Foreign Direct Investment
A closer look inside Hong Kong, Singapore and Indonesia

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Abstract

One of the contributors to the recent economic growth in Asia is foreign direct investment. Different studies shows that foreign direct investment contributes to a country’s economic growth and there is a positive relation observable between foreign direct investment and economic growth. However, the contribution and effect of foreign direct investment depends on certain factors like the so called growth-path of a economy. Transition economies will benefit more from foreign direct investment than developed economies. This thesis will focus on three economies, namely Hong Kong, Indonesia and Singapore. One of the findings is that foreign direct investment supports the positive relation for economic growth. It also supports the fact that Indonesia as a transition economy is more dependent upon foreign direct investment, while Hong Kong and Singapore are less dependent upon foreign direct investment, due to other important sources that also are beneficial for their economic growth.

Keywords: foreign direct investment, gross domestic product, economic growth, developed economies, transition economies, neoclassical growth model, sources of growth, technology, education, human capital, Hong Kong, Indonesia, Singapore.
1. Introduction

For the last two decades, the South East Asia region has been developing its economy on a high speed level. A part of the economic growth is caused by the growing and extensive business between the US, Europe and the Asian countries itself (globalization of trade). On the other hand, a part of the economic growth is caused by Foreign Direct Investment (also known as FDI).

The Asian Development Bank (ADB) stated that the overall economic growth (measured in growth rates of real GDP) in the last twenty years in Hong Kong, Singapore and Indonesia, where respectively around 4.0 percent in Hong Kong and 5.7 percent in Singapore and also in Indonesia. This thesis will put the focus in the Asia region on three Asian economies, namely Hong Kong, Singapore and Indonesia. Hong Kong and Singapore are known for their well established and mature economies, while Indonesia, on the other hand, is still a third world country with an economy in development.

As already mentioned before, both Hong Kong and Singapore are financial centers of respectively East Asia and South East Asia. One of the characteristics is that many multinational firms are located in Hong Kong and Singapore. The multinational firms generates employment and are also accompanied by transfers of technology and managerial know-how.

In contrast with Hong Kong and Singapore, the Indonesian economy is one who is still developing to a more mature and stabilized economy. Indonesia is still a third world country and it has to deal with a growing population and economy, where the middle class is rising and the number of rich people is rapidly growing.

Hong Kong, Singapore and Indonesia all have in common that their economies are (still) growing and FDI plays a role in the growth of their economies. The question is, to which extend does FDI plays a role?

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1 Asian Development Bank (2010), Key Indicators for Asia and the Pacific 2010, 41st edition
2. Thesis structure

In this part an elaboration of the content of the thesis will be given. This elaboration includes the introduction, each of the sub-questions, the data analysis and the conclusions (which will be answered in the empirical part).

Introduction
The purpose of the introduction is to give the reader a short brief about the economic growth in Hong Kong, Singapore and Indonesia and how it developed over the past few years.

What causes the economic growth in Hong Kong, Singapore and Indonesia?
To answer this sub-question, it is important to have an overview about the countries GDP and FDI over the last ten years. GDP stands for Gross Domestic Products and it is basically the monetary value of all the finished goods and services produced within a country's borders in a specific time period. FDI stands for Foreign Direct Investment and it is an abroad investment made by a company, where the company (being invested in) is in control by the foreign corporation. (E.g. an American company taking a majority stake in a company in Singapore).

Are there differences between the reasons of growth in their economies?
In this sub-question the distinction of the causes of economic growth can be made. The reasons for the economic growth among the three countries could be different. It could be interesting to see, if different causes of economic growth, influence/ affects the foreign direct investment. Yet, the input of the previous sub-question is important to answer this sub-question.

How is the “intensiveness” of foreign firm investments in Hong Kong, Singapore and Indonesia?
The degree of foreign direct investment in the three countries are different. This sub-question is to determine in which way these investments are different among each other and whether this have influence/ impact on the economic growth in Hong Kong, Singapore and Indonesia.

How does foreign direct investment contribute to the economic growth & data analysis
To answer this sub-question, the answers from the previous sub-questions and data from the Asian Development Bank (ADB) and/or DataStream will be used. A simple regression will be applied to analyze the data and to set if there is a positive relation between the economic growth (of Hong Kong, Singapore and Indonesia) and foreign direct investment.

A T-test with a significance level of 5 percent will be used to test the hypothesis. The independent variable will be the GDP of Hong Kong, Singapore and Indonesia over the last 10 years, the dependent variable will be FDI from each country over the last 10 years. The data from the empirical part will be used to conclude if the hypothesis should be accepted or rejected.
3. Literature review

Through all the years there has been a lot of research in the concept of investing abroad, which relates to Foreign Direct Investment (FDI). One of the difficulties is that FDI cannot be defined with just a few words. To give an idea of what the term FDI means, it will be clarified hereafter. According to the International Monetary Fund (IMF), FDI stands for:

Direct investment is a category of international investment made by a resident entity in one economy (direct investor) with the objective of establishing a lasting interest in an enterprise resident in an economy other than that of the investor (direct investment enterprise). ‘Lasting interest’ implies the existence of a long-term relationship between the direct investor and the enterprise and a significant degree of influence by the direct investor on the management of the direct investment enterprise. Direct investment involves both the initial transaction between the two entities and all subsequent capital transactions between them and among affiliated enterprises, both incorporated and unincorporated.

The Asian Development Bank (ADB) defined foreign direct investment (FDI) as followed: FDI is a financial investment made abroad with the purpose of acquiring significant influence or outright control over a foreign firm. It may involve establishing a new company abroad or investing in an existing enterprise.

The Asian Development Bank also stated that FDI is important because it contributes to employment and it usually involves the transfer of technology and managerial skills from more developed to less developed economies. FDI also mainly benefits countries that are growing rapidly and have a politically stable environment.

One of the implications when an investment (no matter what sort of investment) is considered, is that certain risk have to be taken. In case a firm wants to invest abroad, the firm wants to minimize the risk. When a country faces political, economical and/ or social instability, the risk for the firm who wants to invest in a particular country will increase. These kinds of instability could occur when a country does not have a stable legal system, lack of appropriate laws, faces

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2 J. P. Chousa, K.C. Vadlamannati, B. P. Aristidis and A. Tamazian (2008), Determinants of Barries to quality of direct Foreign Investments – Evidences from South & East Asian Economies
3 Asian Development Bank (2010), Key Indicators for Asia and the Pacific 2010, 41st edition
high inflation, volatile exchange rate etcetera. These factors could increase the investment risk and these have to be taken into account when a firm wants to make an investment (abroad). Now a day’s transition economies (economies in development) in Middle and East Europe and Asian countries faces these kinds of risk.\textsuperscript{2}

A growth model, such as the extended version of the neoclassical growth model, as described by Barro and Sala-i-Martin (2003)\textsuperscript{4} can be used to “predict” the way of how a country’s income will develop. This model implicit that a country with a low level of initial income relative to its potential income, will tend to grow faster than a country that is already near its limits of potential income. In other words, poorer countries are expected to grow faster than a country with a mature and developed economy. This can be explained by the fact that the levels of physical and human capital and technological progress of a poorer country are further away from its limits, so it can accumulate capital and learn existing technology more quickly than a mature and developed economy. To emphasize this in one phrase: the greater potential for catching up, the more likely a poorer country will grow more quickly.

Zang (2001)\textsuperscript{5} emphasizes in his research about the (strong) relation between FDI and economic growth. Zang (2001) stated that countries with a rapid economic growth, are generating more demand for FDI, but also providing better opportunities for making profits. Therefore a country with such opportunities will attract a greater FDI. On the other hand Zang (2001) also mentioned that greater FDI – inflows will stimulate the economic growth of a host country, through positive direct effects and indirectly spill over effects. Furthermore Zang (2001) points out that the impact of FDI on a host economy is more country specific, so not every country will have the same (economical) impact/ benefits due to FDI. To enhance the impact of FDI, a host economy should adopt liberated trade regimes, improve education and human capital conditions, encourage export-orientated FDI and maintain macroeconomic stability.

The general line that Zang (2001) follows in his research with regards to FDI, is that FDI has a greater incentive if a host economy does have better economic performances, better infrastructural facilities and greater opportunities for making profits.

\textsuperscript{4} R. Barro, X. Sala-i-Martin (2003), Economic Growth

\textsuperscript{5} K. H. Zhang (2001), Does foreign direct investment promote economic growth? Evidence from East Asia and Latin America
In a FDI-growth study from Kalirajan, Miankhel, Thangavelu (2009), they argue that FDI only can increase income, when in the long run growth, it does augment technology. This long run growth can only be increased and realized if FDI positively affects the technology. So in order to be growth advancing, FDI must positively influence technology. The findings of Kalirajan, Miankhel, Thangavelu (2009) are based on the fact that FDI-growth is identified by neoclassical growth models. These neoclassical growth models incorporate technological progress and labour forces (human capital) as exogenous variables and these are needed to establish the FDI-growth. In addition to emphasize that FDI must positively affects technology, Kalirajan, Miankhel, Thangavelu (2009) also mentioned that this can only be accomplished if there are transfers of new technologies and ideas, high technology imports, foreign technology adoption and a certain level of human capital. In this study they also have paid attention to the fact that firms likely serve the foreign market first by trading, because it is less risky than FDI. After a time of trading with foreign markets, firms are gaining knowledge about the foreign countries economies, political and social conditions before investing and establishing on the foreign markets.

In contrary to many FDI related studies, J. P. Chousa, K. C. Vadlamannati, B. P. Aristidis, A. Tamazian (2008) mentioned in their theoretical framework of their studies the “need” for FDI. FDI results from a certain need and opportunities present at an imperfect market. J. P. Chousa, K. C. Vadlamannati, B. P. Aristidis, A. Tamazian (2008) also addresses the fact about implications in measuring FDI. Each country uses a (slightly) different way/method to measure its FDI, there is no one way of measurement with regards to FDI. Depending on the country an investment is treated as FDI if the acquirer has an equity stake larger than 10 percent, 20 percent, 25 percent etcetera. Another implication is in case of specific companies and/or regulations, even ownership of 50 percent or more does not allow for managerial control. Hence, not all FDI will lead and aim to managerial control and the level of control differs across the different investments.

J. P. Chousa, K. C. Vadlamannati, B. P. Aristidis, A. Tamazian (2008) also outline the obstacles/constraints of FDI. These obstacles/constraints can be categorized as followed:

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- Business environmental (market) constraints, where these constraints consist of: bureaucracy, corruption, briberies, lack of entrepreneurship, lack of managerial skills, lack of skilled and educated labour force, social instability, problem with locals, technological backwardness etcetera.

- Legal constraints, where these constraints consist of: unstable legal framework, lack of laws, constant changes of laws, problems with property rights, lack and/ or discrimination in the enforcement of laws etcetera.

- Taxation constraints, where these constraints consist of: high taxation, high VAT, repatriation of profits etcetera.

- Taxation constraints, where these constraints consist of: high taxation, high VAT, repatriation of profits etcetera.

- Political and government constraints, where these constraints consist of: political and government instability, high government intervention, blockage of fund transfers, unwillingness for successful reforms etcetera.

- Infrastructure constraints, where these constraints consist of: lack of infrastructure in telecommunications, roads, networks, internet etcetera.

- External constraints, where these constraints consist of: war, effect on (global or local) economic crisis etcetera.

- “Others”, such as: lack of future prospects for market/ economic growth, lack of participations in regional initiatives, international organisations and unions (IMF, OECD, NATO, EU, lack of biletaral treaties, lack of financial incentives) etcetera.
Y. J. Kim and A. Terada-Hagiwara emphasize (2010)\textsuperscript{7} in their research the importance of education (especially in developing countries). They stated that there exist several features that characterize the processes of developing Asian countries. These features are:

- liability to fall into poverty traps, (focusing more on the adoption of technology instead of creating new technology);
- technology-skill mismatch;
- technology appropriate capital.

Countries need to accumulate human capital and the “width” of human capital needs to be above a certain “threshold” level. The data from developed and developing economies (which they used in their research) are supporting the argument that for efficient adoption of technology, specifically accumulation of general human capital and the “width” of human capital are crucial. The data also points out that no country grew quickly without the benefits from a high qualified force of labor. The countries in Asia that grew quickly had the possession of a force of labor which was well qualified.

If a country wants to avoid the technology-skill mismatch, one has to upgrade the speed of technology, so that it can take the full advantage of “learning-by-doing” and make full advantage/use of human capital. It seems that some of the population in South Asia is lacking the required level of skills, this result in a gap towards the technology frontier.

Their last finding is that depending of the stage of development; countries need to balance investments between general and specific human capital, width and depth of human capital, basic and development research and finally primary, secondary and tertiary education.

When these investments are balanced and working out properly, this should enhance a country’s change to gain more economic growth and become a more developed economy.

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\textsuperscript{7} Y. J. Kim, A. Terada-Hagiwara (2010), A Survey on the Relationship between Education and Growth with Implications for Developing Asia, ADB Economics Working Paper Series, no. 236
4. Causes of economic growth

In this part a brief description of the economic growth of Hong Kong, Singapore and Indonesia will be given. This part will especially focus on the sources which lead to the economic growth.

The economies of Hong Kong, Singapore and (to some extent) Indonesia has grown strongly over the past three decades. This growth has stopped twice, namely during 1997 and 1998 (due to the Asian financial crisis) and during the global financial crisis in 2008 and 2009. Nevertheless, the three economies recovered relative quickly from both crisis.

Several factors are responsible for the rapid growth, for example Lee, Radelet and Sachs (2001), find several causes for the rapid growth:

- large potential of “catching up”;
- favorable geographic characteristics;
- demographic dividend/distribution;
- economic policies and strategy aimed on growth.

Lee, Radelet and Sachs (2001) also conclude that in particular economic policies relating to openness, played a significant role to the region’s realized economic growth.

The so called growth path of the three economies can be explained from a theoretical framework point of view. This theoretical framework basically is a (extended) version of the neoclassical growth model.

As mentioned before, this neoclassical growth model incorporates the role of human capital and technological progress. With the role of human capital and technological progress in mind, the model explains the economic growth by the following reasoning:

When a country has a low initial income per capita, relative to the long run potential level of income per capita, this country will grow faster than a country that is already close to its limits of the long run potential level of output per capita. If a country faces a technological gap, there is a

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chance for a rapid technology “catch-up”. This can be accomplished by “using” the technology from economies that are more technologically advanced. So, the lower the initial level per capita output relative to its potential, the higher the initial growth tends to be.

This theoretical framework could help to explain why developed economies such as Japan, Hong Kong, and Singapore, with its relatively large capital stock and operating near the world’s technological border/frontier, grows more slowly than emerging countries in Asia (such as Indonesia) that are speeding up the pace and catching up with developed economies.

When we are looking to the “sources of growth” the following information and data about Hong Kong, Singapore and Indonesia is to find in figure 1 and table 1 (sources are from Asian Development Bank, Statistics).

According to the Asian Development Bank (ADB)\textsuperscript{10} growth in the Indonesian capital stock explained more than half of the GDP growth in the 1980s and 1990s. By the 2000s, capital fell to third place as a contributor to the growth. Meanwhile, growth in labor input consistently maintained its rank as the second most important contributor to GDP growth. From being an almost “non-contributor” in the 1980s, education has emerged as a consistent source of GDP growth, accounting for more than 10 percent of total growth during the 1990s and 2000s.

In Singapore, the share of capital stock growth in GDP growth has been steadily declining over the three growth periods, while the share of TFP (total factor productivity) growth has been steadily rising. The shares of labor and education have generally been stable between the 22 percent - 27 percent and 9 percent - 11 percent respectively.

Hong Kong, one of Asia’s countries with a high developed economy, faces the fact of higher levels of income per capita, but average growth rates declined during the last three decades. This sort of supports the assumption that poorer countries tend to grow faster than (rich) countries with a developed and mature economy.

Table 1  Basic Growth Accounts, 1981 – 2030 (annual average growth rates)

<table>
<thead>
<tr>
<th>Source: Asian Development Bank, (section statistics)</th>
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</thead>
<tbody>
<tr>
<td><strong>Hong Kong, China</strong></td>
</tr>
<tr>
<td>GDP (Actual)</td>
</tr>
<tr>
<td>6.24</td>
</tr>
<tr>
<td>GDP per labor</td>
</tr>
<tr>
<td>4.59</td>
</tr>
<tr>
<td>Labor input</td>
</tr>
<tr>
<td>1.65</td>
</tr>
<tr>
<td>Education</td>
</tr>
<tr>
<td>1.11</td>
</tr>
<tr>
<td>Capital per labor</td>
</tr>
<tr>
<td>5.62</td>
</tr>
<tr>
<td>Total factor productivity</td>
</tr>
<tr>
<td>1.67</td>
</tr>
</tbody>
</table>

| **Indonesia**                                  |
| GDP (Actual)                                   |
| 5.68    | 4.11      | 4.51    | 4.66    | 4.12    |
| GDP per labor                                  |
| 2.64    | 1.53      | 2.58    | 3.16    | 3.08    |
| Labor input                                    |
| 3.04    | 2.58      | 1.93    | 1.50    | 1.04    |
| Education                                      |
| 0.09    | 0.80      | 0.79    | 0.46    | 0.28    |
| Capital per labor                              |
| 5.69    | 3.11      | -0.04   | 3.79    | 3.84    |
| Total factor productivity                      |
| 0.31    | -0.19     | 2.12    | 1.37    | 1.37    |

| **Singapore**                                  |
| GDP (Actual)                                   |
| 7.00    | 7.84      | 4.86    | 5.24    | 3.28    |
| GDP per labor                                  |
| 3.80    | 4.93      | 2.71    | 3.65    | 3.34    |
| Labor input                                    |
| 3.20    | 2.91      | 2.15    | 1.59    | -0.06   |
| Education                                      |
| 1.32    | 1.15      | 0.77    | 0.63    | 0.48    |
| Capital per labor                              |
| 3.99    | 4.13      | 0.84    | 5.26    | 4.71    |
| Total factor productivity                      |
| 1.42    | 2.59      | 1.92    | 1.17    | 1.17    |

Source: Asian Development Bank, (section statistics)

Figure 1  Contributions to GDP Growth, 1981 – 2007 (percentage points)

GDP = gross domestic product; PRC = People’s Republic of China; HKG = Hong Kong, China; IND = India; INO = Indonesia; KOR = Republic of Korea; MAL = Malaysia; PAK = Pakistan; PHI = Philippines; SIN = Singapore; TAP = Taipei, China; THA = Thailand; VIE = Viet Nam.

Sources: Calculations from Heston, Summers, and Aten (2009); ILO (2010); Barro and Lee (2010).

Sources (others then mentioned above): Asian Development Bank (section statistics)
As mentioned before, education is an important source of GDP growth. In Asian culture, parents do find it very important to send their children to school. The idea behind this is that the parents want to give their children the possibility, to have the highest possible attainment of education. The reason is that a higher form of education (for example a master degree) expands the opportunity to have a better job and increase their financial position. To link this with today’s actuality, Portugal delivers the fact of what could possibly happened if the educational system is weak. The Wall Street Journal addresses, in their 25 – 27 March 2011 editions, the fact about educational rates and financial problems (mainly government debt) in Portugal. The data for this article comes from the OECD databank and one of the conclusions of this article is that Portugal faces a high “school dropout rate” and that is resulting in unskilled workers. The high share of unskilled workers makes it harder for a nation (Portugal in this case) to generate economic growth. This will likely lower its country’s GDP and FDI, due to a weaker economy.
5. FDI & Economic situation

In this part the net inflows of FDI and some general key trends in Asia will deserve points of attention. As mentioned earlier, the net inflows of FDI are necessary for this sub-question. Net FDI inflows are expressed as a percentage of GDP. This makes it possible to compare the “intensiveness” of FDI with respect to a country’s GDP.

A table is listed below with the NET FDI inflows from 1990 until 2009.

Table 2  Net inflows of FDI

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Hong Kong, China</td>
<td>n.a.</td>
<td>n.a.</td>
<td>36.6</td>
<td>14.3</td>
<td>5.9</td>
<td>8.6</td>
<td>20.5</td>
<td>18.9</td>
<td>23.7</td>
<td>26.3</td>
<td>27.7</td>
<td>23.0</td>
</tr>
<tr>
<td>Indonesia</td>
<td>1.0</td>
<td>2.2</td>
<td>-2.8</td>
<td>-1.9</td>
<td>0.1</td>
<td>-0.3</td>
<td>0.7</td>
<td>2.9</td>
<td>1.3</td>
<td>1.6</td>
<td>1.8</td>
<td>0.9</td>
</tr>
<tr>
<td>Singapore</td>
<td>14.4</td>
<td>13.2</td>
<td>17.5</td>
<td>17.2</td>
<td>7.0</td>
<td>12.3</td>
<td>17.8</td>
<td>11.5</td>
<td>19.1</td>
<td>17.8</td>
<td>11.8</td>
<td>9.2</td>
</tr>
</tbody>
</table>

Source: Asian Development Bank (section statistics)

Remarkable is that Indonesia’s net FDI is relatively low compared to Hong Kong and Singapore. This suggests that Indonesia is less attractive for foreign firms compared to Hong Kong and Singapore. The Indonesian government has a policy that foreign firms, who wants to invest and establish in the country, are obliged to form an alliance with a domestic firm. This could withhold or form an obstacle for foreign firms to invest and establish themselves in Indonesia.

When we compare the net inflows of FDI from the pre-crises year 2007 with 2009 the year of the global crisis, the net inflows of the three countries in 2009 are substantial lower than in 2007. Where Hong Kong faces a (particular) small drawback of its FDI net inflows, Singapore and Indonesia’s FDI net inflows are almost down by a half.

According to the Asian Development Bank (ADB)\(^{11}\) not only FDI is affected by the global economical crisis, but also Asia’s exports. Export in Hong Kong, Indonesia and Singapore mostly grew in the years 2007 and 2008, but sharply falls during the global economic crisis in 2009. The global economic crisis causes a cut in demand for Asia’s exports.

\(^{11}\) Asian Development Bank (2010), Key Indicators for Asia and the Pacific 2010, 41st edition
Another remarkable point is that Asia’s trade remains mainly within Asia. In Europe and the US it is for example a common sense to think that a lot of Asian countries are producing for Europe and the US. Data from the ADB delivers the proof that the trade of merchandise exports remains mainly within Asia itself. Nearly 70 percent of merchandise exports in Hong Kong and Singapore have another Asian country as destination. Indonesia at the other hand, nearly 60 percent of the merchandise exports remains within Asia.

A drawback in foreign direct investment and export results in a lower GDP. When looking to the distribution of global GDP, Asia and the Pacific region accountant for almost one third of the global GDP measured in purchasing power parity (PPP) terms.

Figure 2 is listed below and it shows the distribution of the global GDP.

Figure 2  Distribution of global GDP at PPP

![Percentage Distribution of GDP at PPP: Asia and Pacific Region in the World Economy, 2008](image)

Source: Asian Development Bank

When looking to GDP per capita, Singapore and Hong Kong are “top of the chart”. In 2009 Singapore’s GDP per capita was about 50.800 USD and that is about twelve times higher than Indonesia’s GDP per capita of 4.150 USD. Hong Kong’s GDP per capita in 2009 was about
43.050 USD and that is slightly more than ten times Indonesia’s GDP per capita in 2009. Figure 3 shows that since the beginning of this century the economies of Hong Kong, Indonesia and Singapore have made substantial increases in their GDP per capital. Remarkable is that Indonesia in 2009 almost doubled its GDP per capita.

![Figure 3  GDP per capita](image)

Source: World Bank (the data is derived, wherefore only the relevant data is showed)

A (general) key trend which can be observed in Asia is the importance of migrant workers. The migrant workers’ remittances are a vital source of income for many economies and really contribute to a country’s GDP. Explanation of migrant workers’ remittances: *Migrant workers’ remittances consist of earnings of persons who work abroad for only a few months in the year, transfers of capital when people change their country of residence and money sent back to home countries by migrants working abroad for several years at a time.*[^12] The last mentioned component is the largest component of them all.

The trend about migrant workers has been described in the previous paragraph. This trend does not specifically hold for Hong Kong’s and Indonesian economies. On average the migrant workers’ remittances (expressed as a percentage of GDB) over the last five years are 0.2 percent for Hong Kong and 1.5 percent for Indonesia. For Singapore there was unfortunately no data available about this topic. The remittance expressed as a percentage of GDB is a measure of each country’s dependence of this source of income.

[^12]: Asian Development Bank (2010), Key Indicators for Asia and the Pacific 2010, 41st edition
In general this trend is observed for countries in Central Asia, where the inhabitants of mainly old Soviet countries are currently employed and dependent on workers’ remittances from Russia and the inhabitants of the Pacific islands who are currently mainly employed and dependent on workers’ remittances from Australia and New Zealand. Other Asian countries that are (to some extend) dependent on workers’ remittances are Bangladesh, Nepal and Philippines.
6. **Empirical findings**

6.1 **Data**

For the empirical part the following data from Hong Kong, Indonesia and Singapore will be used:

- Real GDP in US dollars;
- Real FDI in US dollars;
- GDP growth rates in percentage;
- FDI growth rates in percentage.

The collected data (dataset) are from a ten years time period (2000 – 2009). In this time period the events of the Asia crisis, Global Financial Crisis and the recent boom took place.

Since the relation between FDI and economic growth is nation/country specific the data of each economy will be individually used, to establish if FDI is a contributor/source for economic growth and whether there is a relation observable between FDI and economic growth. To investigate whether there is a relation between the questions mentioned above and FDI, we have to relate FDI to another variable. This variable will be real GDP and GDP growth rates, since the measures of GDP will reflect and give an expression of economic growth.

Before executing the empirical part, the dataset will be imported in SPSS in order to run the statistical analysis. The dataset with regards to real GDP and real FDI (both in US Dollars) will consist of six different groups, namely:

- R_GDP_HK (real GDP Hong Kong in US Dollars);
- R_GDP_ID (real GDP Indonesia in US Dollars);
- R_GDP_SGD (real GDP Singapore in US Dollars);
- FDI_HK (foreign direct investment Hong Kong in US Dollars);
- FDI_ID (foreign direct investment Indonesia in US Dollars);
- FDI_SGD (foreign direct investment Singapore in US Dollars).

These names will be used and can be found on the SPSS printouts in paragraph 6.3.
Regard the theory; the expectation is that there will be a relation observable between economic growth and FDI and that FDI is a contributor for economic growth. However, to which extend FDI is a contributor will likely differ, because of the phase/state of their economy. Hong Kong and Singapore are booth having a developed economy, while Indonesia on the other hand is a transition economy. With this in mind, it will be likely that the outcomes from the statistical test will differ for each economy.

Tables 3 until 6 contains real GDP, real FDI, GDP growth rates and FDI growth rates will be shown.

Table 3  Gross domestic product in USD at PPP

<table>
<thead>
<tr>
<th>Real GDP in US dollars, millions</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
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<tbody>
<tr>
<td>Hong Kong, China</td>
<td>175.569</td>
<td>180.723</td>
<td>187.272</td>
<td>197.012</td>
<td>219.830</td>
<td>243.081</td>
<td>268.514</td>
<td>293.330</td>
<td>305.426</td>
<td>301.494</td>
</tr>
<tr>
<td>Indonesia</td>
<td>495.123</td>
<td>525.524</td>
<td>558.781</td>
<td>597.970</td>
<td>646.094</td>
<td>706.150</td>
<td>767.884</td>
<td>838.866</td>
<td>907.466</td>
<td>959.973</td>
</tr>
<tr>
<td>Singapore</td>
<td>135.703</td>
<td>136.394</td>
<td>145.081</td>
<td>153.856</td>
<td>173.095</td>
<td>193.357</td>
<td>217.586</td>
<td>244.587</td>
<td>253.630</td>
<td>253.345</td>
</tr>
</tbody>
</table>

Source: Asian Development Bank & World Bank

Table 4  Growth rates of real GDP (percentage)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Hong Kong, China</td>
<td>8.0%</td>
<td>0.5%</td>
<td>1.8%</td>
<td>3.0%</td>
<td>8.5%</td>
<td>7.1%</td>
<td>7.0%</td>
<td>6.4%</td>
<td>2.2%</td>
<td>-2.8%</td>
</tr>
<tr>
<td>Indonesia</td>
<td>4.9%</td>
<td>3.6%</td>
<td>4.5%</td>
<td>4.8%</td>
<td>5.0%</td>
<td>5.7%</td>
<td>5.5%</td>
<td>6.3%</td>
<td>6.0%</td>
<td>4.5%</td>
</tr>
<tr>
<td>Singapore</td>
<td>9.1%</td>
<td>-1.2%</td>
<td>4.2%</td>
<td>4.6%</td>
<td>9.2%</td>
<td>7.4%</td>
<td>8.6%</td>
<td>8.5%</td>
<td>1.8%</td>
<td>-1.3%</td>
</tr>
</tbody>
</table>

Source: Asian Development Bank & World Bank

Table 5  Foreign direct investment in USD

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Hong Kong, China</td>
<td>61,923,9</td>
<td>23,776,2</td>
<td>9,682,0</td>
<td>13,624,4</td>
<td>34,031,6</td>
<td>33,617,7</td>
<td>45,053,6</td>
<td>54,365,1</td>
<td>59,614,4</td>
<td>48,449,3</td>
</tr>
<tr>
<td>Indonesia</td>
<td>-4,550,4</td>
<td>-2,977,4</td>
<td>145,1</td>
<td>-596,9</td>
<td>1,896,1</td>
<td>8,336,3</td>
<td>4,914,2</td>
<td>6,928,5</td>
<td>9,318,5</td>
<td>4,877,4</td>
</tr>
<tr>
<td>Singapore</td>
<td>15,484,5</td>
<td>15,093,1</td>
<td>6,381,2</td>
<td>11,800,1</td>
<td>20,053,6</td>
<td>14,374,2</td>
<td>27,680,3</td>
<td>31,550,4</td>
<td>22,724,5</td>
<td>16,808,3</td>
</tr>
</tbody>
</table>

Source: Asian Development Bank & World Bank
Table 6  Foreign direct investment, net inflows (percent of GDB)

<table>
<thead>
<tr>
<th>FDI net-inflows, percentage of GDP</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hong Kong, China</td>
<td>36.6%</td>
<td>14.3%</td>
<td>5.9%</td>
<td>8.6%</td>
<td>20.5%</td>
<td>18.9%</td>
<td>23.7%</td>
<td>25.3%</td>
<td>27.7%</td>
<td>23.0%</td>
</tr>
<tr>
<td>Indonesia</td>
<td>-2.8%</td>
<td>-1.9%</td>
<td>0.1%</td>
<td>-0.3%</td>
<td>0.7%</td>
<td>2.9%</td>
<td>1.3%</td>
<td>1.6%</td>
<td>1.8%</td>
<td>0.9%</td>
</tr>
<tr>
<td>Singapore</td>
<td>17.5%</td>
<td>17.2%</td>
<td>7.0%</td>
<td>12.3%</td>
<td>17.8%</td>
<td>11.3%</td>
<td>19.1%</td>
<td>17.8%</td>
<td>11.8%</td>
<td>9.2%</td>
</tr>
</tbody>
</table>

Source: Asian Development Bank & World Bank

6.2 Model

To assess whether FDI contribute to a country’s economic growth, a statistical test will be executed. The model which will be used is a statistical test called t-distribution, or also known as Student distribution.

The t-distribution has a parameter $\nu$ and the t-distribution is the probability distribution that belongs to the following probability density function (PDF):

$$ f(y) = Cv * 1/\sqrt{(1 + y^2 / \nu)^{(\nu+1)/2}} $$

$\nu$ is a positive integer, and it reflects the number of degrees of freedom (also indicated with $n$). The constant $Cv$ has to be such that $f$ is a continuous probability density function, so the total area under $f$ is one. Each choice of $\nu$ yields a probability density function and it basically defines a whole family of probability distributions, namely the t-distributions.

At first sight, the graphs of the probability density functions look similar to the standard normal probability density function, because they are also symmetric around zero and also concentrated on the set of all real numbers. However, the tails of a t-distribution are more “fatter”.

Figure 4 graphically displays the plots of the probability density functions.
By running the statistical test, linear regression function in SPSS, the R-square and correlation will be derived. To assess if FDI contribute to a country’s economic growth the R-square of each economy will be needed. The R-square of each economy (Hong Kong, Indonesia and Singapore) will be derived by running a statistical data test with a confidence interval of 95 percent, where real GDP (of each individual economy) is an independent variable and real FDI (of each individual economy) is a dependent variable. Each economy will be assess individually and the data for this test has already been given in the tables 3 and 5.

When looking at (for example) two assets in an investment portfolio, there is a certain relationship (positive or negative) observable. This relationship is also observable between FDI-growth and the growth of GDP. The question rises is: what kind of relation is observable (thus positive or negative) and how “strong” will this relation be between those two? The correlation between FDI-growth and GDP-growth will be used to answer the question. The required data has already been given in the tables 4 and 6.
6.3 Results

This section presents the results and findings for each economy. For every economy there will be an explanation about whether FDI contributes to economic growth and if there is a relation between FDI-growth and GDP-growth.

Hong Kong:

For Hong Kong the R-square and the adjusted R-square are respectively 0.339 and 0.257. This indicates that FDI contributes is supportive for economic growth to a certain extend. However since these values are relatively low, this also indicates that there is not a strong relation that FDI is really an important source for Hong Kong’s economy in the period between 2000 – 2009.

Figure 5  Model Summary R-square for Hong Kong

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.582</td>
<td>0.339</td>
<td>0.257</td>
<td>15995.2593</td>
</tr>
<tr>
<td></td>
<td>a. Predictors: (Constant), R_GDP_HK</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Indonesia:

For Indonesia the R-square and the adjusted R-square are respectively 0.709 and 0.673. This indicates that FDI contributes is supportive for the economic growth. Since these values are relatively high, this indicates that there is a quite strong relation that FDI is an important source for Indonesia’s economy (namely supports the economic growth) in the period between 2000 – 2009.

Figure 6  Model Summary R-square for Indonesia

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.842</td>
<td>0.709</td>
<td>0.673</td>
<td>2734.1384</td>
</tr>
<tr>
<td></td>
<td>a. Predictors: (Constant), R_GDP_ID</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Singapore:

For Singapore the R-square and the adjusted R-square are respectively 0.441 and 0.371. This indicates that FDI is supportive for economic growth to a certain extent. However since these values are moderate, this does not proof significantly that the proposition that FDI is an important source for economic growth is valid.

Figure 7 Model Summary R-square for Singapore

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.664 a</td>
<td>.441</td>
<td>.371</td>
<td>5922.8961</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), R_GDP_SGD

When looking at (for example) two assets in an investment portfolio, there is a certain relationship (positive or negative) observable. This relationship is also observable between FDI-growth and the growth of GDP. The question rises is: what kind of relation is observable (thus positive or negative) and how “strong” will this relation be between those two? The correlation between FDI-growth and GDP-growth will be used to answer the question. The needed data has already been given in the tables 4 and 6.

The correlations between FDI-growth and GDP-growth for Hong Kong, Indonesia and Singapore are listed below.

Figure 8 Correlation overview between FDI-growth and GDP-growth

<table>
<thead>
<tr>
<th>Correlation</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hong Kong</td>
<td>0.381284754</td>
</tr>
<tr>
<td>Indonesia</td>
<td>0.093253572</td>
</tr>
<tr>
<td>Singapore</td>
<td>0.501075747</td>
</tr>
</tbody>
</table>

The correlations of all of the three economies indicates that there is a positive relationship between the growth of FDI and the growth of GDP, hence FDI-growth and GDP-growth tend to move together, but they do not follow each other in exact the same way.

The correlation between FDI-growth and GDP-growth is the strongest in Indonesia’s economy, this also holds for some extend for the Singaporean economy, while the correlation in
Hong Kong is relatively low (compared to the other two economies). These findings match with the findings of the real GDP and real FDI.

Figure 9 shows an overview with the empirical findings for each economy.

<table>
<thead>
<tr>
<th>Economy</th>
<th>R-square</th>
<th>Adjusted R-square</th>
<th>Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hong Kong</td>
<td>0.339</td>
<td>0.257</td>
<td>0.381284754</td>
</tr>
<tr>
<td>Indonesia</td>
<td>0.709</td>
<td>0.673</td>
<td>0.693253572</td>
</tr>
<tr>
<td>Singapore</td>
<td>0.441</td>
<td>0.371</td>
<td>0.501075747</td>
</tr>
</tbody>
</table>
7. Conclusion

Throughout the theory there is a general agreement about a positive relation between FDI and a country’s economic growth. The data used in this research also suggest that there is a positive link between FDI and economic growth, however this link differs in each economy.

Another finding is that FDI in this case mainly supports Indonesia as a transition economy, while the economies of Hong Kong and Singapore are less dependent on FDI. The R-square and correlation of Indonesia’s economy are both higher than Hong Kong’s and Singapore’s economy. This makes sense, because from a theoretical perspective the argument (that FDI mainly benefits transition economies over developed economies) is supported.

The lower R-square and correlations from Hong Kong and Singapore can also be clarified. Since both economies are well developed, the growth of their economies are less dependent on FDI. There are other (major) sources that causes economic growth in Hong Kong and in Singapore and therefore the dependence upon FDI is lower than in Indonesia. In other words, FDI as a contributor and source to economic growth tend to be less powerful in the economies of Hong Kong and Singapore than Indonesia.

Other factors that contribute to economic growth and directly and/or indirectly to FDI are (for example) the potential of “catching-up”, education and economic policies and strategies aimed on growth. The potential of “catching-up” has been explained with means of the technological frontier. A country which is more distanced from its technological frontier, has more potential of catching-up than countries which already are near or on the technological frontier. By augmenting technology and improving education, a country will tend to move to the technological frontier.

Improvement in education is needed to attract more FDI. Throughout the theory, education of labor force is necessary to attract (greater) FDI and therefore support economic growth. Improvement of education enhances the probability of better jobs and for foreign investors it might be more attractive to invest in an economy with more high skilled workers. On the other hand, no improvements in education or high “dropout rates” will result in poor educated workers and low paid labor. On political level, economic policies and strategies must be aimed on growth.
The circumstances and climate in a economy must be beneficial for a foreign firm to establish themselves in a country. Freedom to move capital, people, goods and services are also necessities to attract more FDI.
Bibliography


- Asian Development Bank (2010), Key Indicators for Asia and the Pacific 2010, 41st edition

- B. K. Ang, S.-F. Yap (2009), Trade and Economic Development in South East Asia

- R. Barro, X. Sala-i-Martin (2003), Economic Growth

- P. J. Burke, Fredoun Z. Ahmadi-Esfahani (2006), Aid and Growth: A study of South East Asia

- J. P. Chousa, K. C. Vadlamannati, B. P. Aristidis and A. Tamazian (2008), Determinants of Barries to quality of direct Foreign Investments – Evidences from South & East Asian Economies

- D. Ciuriak (1999), The Economies of China, Taiwan and Hong Kong since the Asian Crisis

- L. E. Dellenbarger, L. Zhu, Z. Chen (2005), Where is Southeast Asia Heading?

- G. Han, K. Kalirajan, N. Singh (2003), Productivity, Efficiency and Economic Growth: East Asia and the Rest of the World


- K. Navaneetham (2002), Age Structural Transition and Economic Growth: Evidence from South and South East Asia


- K. H. Zhang (2001), Does foreign direct investment promote economic growth? Evidence from East Asia and Latin America