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THE APPLICATION OF THE MULTI-LEVEL INVESTMENT FLOWS MONITORING MODEL (MIF-MODEL) ON CHINA AND ASEAN

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Abstract

This paper proposes a new model to analyze the mobility of investment flows at the intra-states level, domestic level, intra-regional level and global level. This new model is entitled “the multi-level investment flow monitoring model (MIF-model)”. The MIF-model proposes five new indicators: domestic direct investment growth rate (DDI); intra-regional direct investment growth rate (IDI); total investment formation growth rate (TIF); investment reception performance growth rate (IRP). These indicators are built to analyze the mobility of investment flows in any country or region from a multi-level perspective across time and space. However, the application of the MIF-model is based on the analysis of investment flows behavior in China and ASEAN members in the past forty years.

Keywords: Econographicology, Foreign Direct Investment (FDI), Capitals, Multidimensional Coordinate Spaces, Multidimensional Graphical Modeling for Economics, China, ASEAN
JEL: E22

1. Introduction

For a long time, researchers, academics and policy makers have been using the concept of foreign direct investment (FDI) to explain the mobility of capitals across countries or regions under portfolio and stock market exchanges. According to this research, the FDI displays some limitations when it comes to analyzing investment flow mobility under different levels such as intra-state level, domestic level and intra-regional level. It makes sense to rethink this concept when there is the possibility to propose an additional classification to analyze the mobility of investment flows under a multi-level perspective. Hence, FDI’s limitations have given rise to a new proposition: an alternative model called the multi-level investment flows monitoring model (MIF-model).

2. The Multi-level Investment Flows Monitoring Model (MIF-model)

The MIF-model suggests that the intra-regional direct investment (IDI) needs to be separated from the foreign direct investment (FDI). The IDI is focused on the analysis of investment flow exchange among all member countries in the same trade bloc. At the same time, the MIF-model also suggests the analysis of investment flow mobility under the intra-states level by the application of the intra-states direct investment (ISDI), and under the domestic level by the application of the domestic direct investment (DDI). The main objective in using the ISDI, DDI, IDI, TIF and IRP is to monitor different investment flow trends simultaneously. In fact, the past behavior and trend of all these types of investment can be analyzed in greater detail in the short, medium and long term. The new types of investment flow proposed by the MIF-Model are as follows:

2.1. The Intra-states Direct Investment (ISDI) and the Domestic Direct Investment (DDI)

The first indicator is called the intra-states direct investment (ISDI). It shows the mobility of investment flow among states in the same country. Therefore, the ISDI measurement is based on a large portfolio of investment(s) by local firm(s) in different states in the same country. We assume that the ISDI is the main pillar in building the domestic direct investment (DDI). The DDI is equal to the sum of all ISDI within a fixed period of time (see Expression 1 and Figure 1).

$$(1.) \quad DDI = \sum_{i=1}^{\infty} ISDI_i$$

In fact, the DDI is defined as the formation of the total domestic capital by local firms in the same country through operation, establishment and expansion of operations in different states in the same country. The DDI is the function of a large number of ISDI (see expression 2 and Figure 1).

$$(2.) \quad DDI = f (ISDI_1, ISDI_2, \dots, ISDI_{\infty})$$

2.2. The Intra-Regional Direct Investment (IDI)

The intra-regional direct investment or IDI (Ruiz Estrada, 2005) consists of the mobility of investment flow from one country to another country in the same region or geographical space under the implementation of any form of regional integration agreement such as free trade area, custom union, economic union, financial or technical cooperation agreement. Hence, the total IDI is equal to the sum of all IDI among all member countries in the same trade bloc (see

Expression 3 and Figure 1). The basic condition for the good performance of IDI is that the DDI from some or all member countries in the same trade bloc are also necessarily strong.

$$(3.) \quad \text{IDI} = \sum_{j=1}^{\infty} \text{IDI}_j$$

On the other hand, the IDI is always the function of each IDI member in the same trade bloc (See Expression 4 and Figure 1).

$$(4.) \quad \text{IDI}_{\text{member-}i} = f(\text{IDI}_{\text{member-}1}, \text{IDI}_{\text{member-}2}, \dots, \text{IDI}_{(\text{member-}n)})$$

$i \text{ and } n = \{1, 2, \dots, n\}$

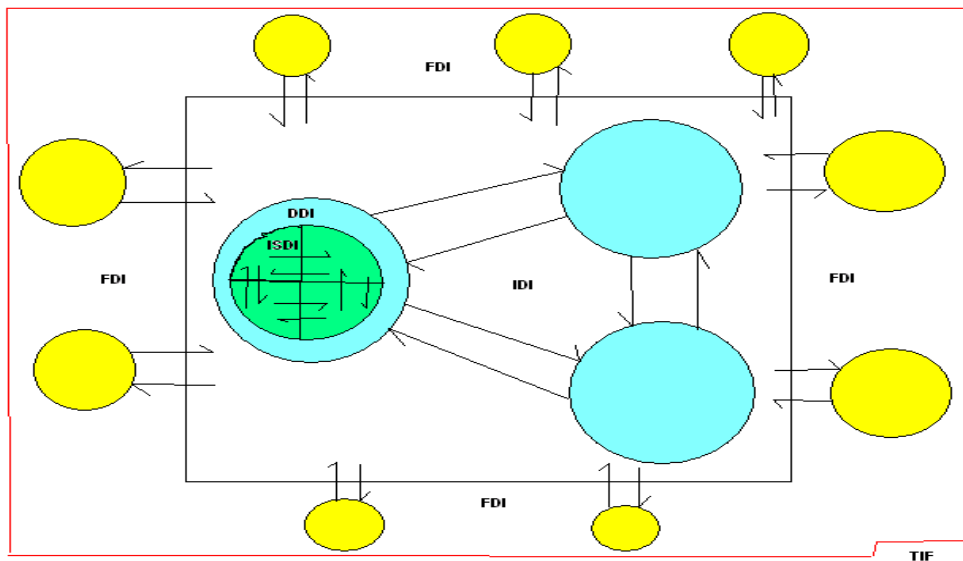
2.3. The Total Investment Formation (TIF)

The total investment formation (TIF) shows the total investment amount of any country or region. The TIF is equal to the total sum of the intra-states direct investment (ISDI), the domestic direct investment (DDI), the intra-regional direct investment (IDI) and the foreign direct investment (FDI) amounts (see Expression 5 and 6).

$$(5.) \quad \text{TIF} = f(\text{DDI}, \text{IDD}, \text{FDI})$$

$$(6.) \quad \text{TIF} = \sum_{i=1}^{\infty} \text{DDI}_i + \sum_{j=1}^{\infty} \text{IDI}_j + \sum_{k=1}^{\infty} \text{FDI}_k$$

Figure 1: The ISDI, DDI, IDI and FDI



Source: Author

2.4. The Investment Reception Performance (IRP)

In the measurement of the IRP based on the TIF, three indicators are used: domestic direct investment (DDI), intra-regional direct investment (IDI) and foreign direct investment

(FDI). A constant coefficient – the investment constant growth approach inclines (I_k) - is also used concurrently (Ruiz Estrada, 2004). The I_k is represented by α , β , and λ in expression (7.) and is applied to each type of investment: domestic direct investment (DDI), intra-regional direct investment (IDI) and foreign direct investment (FDI). Each investment constant growth approach inclines I_k (α , β , or λ) has a limit that is equal to 1 [Refer to expression (7.)]. The weighted sum of the IRP cannot be more than 1. The application of the I_k is twofold. The first application is the I_k Homogeneous Interest. In this application, each I_k has the same level of importance in the analysis [Refer to expression (7.1.)]. The second application is the I_k incline. There are three possibilities in this application: the domestic direct investment (DDI) approach incline [refer to expression (7.2.)], the intra-regional direct investment (IDI) approach incline [refer to expression (7.3.)] and the foreign direct investment (FDI) approach incline [refer to expression (7.4.)]. After the type of I_k to be applied has been determined, the IRP is measured according to expression (7). The IRP analysis may reveal one of three different scenarios, namely (a) low performance investment reception stage ($0 \leq \text{IRP} \leq 0.33$), (b) acceptable performance investment reception stage ($0.34 \leq \text{IRP} \leq 0.66$) and (c) best performance reception stage ($0.67 \leq \text{IRP} \leq 1$) (see Figure 2). The analysis of the IRP can provide a general idea or approximation of the stage of investments reception achieved in any country or region through time and space. The following is a suggested combination of the application of the I_k in the measurement of the IRP:

$$(7.) \quad \text{IRP} = \sum_{i=1}^{\infty} \text{DDI}_i * \alpha + \sum_{j=1}^{\infty} \text{IDI}_j * \beta + \sum_{k=1}^{\infty} \text{FDI}_k * \lambda \leq 1$$

$$(7.1.) \quad \alpha = 0.33, \beta = 0.33, \lambda = 0.33 = 1 \Rightarrow I_K \text{ Homogeneous interest}$$

$$(7.2.) \quad \alpha = 0.60, \beta = 0.20, \lambda = 0.20 = 1 \Rightarrow I_K \text{ DDI approach incline}$$

$$(7.3.) \quad \alpha = 0.20, \beta = 0.40, \lambda = 0.20 = 1 \Rightarrow I_K \text{ IDI approach incline}$$

$$(7.4.) \quad \alpha = 0.20, \beta = 0.20, \lambda = 0.40 = 1 \Rightarrow I_K \text{ FDI approach incline}$$

It must be highlighted that the above combination represents only several of many possibilities or permutations. This should draw attention to the flexibility of the IRP in adapting to any situation or chosen policy mode. The IRP presents an approximation of the investment volumes from the intra-state, domestic, intra-regional and foreign level concurrently based on the application of simple 2-Dimensional graphs under the uses of the 2-Dimensional coordinate system respectively.

3. Application of the MIF-model on China and ASEAN:

This paper will apply the MIF-model on the study of investment flows in China and ASEAN members (e.g. Malaysia, Indonesia, Singapore, Thailand, and Philippines) respectively. The MIF-model was applied to China and ASEAN between 1970 and 2010 (see Figure 1 and 2). This period of time was chosen because the general objective of the MIF-model are to study the behavior of different types of investment such as domestic direct investment (DDI), intra regional direct investment (IDI), and foreign direct investment (FDI) between China and ASEAN.

The result of MIF-model shows that China was highly linked to the FDI between 1980 and 2010 (see Figure 2). For the rest of types of investment such as the DDI or IDI (see figure 2) shows less expansion and dependency. The high dependency of the Chinese economy on FDI makes this country highly vulnerable to external shocks such as financial crisis and oil crisis respectively. Even the large effort to generate a fast growth in the Chinese DDI in the last past forty years is not enough to overcome the FDI growth rate until today according to our model.

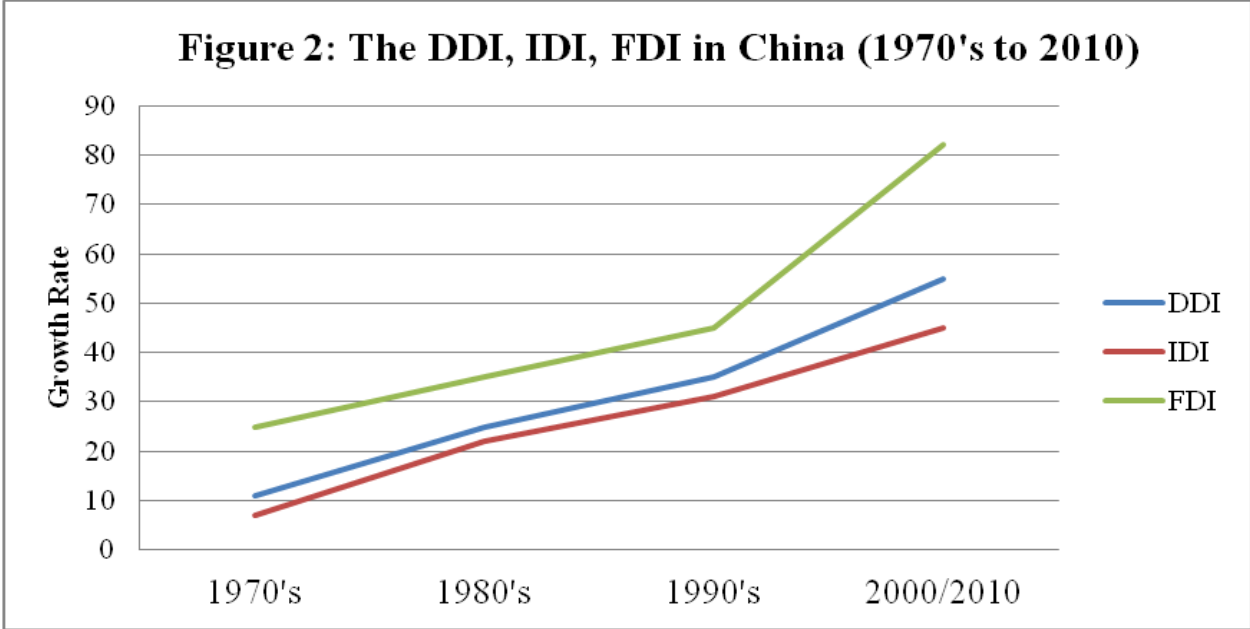
The main reason **WHY** the Chinese-DDI was keep less growth than the FDI is because the large gap that exist in the income distribution among different regions and provinces in all China. It can be observed in the map 1 that the large gap of income distribution that exist into China is generating a huge impact directly on the levels of the domestic consumption and the saving rates in different regions and provinces. Hence, the heterogeneous levels of domestic consumption that exist in China is generating different levels of marginal propension to save among different provinces in China specially in far provinces such as Xinjiang, Tibet, Qinghai, inner Mongolia, Gansu, and Ningxia. These preliminary observations suggest that, for low marginal propension to save in China create low DDI growth rate in the short and medium run.

Moreover, the IDI growth rate is lower compared to the DDI and FDI growth rates. As mention earlier in terms of FDI growth rate in the Chinese economy is high. The large component of the Chinese-FDI is originated from countries such as U.S.A., E.U., Japan, Taiwan, South Korea, and ASEAN members (e.g. Singapore and Malaysia). According to this research we can observe that the Chinese-FDI rate was expanded from 25% (1970/1979) to 82% (2000/2010). In the case of the DDI was experienced an expansion from 11% (1970/1979) to 55% (2000/2010). In the last place is located the IDI that show a considerable expansion from 7% (1970/1979) to 45% (2000/2010).

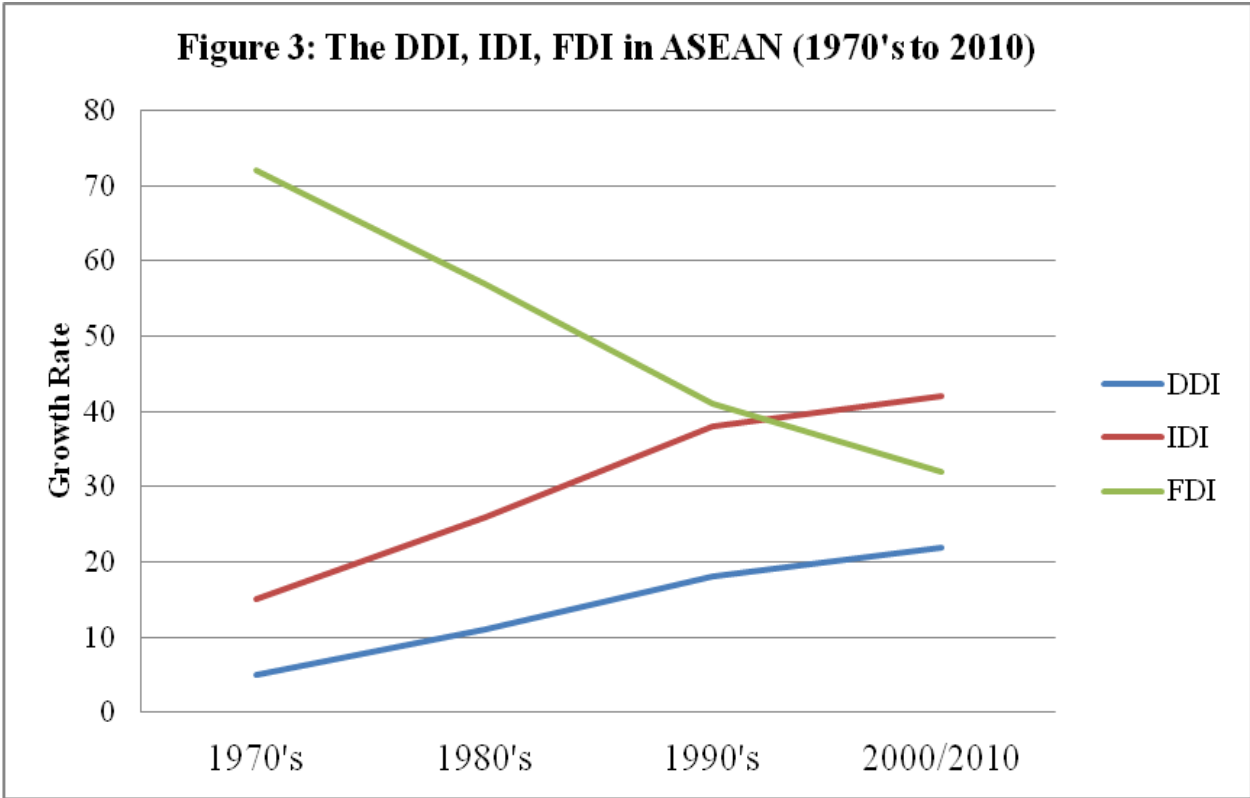
The results of MIF-model in figure 2 provide a means for comparing the performance of different types of investment flows in China. According to our model the ranking of types of investment flows in China is the following by three places: (1st place) FDI; (2nd place) DDI; (3rd place) IDI respectively. If we compare the TIF rate and TIF growth rate between China and ASEAN (see Figure 4 and 5) then we can observe that China became more attractive place for investors from all the world than ASEAN. This drastic change of FDI flows from ASEAN to China occur in the middle of 1980's according to MIF-model. This drastic change of FDI flows from ASEAN to China is originated from the drastic changes that was implemented by the Chinese government in middle of 1970's under the implementation of a new economic model.

This new economic model depend on the fast expansion of infrastructure, incentives to foreign and domestic firms, the largest market in the world, and large supply of cheap labor for the manufacturing and services sectors. If we compare the TIF growth rates between China and ASEAN then we can find that exist a large gap between these two regions according to figure 5. Constraining against with reference to the results from figure 6 shows that the chinese investment flows are located on the best investment reception performance compared to ASEAN.

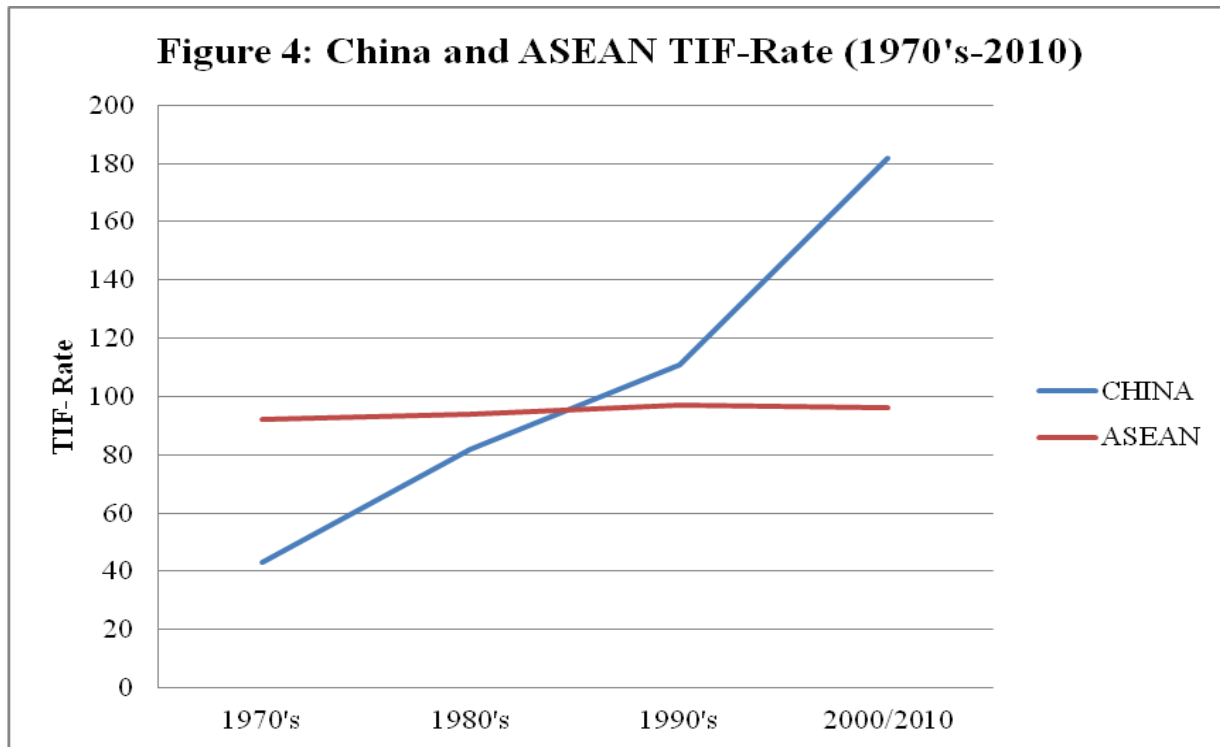
On the other hand, in the case of ASEAN investment flows shows in figure 3 that the FDI fall considerably from 72% (1980's) to 32% (2000/2010). But in the case of ASEAN-IDI had a good performance from 15% (1970-1979) to 42% (2000-2010). Finally, the ASEAN-DDI continue keeping a lower growth rate compare to IDI and FDI. We can mention that the investment flows trend of ASEAN keep the following trend: (1st place) IDI; (2nd place) FDI; (3rd place) DDI respectively. The lower growth rate of ASEAN-DDI is originated by the bad income distribution that exist in some ASEAN members such as Indonesia, Philippiness, and Thailand. It is understood that their TIF-Rate and TIF growth rate for ASEAN (see Figure 4 and 5) was under a low investment reception performance compared to China. Finally, the ASEAN-IRP was experienced a lower performance compare to China. The lower performance of ASEAN-IPR was originated by poor investment programs (low incentives), fast poverty expansion (less demand of good and services), weak legal frameworks, scarce of political stability and visionary leadership, and trade barriers by some large members of ASEAN such as Indonesia, Philippines and Thailand. Equally important, all the above results testify the viability of the MIF-model as an alternative analytical tool to analyze different types of investment flows.



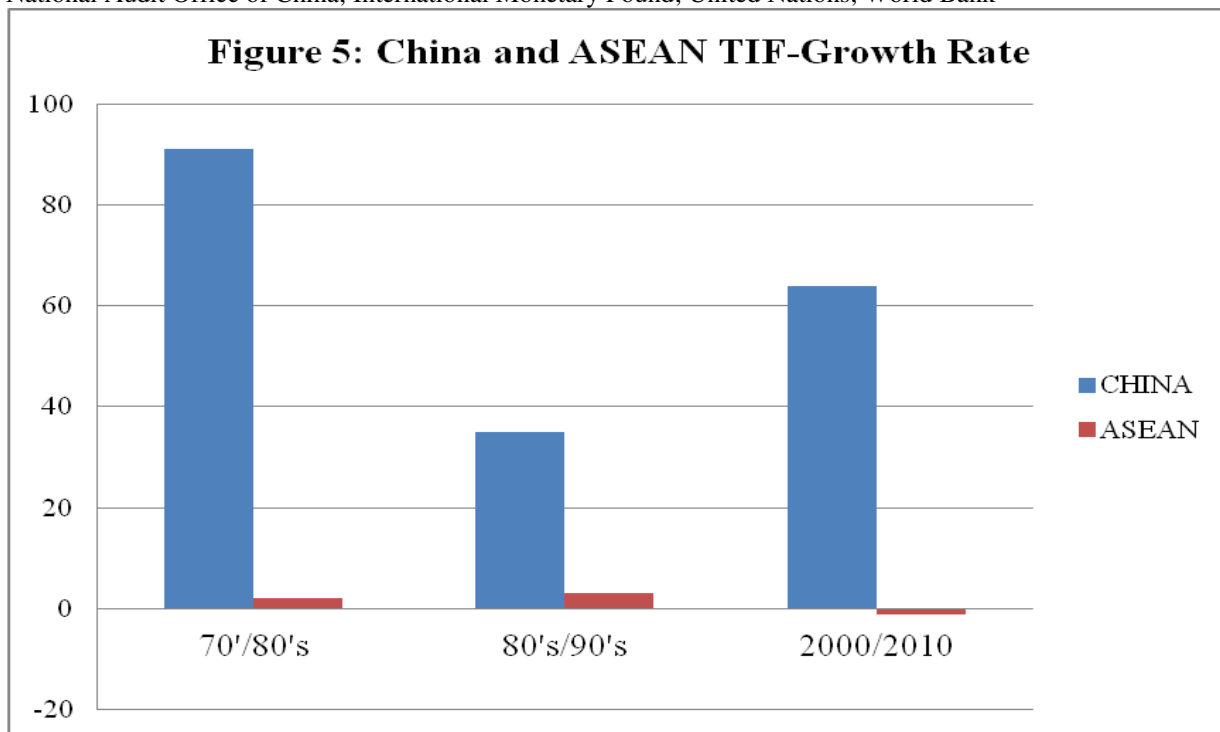
Source: Asian Development Bank; Ministry of Foreign Affairs of China; Ministry of Education of China; Ministry of Finance of China; National Population and Family Planning Commission of China; People's Bank of China; National Audit Office of China; International Monetary Found; United Nations; World Bank



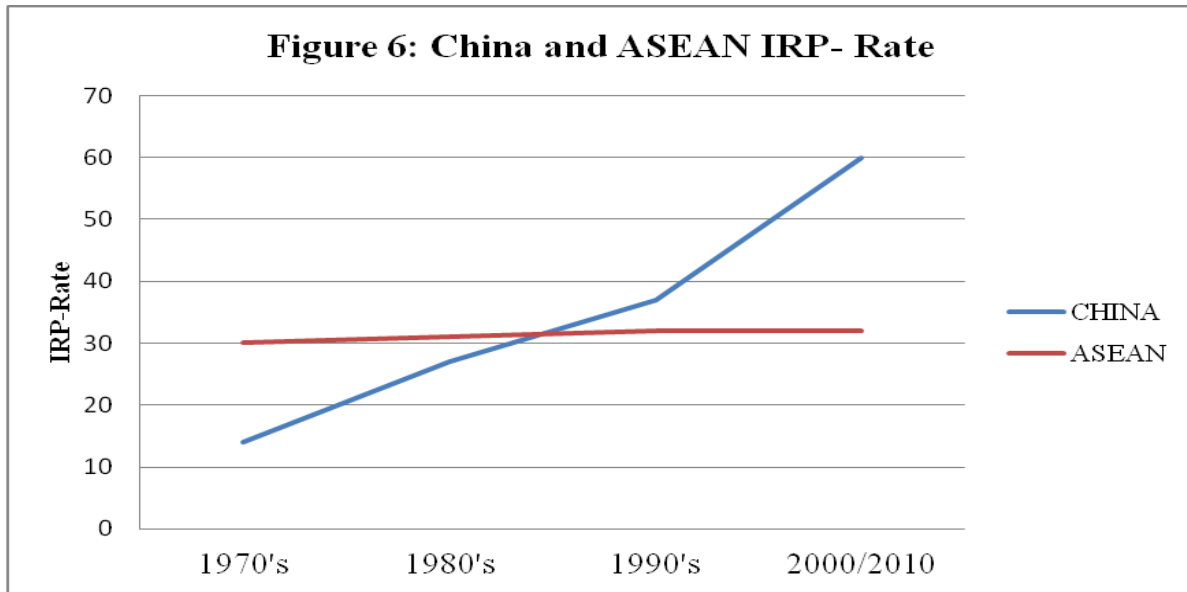
Source: Asian Development Bank; Ministry of Foreign Affairs of China; Ministry of Education of China; Ministry of Finance of China; National Population and Family Planning Commission of China; People's Bank of China; National Audit Office of China; International Monetary Found; United Nations; World Bank



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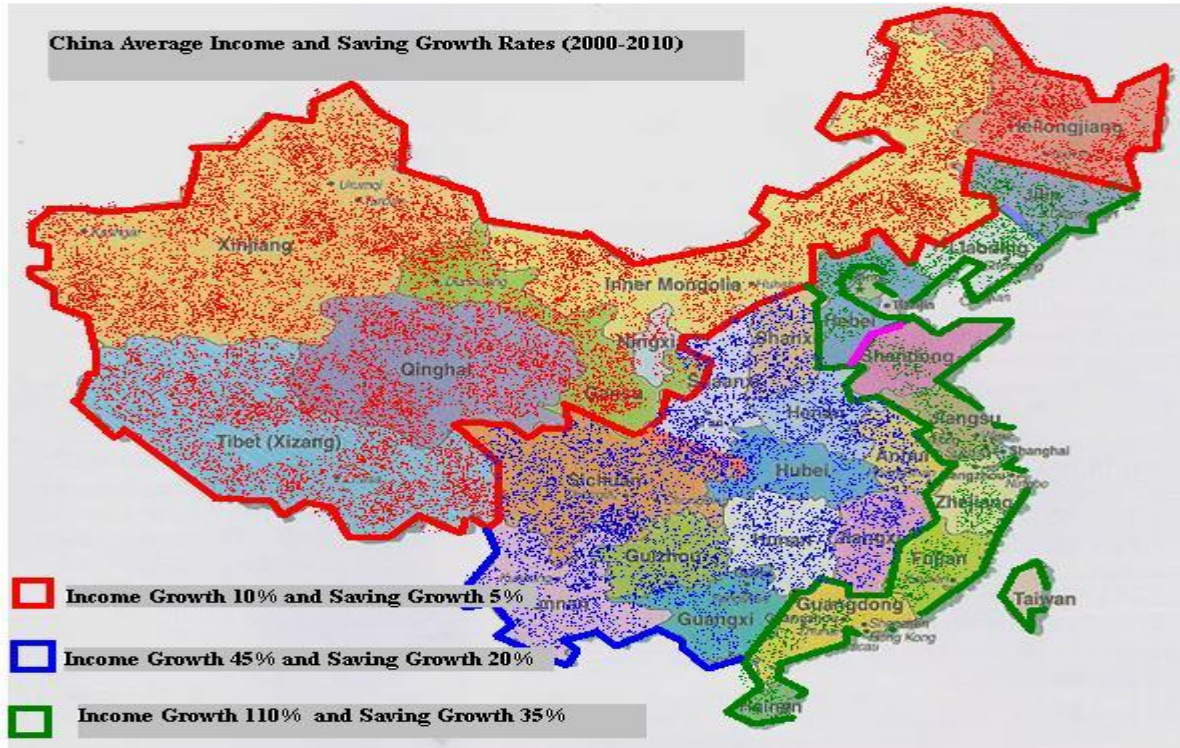


Source: Asian Development Bank; Ministry of Foreign Affairs of China; Ministry of Education of China; Ministry of Finance of China; National Population and Family Planning Commission of China; People's Bank of China; National Audit Office of China; International Monetary Fund; United Nations; World Bank



Source: Asian Development Bank; Ministry of Foreign Affairs of China; Ministry of Education of China; Ministry of Finance of China; National Population and Family Planning Commission of China; People's Bank of China; National Audit Office of China; International Monetary Found; United Nations; World Bank

Map 1: China Average Income and Saving Growth Rates



Source: Asian Development Bank; Ministry of Foreign Affairs of China; Ministry of Education of China; Ministry of Finance of China; National Population and Family Planning Commission of China; People's Bank of China; National Audit Office of China; International Monetary Found; United Nations; World Bank

4. Concluding Remarks

This research paper concludes that it is possible to monitor different types of investment under a multi-level perspective. In order to do this, the MIF-model has adopted new types of indicators: the domestic direct investment (DDI), the intra-regional direct investment (IDI), the total investment formation (TIF) and the investment reception performance (IRP). The MIF-model gives policy makers and researchers in international trade and macroeconomics issues the opportunity to observe and analyze the trends and stages of investment flows mobility in any country or region from a multi-level analytical perspective.

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