that countries "with a high degree of involvement in international commerce, cheap wage level, higher gross domestic product (GDP) growth rates, quicker improvement in infrastructure, more rapid advances in agglomeration" are the contenders for receiving FDI (Wei et al., 1999). Another determinant which is invariably related to inward FDI inflows is strategic, behavioral, and economic benefits, lower costs, huge reserves of natural resources, and capacity of market expansion (Erel et al., 2012). Enumerating FDI's determinants Dunning's eclectic paradigm cannot be neglected. The author performs four main motivations for FDI: Resource seeking; market seeking; efficiency seeking and strategic asset seeking (Dunning, 1998).

The emergence of FDI has certain backgrounds. The most important one that should be mentioned here is a call for sustaining competitive advantage in production techniques. It is almost

impossible to make every detail permanently better than any other body. In some cases it appeared to be more beneficial to invest to other country, produce goods in those local markets and afterwards import well-executed products to the native country. A background can be described in the following simple formula: To produce where expenses are lower and to sell where price is higher.

The economic system throughout the history could be considered stable to some extent. The problem is that the contemporary models of financial assessment tools were formed under the influence of developed economies and cannot be employed for new emerging markets, whereas the mechanisms of market are significantly divergent from the existing models. As a consequence of large differences there is a widespread stance that emerging markets resemble a lottery. Due to high risk rate losses can exceed probable benefits. Nevertheless, in some cases the investment can turned out to be successful and committed facilities will be multiplied many times. The main objective of this article to identify the peculiarities of such cases and through the analytical model to recommend investment companies how to invest to emerging markets with lower risks.

2. LITERATURE REVIEW

The theory of international trade has changed dramatically over centuries. One of the first attempts to prove that for mutual development and prosperity it is better to draw attention to other issues than to mere accumulating gold and silver belongs to Ricardo (1817). By means of mathematics, he argued that combination of industry specialization and free international trade would lead to positive results. His fully-fledged theory was called the theory of comparative advantage.

Heckscher-Ohlin (1919; 1933) findings indicate that a country exports resources which it had in abundance. For instance, the United States are prosperous in capital, which means their export trade will be dominated by capital goods. Hence, the country is eager to invest in those industries abroad which are underdeveloped in the native country (Heckscher, 2007; Ohlin, 1933). Nevertheless, the study conducted by Leontief (1954) challenges the afore-mentioned theory arguing that the US in contradiction with Heckscher-Ohlin exports labor-intensive commodities and imports capital-intensive commodities (Leontief, 1954). The approaches to the description of the business units functioning discussed by Smirnov (2012), Smirnov (2015).

Nowadays, scholars tend to explore developing countries as an essential engine for the future growth and development. Despite the fact that the prior conditions in the developed countries are better, return on capital in emerging markets are considerably higher. Nevertheless, the forecast foreseeing that developing countries will overtake developed ones finds little justification.

An array of scientists examines FDI inflows into emerging economies from different perspectives. Zhang (2001) studies the connection between FDI and economic growth in East Asia and Latin America (Zhang, 2001). Makki and Somwaru (2004) prove a significant positive interaction between FDI and trade in economic

growth in 66 developing countries (Makki and Somwaru, 2004). Liu (2008) explores how spillovers generated by FDI can affect domestic firms in the host country. Overall, Liu concludes that FDI provides domestic firms with positive and significant external benefits (Liu, 2008).

BRICS refers to five rapidly developing countries (Brazil, Russia, India, China, and South Africa) which have been distinguished by O'Neil (2001). The author argues that based on GDP forecast for the next decade, these economies (without South Africa yet) will surpass the G7 individual GDP growth (O'Neill, 2001). Wilson and Purushothaman (2003) unambiguously support this finding confirming that by the year 2050 China is to be new global economic leader, China and India are to become dominant producers of manufactured products (Jiagui and Xiaojing, 2010), Brazil and Russia are to become global leaders in raw products' supply (Wilson and Purushothaman, 2003). Analytical materials of Goldman Sachs have transformed into new viable actor in global politics and economies. Furthermore, the role of these developing countries in this study cannot be doubted as almost half of FDI in emerging economies have led to this group (Ivan and Muresan, 2010). Due to South Africa's joining the group, the potential impact of five countries has expanded substantially. All afore-mentioned gives grounds to examine the particular case of BRICS in this paper.

3. RESEARCH METHODOLOGY

Kahneman and Tversky (1984) revealed the significant impact of behavioral anomalies on stakeholders' investment. Moreover, the author underlined the relevance of taking these anomalies into consideration for examining distinctive features of developing economies (Kahneman and Tversky, 1984).

The current concern is to distinguish among two different concepts. Modern behavioral economics studies two categories from the same angle: The value of \$1 of potential income which reflects a risk of not receiving it and the value of \$1 of potential losses. Nevertheless, this paper proposes to distinguish these two indicators as investors' attitude to losing \$1 is divergent from attitude to gaining it.

According to efficient-market hypothesis developed by Fama and French (1992) a market can be considered efficient regarding certain information, if that information immediately reflects entirely in asset price (Fama and French, 1992). The fundamental condition of carrying out this hypothesis is an ability of agents to make rational decisions from risk-return perspective. However, there is inverse proportionality between the size of the market and the possible distortion of aforementioned ability. Such a distortion can undermine the efficiency of investment distribution in developing economies that is crucial for development of markets. Akerlof (1970), the Nobel Prize winner, defines trust distortion as one of basic reasons for market distortion. Trust distortion is generated by asymmetric information which leads to disadvantageous choices of investment distribution and risk of contract's implicit breaching (Akerlof, 1970). Another factor that provokes the emergence of distortion is a possibility to make wrong

decisions consciously foreseeing governmental support in the future and unconsciously underestimating risks as a consequence of trusting in ephemeral state guarantee. The list of scholars who studied the problem of distortion is not limited to above-mentioned authors only. Coase (1992) is a creator of new institutional theory (Coase, 1992), Lucas (1972) offered his rational expectations theory (Lucas, 1972), Markowitz (1959) developed a modern portfolio theory (Markowitz, 1959). Sharpe (1964) as an originator of capital asset pricing model (Sharpe, 1964) and Tirole are those who have contributed much into exploring the essence of the problem. This paper is to perform an analytical model which is an empirical confirmation of theories mentioned above. Nevertheless, it is divergent from all existing models in two perspectives. Firstly, inner capacity of market's self-regulation oriented at overcoming trust distortion. Secondly, it is the first time when the value of \$1 of potential income in the future and the value of \$1 of possible losses in the future appear as separate coefficients.

4. MODEL AND ANALYSIS RESULTS

A strategy of the agent is dependent on his expectations and the level of trust in these expectations. Rational expectations theory examines only expectations focused on the price. Behavioral aspects refer to utility expectation estimation.

Considering the current value of agent's \$1, we can indicate that under different conditions it can have different utility (Nagapetyan and Rubinstein, 2015). Under scrutiny even more complex structure can be revealed. For example we can describe the utility of \$1 of potential income in the future (\$1[d]), expressing the value of potential income to the investor. Also we see the utility of \$1 of possible losses in the future (\$1[R]), expressing the value of possible risks. The value of \$1(d) depends on expectations, on how much the agent is confident that he will gain that potential income (Rubinstein et al., 2015). Hence, the more the agent is confident in potential losses, the more value these losses gain. The proposed model determines the demand for the asset by composition of two coefficients. A proportion of expected price and current price reflect rational expectations and efficiency of the market in the model. A proportion of the utility of \$1 of possible income in the future and the utility of \$1 of possible losses in the future represent behavioral finance component which implies the level of trust in the processes taking place in the market. Overall, we have constructed the integrated finance markets model denoted as (1):

$$D = \frac{P_1}{P_0} * \frac{\$1(d)}{\$1(R)} \quad (1)$$

D - The demand for the asset

P_1 - Expected price of the asset in the future

P_0 - Current price of the asset

$\$1(d)$ - the value of \$1 of potential income in the future

$\$1(R)$ - The value of \$1 of potential losses in the future.

In classical models for the increase in P_1 overbalancing the system the market responses immediately by the increase in P_0 normalizing the rate of expected yield. By adjecting a condition that the value of \$1(d) is not equal to the value of \$1(R), an outcome

can appear to be completely different. As a response to the increase in P_0 which can be perceived not as marketing optimization but as objective process, investors will increase the demand for the asset on account of increasing in \$1(d) coefficient (Rubinstein and Nagapetyan, 2015). Hence, the increase of first multiplier's denominator leads to the increase of second multiplier's numerator. Therefore, it is harder to predict the result.

A key question is the following: Two opposite vectors affect the expected yield; further unfolding of the situation is dependent on what component will be higher: The speed of current price growth decreasing expected yield rate or the speed of expected value of \$1 income growth increasing expected yield rate. Thus, as long as the level of trust growth rate is higher than current price growth rate, the rise in prices is to continue. Thereby, the market will become more and more distant from equilibrium state. An efficient market mechanism attempts to balance the situation, but agents are "trapped" by inability to esteem correctly rational and irrational aspects of rise in prices. Considering the rise to be a consequence of objective factors, they behave in a way that even deepens irrationality. Nevertheless, the market will manage to balance, the problem is time and agents' losses.

The rise in prices cannot last infinitely. The second multiplier has limitation in its growth since every agent has psychological limits of trust growth. It means that \$1(d) deviation from \$1(R) cannot be higher than a certain rate. The speed of trust growth will decrease whereas the market mechanism will ultimately bring prices to equilibrium. There comes a point when price influence will surpass the influence of trust maintenance. When it comes to the crunch expected yield rate will decrease on account of rise in current prices, although it will not result in the increase in the second multiplier. Consequently, the demand and current price will decrease. This change will come in contradiction with investors' current expectations. Therefore, the second multiplier will decrease dramatically which will provoke even more decrease in expected yield, current price and a chaos, eventually, will break out. The market by all means has returned to the equilibrium. But how long it has taken and what price has been paid is an open question. A length and amplitude of cyclic instability in the model is directly dependent on people's expectations.

5. CONCLUSION

A great variety of concepts on the topic can be found in economic publications: Theory of rational expectations, capital asset pricing model, Black-Scholes model, behavioral finance, etc. All of the approaches, mentioned above, examine the risk of gaining and risk of loss to be equal, while in our study these risks investigated separately as two full-fledged coefficients. In this respect the analytical model that we propose is somehow new.

An essential question is how the foregoing model can be implemented into emerging markets investment processes. The emphasis of this issue is on BRICS countries. Despite the fact that these countries are the main contenders for FDI inflows unequal distribution still remains to be a burning issue. For instance, FDI in China primarily concentrate on the coastal regions (Chen and

Fleisher, 1996) comparatively neglecting other provinces' demand (Chen and Fleisher, 1996). The same problem can be seen in India where investors focus on the Western and Southern states and territories enlarging the income gap between these regions and other parts of the country (Siddharthan, 2007). The Brazil suffers from the lack of FDI in certain sectors, vital to the economic growth. To resolve the problem, Lula da Silva's government in 2007 launched the Programa de Aceleracao do Crescimento pursuing an objective of increase in the investment rate to 25%. Russia and South Africa address the same challenges. Also we need to remember about the level of development of business relations (Smirnov and Belkin, 2015; Gafforova et al., 2015; Smirnov, 2014).

The contradiction is in the significant divergence of emerging markets from developed ones. Our model cannot solve the problem but can indicate the peculiarities. For instance, in the developed countries, when companies invest in a certain project, they are convinced that this project is to be accomplished and well-executed. However, in developing economies two stages should be distinguished: (1) The initial launch of a project, with high rate of possible risks; (2) the operation of the project in emerging market, with high rate of possible income. These stages are reflected in our model.

Our recommendation to developing countries is a following model of governmental behavior. The government is to develop its country by allocating funds from the budget into regions. Nevertheless, by investing the government should call for investment banks to find FDI. In this case, the risk of possible losses is low as the government gives a certain guarantee to return investors' money back if the project is not carried out. If it is successful, the government will sell out its share and reinvest released funds into other region. Investors will gain a profit and study a new market. The proposed model does not solve all the crucial questions but shows the way of using new coefficients that should be taken into consideration.

REFERENCES

- Akerlof, G. (1970), The market for lemons: Quality uncertainty and the market mechanism. *Quarterly Journal of Economics*, 33(9), 121-130.
- Chen, J., Fleisher, B.M. (1996), Regional income inequality and economic growth in China. *Journal of Comparative Economics*, 22(2), 141-164.
- Coase, R. (1992), The institutional structure of production. *American Economic Review*, 82(4), 713-719.
- Dunning, J.H. (1998), Globalization and the New Geography of foreign direct investment. *Oxford Development Studies*, 26, 47-69.
- Erel, I., Liao, R.C., Weisbach, M.S. (2012), Determinants of cross-border mergers and acquisitions. *Journal of Finance*, 67, 1045-1082.
- Fama, E., French, K. (1992), The cross-section of expected stock returns. *Journal of Finance*, 47, 427-465.
- Farrell, R. (2008), *Japanese Investment in the World Economy: A Study of Strategic Themes in the Internationalisation of Japanese Industry*. Britain: Edward Elgar.
- Gafforova, E., Merkusheva, N., Smirnov, V., Batalova, V., Merkusheva, Y. (2015), Using crowdsourcing to expand the resource base of business. *Asian Social Science*, 11(7), 91-97.
- Gastanaga, V., Nugent, J., Pashamiova, B. (1998), Host country reforms and FDI inflows: How much difference do they make? *World Development*, 26(7), 1299-1314.
- Griffin, R.W., Pustay, M.W. (2007), *International Business: A Managerial Perspective*. 5th ed. New Jersey: Pearson/Prentice Hall.
- Heckscher, E. (2007), In: Findlay, R., Henriksson, R.G., Lindgren, H., Lundahl, M., editors. *International Trade, and Economic History*. London: The MIT Press.
- Heckscher-Ohlin (1919; 1933). This is model developed by Eli Heckscher and Bertil Ohlin (https://en.wikipedia.org/wiki/Heckscher%E2%80%93Ohlin_model)
- Ivan, M., Muresan, J.D. (2010), The Implications of Globalization upon the International Banking Activities, The 14th International Business Information Management Association Conference - Business Transformation through Innovation and Knowledge Management An Academic Perspective IBIMA Proceedings. p2261-2267.
- Jensen, N. (2003), Democratic, governance and multinational corporations: Political Regimes and inflows of FDI. *International Organization*, 57, 587-616.
- Jiagui, C., Xiaojing, Z. (2010), Shared rapid economic growth, BRICS have different development modes. *China Economist*, 5, 103-137.
- Kahneman, D., Tversky, A. (1984), Choices, values and frames. *American Psychologist*, 39(4), 341-350.
- Leontief, W. (1954), Domestic production and foreign trade - The American capital position reexamined. *Economia Internazionale*, VII(1), 9-45.
- Lipsey, R.E. (2001), *Foreign Direct Investment and the Operations of Multinational Firms: Concepts, History, and Data*. NBER Working Paper. p8665.
- Liu, Z. (2008), Foreign direct investment and technology spillovers: Theory and evidence. *Journal of Development Economics*, 85, 176-193.
- Lucas, R. (1972), Expectations and the neutrality of money. *Journal of Economic Theory*, 4(2), 103-124.
- Makki, S.S., Somwaru, A. (2004), Impact of FDI and trade on economic growth: Evidence from developing countries. *American Journal of Agricultural Economics*, 86(3), 795-801.
- Markowitz, H.M. (1959, 1991), *Portfolio Selection: Efficient Diversification of Investments*. New York: John Wiley and Sons.
- Moosa, I.A. (2002), *FDI: Theory, Evidence and Practice*. New York: Palgrave.
- Nagapetyan, A.R., Rubinstein, E.D. (2015), Preconditions of occurrence of pricing deformations in the context of the development of modern portfolio theory. *Theory and Practice of Social Development*, 11, pp.1-3.
- O'Neill, J. (2001), Building Better Global Economic BRICs. *Global Economics Paper No. 66*, November 3.
- Ohlin, B. (1933), *Interregional and International Trade*. Cambridge, Mass.: Harvard University Press.
- Ricardo, D. (1817; 1951), On the principles of political economy and taxation. In: Sraffa, P., editor. *Works and Correspondence of David Ricardo*. Vol. I. Cambridge: Cambridge University Press. p135.
- Root, F., Ahmed, A. (1979), Empirical determinants of manufacturing FDI in developing countries. *Economic Development and Cultural Change*, 27, 751-767.
- Rubinstein, E.D., Nagapetyan, A.R. (2015), The development of modern portfolio theory: An implicit arbitrage in the context of identifying the prerequisites of pricing deformations. *Theory and Practice of Social Development*, 12, 10.
- Rubinstein, E.D., Nagapetyan, A.R., Urumova, F.M. (2015), The development of modern portfolio theory: Pricing deformation and arbitration. *Bulletin of the Institute of Economics*, 3, pp.106-115.
- Schneider, F., Frey, B.S. (1985), Economic and political determinants of foreign direct investment. *World Development*, 13, 161-175.
- Sharpe, W.F. (1964), Capital asset prices – A theory of market equilibrium under conditions of risk. *Journal of Finance*, XIX(3), 425-428.

- Siddharthan, N.S. (2007), Regional Differences in FDI Inflows: China–India Comparison. Discussion Paper, Institute of Economic Growth.
- Smirnov, V. (2012), Scientific approaches to understanding business. *Theory and Practice of Social Development*, 2, 272-274.
- Smirnov, V. (2014), Using scientific reflection in the study of entrepreneurship. *Life Science Journal*, 11(9s), 303-306.
- Smirnov, V. (2015), The theoretical basis of modern researching entrepreneurship. *Modern Competition*, 1(49), 58-74.
- Smirnov, V., Belkin, B. (2015), Experience in the application of the principle of methodological pluralism in the study of entrepreneurship. *Asian Social Science*, 11(7), 122-127.
- Stevens, G.V.G. (1969), U.S. Direct Manufacturing Investment to Latin America: Some Economic and Political Determinants. AID Research Paper.
- Wei, Y., Liu, X., Parker, D., Vaidya, K. (1999), The regional distribution of foreign direct investment in China. *Regional Studies*, 33(9), 857-867.
- Wilson, D., Purushothaman, R. (2003), *Dreaming With BRICs: The Path to 2050*. Global Economics Paper No: 99. Goldman Sachs.
- Zhang, K.H. (2001), Does foreign direct investment promote economic growth? Evidence from East Asia and Latin America. *Contemporary Economic Policy*, 19, 175-185.