



SCHOOL OF
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Effects of External Money Inflow on Economic Growth in Pacific Island States

A quantitative study evaluating the effectiveness of external
capital in regard to levels of human capital.

by

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Abstract: External money inflows in form of FDI, ODA, and remittances make up for a substantial share of GDP in PICs. In this dissertation, the effect of external capital inflows on economic growth in receiving countries is evaluated. This study is amongst the first to investigate the interconnected effects of FDI, ODA, and remittances upon output for PICs. In line with the new growth theory, it is argued that the stock of human capital influences the effectiveness of capital inflow on economic growth. This study therefore incorporates human capital and finds that FDI is more effective in stimulating economic growth when levels of human capital are higher, allowing technological spillover effects to be easier absorbed. Remittances appear more effective in fostering economic growth when levels of human capital are lower. ODA seems to have only a slightly positive impact on economic growth, independent from levels of human capital.

Keywords: External capital, FDI, ODA, Remittances, Economic Growth, Pacific Island Countries

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List of Abbreviations

2SLS	Two Stages Least Square
ADB	Asian Development Bank
CAGR	Compound Annual Growth Rate
FDI	Foreign Direct Investment
FE	Fixed Effects
GDP	Gross Domestic Product
GMM	General Method of Moments
GNI	Gross National Income
HC	Human Capital
IMF	International Monetary Fund
LMICs	Low- and Middle-Income Countries
NGT	New Growth Theory
ODA	Official Development Aid
OECD	Organization for Economic Co-Operation and Development
OLS	Orderly Least Squares
PICs	Pacific Island Countries
PNG	Papua New Guinea
REM	Remittances
SIDS	Small Island Developing States
SSA	Sub-Saharan Africa
WGI	Worldwide Governance Indicators

1 Introduction

Countries all over the world strive for economic growth, development, and a higher standard of living. However, attaining this goal has been especially challenging for Pacific Island countries (PICs). These countries face dreadful challenges in their development process as a result of their remote location, limited size, and vulnerability to external shocks such as natural disasters. However, also their high costs of transportation and the absence of economies of scale make it highly difficult for them to successfully undergo the traditional development path from agriculture to manufacturing to services. Thus, the conventional development process does not properly work in PICs (ESCAP, 2019). Due to this, many economies in the Pacific only rely on a few commodities, and the public sector is the largest employer in many of the countries (World Health Organization, 2013). In the last decade migration into domestic urban areas or foreign countries due to employment has become more common and remittances make up for an increasing share of GDP in most countries as can be seen in figure 1. Furthermore, PICs are among the top receivers of per capita official foreign development assistance (ODA) and experience strong increases in absolute terms of Foreign Direct Investment (FDI) since 2013. From 2017 to 2018 FDI rose by more than 160 percent, as can be seen in figure 1 below. In 2018 total FDI capital inflow even surpassed total ODA inflows by more than 22 million US\$. This number may sound small, but 22 million US\$ (more than half of Tuvalu' GDP in 2018), is a substantial amount for PICs.

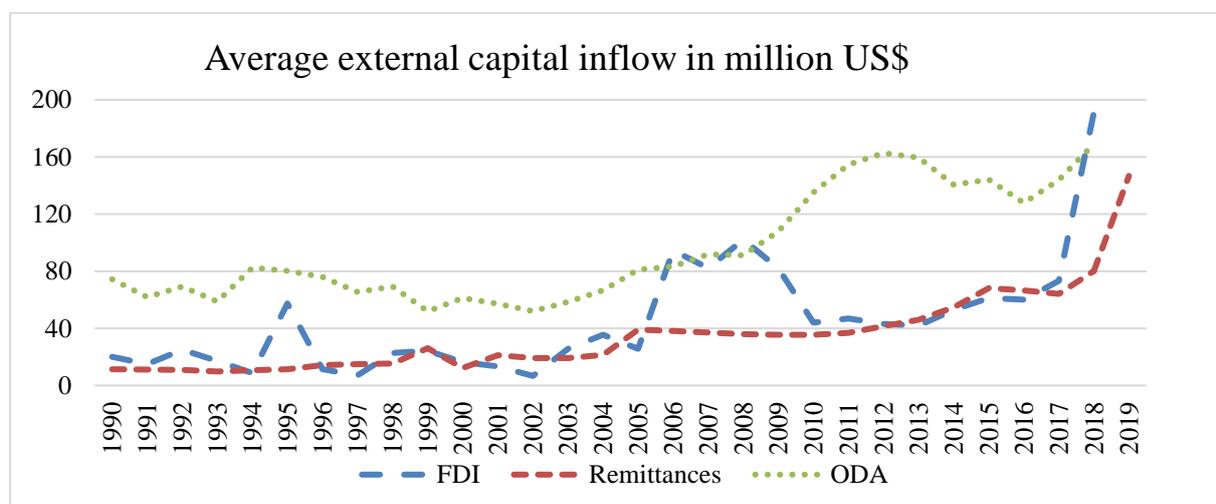


Figure 1: Average external capital inflow to PICs in million US\$
Sources: Data: World Bank (2021), Graph: authors computation

When putting the numbers in relation to other developing regions the uniqueness and dependency on external capital inflows of the PICs can be identified even more clearly, as seen in figure 2. In 2019, ODA accounted for a share of 17 percent of GDP in the PICs. This is substantially higher than any other developing region. For example, countries in Sub-Saharan Africa (SSA) on average only receive 3.2 percent ODA in relation to GDP (World Bank, 2021). The same holds true for remittances where the PICs receive around 10 percent of their GDP annually while countries in SSA receive around 2.7 percent of GDP. Other island countries, to which the PICs are regularly compared with, such as the Caribbean small states receive only around 5 percent of their GDP (World Bank, 2021). Only for FDI the PICs do not outperform other regions as greatly. They still attract substantially more FDI than the SSA region, where FDI accounts for around 2 percent of GDP but the Caribbean small island states are able to attract more FDI than the PICs (World Bank, 2021).

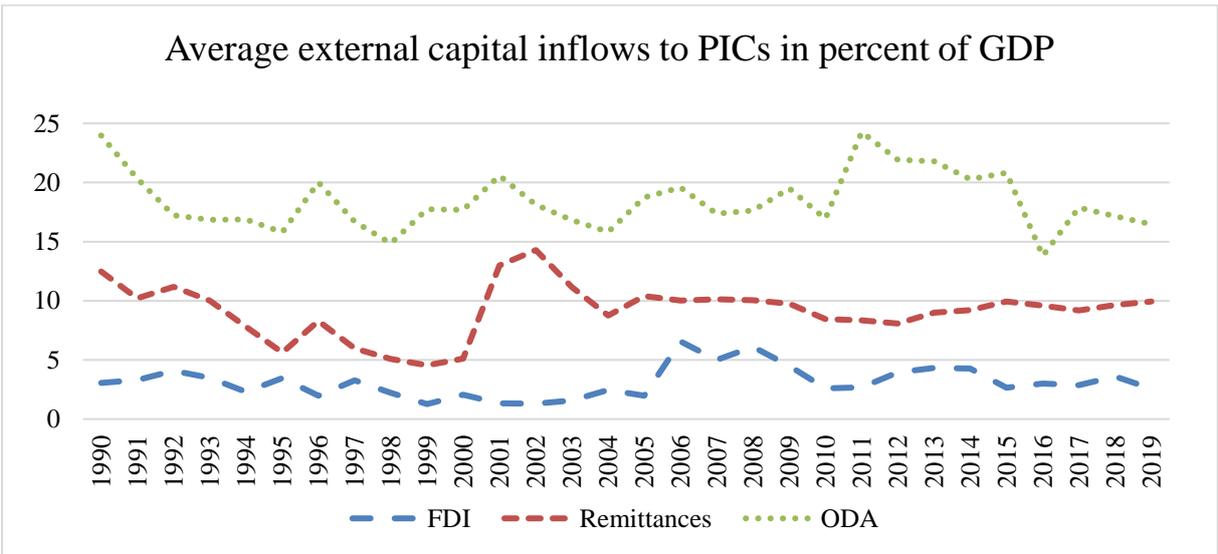


Figure 2:: Average external capital inflows to PICs in percent of GDP
Sources: Data: World Bank (2021), Graph: authors computation

Thus, most of the PICs are heavily reliant on external income sources such as remittances, foreign direct investment, or official development aid. In this study, the effect of FDI, ODA and remittances as a form of income on GDP growth per capita of the countries in the Pacific Islands is examined both, singular and how they interact with each other. A special focus is put on human capital, as it is assumed that different levels of human capital influence the effectiveness of each of the sources of external capital on GDP growth. This idea was formulated by Abramovitz (1986) who described this with the term social capability. According to the social capability approach, a country has strong potential to develop if it is socially advanced but technologically backward. Thus, the preliminary findings suggest that FDI is

more effective in stimulating economic growth when levels of human capital are higher, allowing technological spillover effects to be easier absorbed. Remittances appear more effective in fostering economic growth when levels of human capital are lower. While ODA seems to have only a slightly positive impact on economic growth, independent from levels of human capital.

1.1 Research Gap

There is a wide range of literature that researches the impact of FDI, ODA, and remittances individually. Few exist which investigate how these external capital flows are interconnected and how they affect economic growth. This paper aims to fill this gap for the Pacific Region, a region which is immensely under-researched, possibly due to data scarcity and comparable unimportance to the world market as the countries constitute really small economies.

Following the concerns previously discussed, this paper aims to answer the following question: *“How does external money inflow in form of FDI, ODA and remittances affect economic growth in Pacific Island States in the period from 1990 - 2019?”*

Further, this study examines the effectiveness of external capital inflow through the lens of human capital by following the framework of Borensztein, Gregorio and Lee (1998), who find that a certain minimum threshold of human capital is necessary in the host economy for FDI to stimulate growth. A lack of skilled labour is also mentioned by Feeny, Iamsiraroj and McGillivray (2014a) as a weakness for the host-country of FDI as it limits the technology-spill over and thus also the lasting positive effect FDI could have on the host country. Hence, the level of education is used to distinguish between countries and draw conclusions of effectiveness not only of FDI but also to investigate whether ODA and remittances are sensitive to the stock of human capital. Human capital is used to distinguish between countries because it appears to be an important determinant for the state of the development process and allows for a more nuanced investigation of the effectiveness of external capital (Conceição, 2020). It is expected that the size of external income has an impact on GDP growth per capita and is influenced by the level of education in the Pacific Island States as technological spillover effects can be absorbed more efficiently when human capital is higher which increases the impact of external capital on economic growth.

To answer the research question three hypotheses and a sub research question are formulated:

How does external money inflow affect economic growth in Pacific Island States when accounting for human capital?"

H₀: FDI has a positive impact on economic growth if human capital stock is low

H₁: FDI has a positive impact on economic growth if human capital stock is high

H₀: ODA has a positive impact on economic growth if human capital stock is low

H₂: ODA has a positive impact on economic growth if human capital stock is high

H₀: Remittances have a positive impact on economic growth if human capital stock is low

H₃: Remittances have a positive impact on economic growth if human capital stock is high

The research question, sub-research question and hypotheses are necessary to achieve the aim of this study. The purpose of this study is to contribute to the literature by addressing the under-researched topic of the development of PICs. Moreover, it further investigates the relationship of FDI, ODA and remittances on economic growth and uses the stock of human capital to allow for a more nuanced analysis.

1.2 Outline of the Thesis

Having introduced the research aim and motivation of the study in the first chapter, this is followed by five chapters. The second chapter comprises a literature review which explains the different variations of external money inflows and puts a special focus on the situation in the Pacific region. Chapter three presents the model and explains how the model was chosen based on econometric testing. Also, limitations of the model and the estimators are critically discussed. The fourth chapter presents the data and gives an overview of the variables and the scope of the data as well as discusses further limitations. In chapter five the empirical analysis is conducted. The data is analysed with regards to growth, human capital and crowding-out effects. In the second part of the chapter the results are linked to the literature and discussed in context. Chapter six concludes this paper with a summary of the findings and gives implication and objectives for future research.

2 Theory

Literature concerning the economic situation of PICs is relatively limited as the data is scarce as extensively discussed later. Though there is an immense scarcity of data, this thesis tries to overcome this by highlighting the limitations and then carefully working with the available data.

This literature review explores the current state of academic research concerning the effect of FDI, ODA, and remittances on economic growth and the development progress in the Pacific Island states specifically. First, the relationship between each external money inflow variable and economic growth, in general, is discussed and then underpinned with empirical evidence, especially from the Pacific Island States. In the end, evidence from research which discusses all three variables interconnected is presented.

2.1 Impact of FDI on Growth

The relationship between FDI and economic growth is a well-researched area in academia. Several studies find that FDI and financial development are highly correlated with economic growth (Feeny, Iamsiraroj & McGillivray, 2014a; Fedderke & Romm, 2006; Tekin, 2012; Iamsiraroj & Ulubasoglu, 2015). The standard neoclassical Solow-model suggests that capital flows to the sector with the highest returns (Solow, 1956). It assumes that there is a greater marginal return the lower the income. Hence, FDI, as a capital flow increases economic growth by deepening the capital stock. Furthermore, micro-based analysis advocates the idea that foreign-owned production is more productive than domestically owned production as foreign-owned production has a higher technological standard (Aitken & Harrison, 1999; Haddad & Harrison, 1993). Rivera-Batiz and Romer (1991) identify two channels through which technology is transferred: (i) transmission of ideas traded independently from goods, and (ii) trade in intermediate and capital goods. Borensztein, Gregorio and Lee (1998) argue that FDI takes effect through both channels and thus creates endogenous growth. Read (2008) further examines the impact of growth through linkage creation. He distinguishes between direct and

indirect impacts. Indirect impacts include the generation of positive and negative externalities and spillovers in the host-economy. Direct impacts include job creation and technology transfers. He argues that the creation of employment can raise local labour productivity as technological spillover effects are likely to take place. Thus, introducing new technologies to host-country economies potentially raises the domestic technology stock and absorptive capacity. The positive effects vary dependent on the extent of created linkages between foreign and domestic sectors. Anwar and Cooray (2012), Jayaraman and Choong (2006b) and Lee and Chang (2009) further underline that FDI and the financial sector are complementary. Meaning that FDI adds to the availability of capital for investments.

On the contrary Mendoza and Terrones (2008), Benigno and Fornaro (2014) and Hsu, Tian and Xu (2014) state that FDI and domestic credit are substitutional in promoting economic growth and thus FDI has a negative effect. This effect is particularly pronounced in small economies which have limited markets and investment opportunities. In these economies FDI likely usurps domestic investments and domestic investment is redirected into less productive areas such as consumption. Hence, they conclude that FDI is likely to filibuster returns of domestic credit lending and has a negative effect on economic growth. This view is supported by Read (2008) who notes that this crowding-out effect is most likely to take place in economies where the supply of particular skills or human capital is constrained. As developing countries usually suffer more from skill shortages the crowding-out effect will be more pronounced in these economies. The result of the crowding-out effect is that local firms are unable to compete with foreign firms and instead of experiencing enhanced stimulation of domestic competition they are forced to leave the market which is inefficient.

As the effectiveness of FDI is contextual, in the next section evidence for the PICs is discussed. On a more general note, Read and Driffield (2004) highlight that globally the share of FDI to Small Island Developing States (SIDS) in absolute numbers is relatively low, for the small size of their economies however, the amount converts to a substantial share of their respective GDPs. In relative terms the inflow of FDI to SIDS can even be larger than to the average developing country (Read & Soopramanien, 2003). Read and Driffield (2004) identify different motives for foreign investors to invest in SIDS. These include natural resources, human capital, infrastructure, good governance and openness to trade. The authors expect that investing in SIDS is lucrative for investors and the impacts on economic growth are likely to be large.

The most recent and most extensive study on FDI effectiveness on growth in PICs is from Feeny, Iamsiraroj and McGillivray (2014a). They examine the growth impact of FDI to the Pacific region on seven PICs. Their study comprises of 209 countries and covers a time period from 1971 to 2010 including 42 observations from PICs. They used an OLS-model, a fixed effect model and to control for potential endogeneity of FDI and other variables they further used a General Method of Moments (GMM) Model. They find that a 10 percent increase in the ratio of FDI to host GDP is associated with an average 2 percent increase in host countries but only 0.1 percent to 0.4 percent in PICs in per capita income growth. Thus, higher levels of FDI suggest higher GDP growth rates. They find that the growth effect is less pronounced in PICs than for the average country. Feeny, Iamsiraroj and McGillivray (2014a) explain this lower impact by the evidence they find that FDI in PICs seems to crowd out domestic investment.

Similarly, Chen and Singh (2017) argue, that the impacts of FDI cannot be assumed to be the same as in other countries due to their special characteristics such as smallness, remoteness, limited economic structure, lack of investment opportunities and small market size. In their study they used panel data from 1982-2011 for six PICs. They find evidence that domestic credit and FDI played a competing role in enhancing labour productivity in Samoa, Solomon Islands and Vanuatu but were used as a substitution in enhancing labour productivity in Fiji, Papua New Guinea (PNG) and Tonga. Jayaraman and Choong (2006b) further research the case of Fiji by using a maximum likelihood method and detect a significant relationship of GDP growth rate, FDI inflows, real income per capita, trade openness and real exchange rate. Hence, they agree with Chen and Singh (2017) and assume that FDI inflows in Fiji had a positive impact on economic growth and the development process.

The evidence reviewed for the PICs seems to suggest that FDI can potentially have a positive effect on economic growth. However, there also remains the risk that FDI crowds out domestic investment. Especially ultra-small atoll states such as Samoa seem to be more prone to encounter negative effects than larger countries like Fiji or PNG.

2.2 Impact of ODA on Growth

Effects of foreign aid on economic growth remains a controversial, but a well and continuously researched topic in economics. According to standard economic theory, foreign aid is assumed to have a positive impact on economic growth. This assumption is verified in studies by

numerous researchers such as Papanek (1973), Singh (1985), Burnside and Dollar (2000), Dalgaard, Hansen and Tarp (2004), Ndambendia and Njoupougnigni (2010), Gomanee, Girma and Morrissey (2005), Karras (2006), and Mosley (1980). They used different approaches such as cross country regressions (Papanek, 1973), ordinary least squares models (Singh, 1985), fixed effect models (Cungu & Swinnen, 2003) or pooled mean group estimators (Karras, 2006). Levy (1988) researched the impact of ODA on economic growth in SSA and found a positive relationship between aid and economic growth. Dalgaard, Hansen and Tarp (2004) also conclude that aid and growth are positively related. The magnitude of the impact, however, depends on the climatic conditions.

In contrast to these findings, other researchers also identified a negative relationship between foreign aid and economic growth (Ram, 2004; Bobba & Powell, 2007; Gong & Zou, 2001; Mallik, 2008; Mitra, Hossain & Hossain, 2015). Mitra, Houssain and Houssain (2015) conducted a study for thirteen Asian economies and found a negative relationship between foreign aid on GDP growth in both, the long and the short run. Their results implied that a one percent increase in foreign aid would lead to a decrease in economic growth by 0.18 percent. This negative relationship in the long run is also encountered by Mallik (2008). Reasons for the negative impact of foreign aid include that foreign aid could reduce capital accumulation or labour supply (Gong & Zou, 2001). According to Gong & Zou (2001) the labour supply would be negatively affected by greater amounts of aid, as it would create the financial security for the population to enjoy more leisure time as they receive financial benefits due to foreign aid. Less people in the labour force thus would reduce the overall output of an economy and simultaneously lead to a lower domestic capital accumulation.

Contrary to both preceding findings some researchers did not find any significant relationship between ODA and economic growth (Easterly, Levine & Roodman, 2004; Mosley, Hudson & Horrell, 1987; Boone, 1996; Lensink & Morrissey, 2000; Dreher & Langlotz, 2015). Dreher and Langlotz (2015) conducted a study including 96 countries from 1974 till 2009, using an instrumental variable approach. They do not detect a relationship of foreign aid and economic growth and thus conclude that aid does not have an impact on economic growth. These results are in line with the studies of Lensink and Morrissey (2000) and Boone (1996).

Overall, there seems to be mixed evidence on the relationship of ODA and economic growth. The research community is continuously exploring the relationship. The issue appears to be highly contextual and impossible to generalize. Thus, in the following section the effectiveness

of ODA in PICs is elucidated. ODA ideally should be a catalyst for economies to become economically more mature and independent. Hence, if ODA promotes growth it should diminish over time, leaving a self-sufficiently working economy behind (Knapman, 1986). Aid to PICs however was high and remains high. From the Top-ten ODA per capita receiving countries, seven were from the Pacific Region, see Table 1 (World Bank, 2021).

Table 1: Foreign Aid Inflow per Capita

Country	Year	ODA per capita in current US\$	ODA percent of GNI
Nauru	2019	4,318	31.19%
Tuvalu	2019	3,132	55.84%
Palau	2019	1,385	8.71%
Tonga	2019	1,033	20.07%
Micronesia	2019	813	23.96% ^a
St. Vincent & the Grenadines	2019	764	10.32%
Dominica	2019	716	8.96%
Samoa	2019	628	15.18%
Syrian Arab Republic	2019	600	no data
Kiribati	2019	482	14.8 %

a = 2018

Source: World Bank (2021)

Researchers argue, that island economies have greater needs in their development process than larger developing countries, as they suffer from problem such as small territories, remoteness, small populations and limited natural resources (Knapman, 1986; Grydehøj & Kelman, 2020). Thus, they experience proportionally larger shortfalls of domestic savings and foreign exchange which hampers self-sustained economic growth more than in bigger countries. According to Castle (1980) the smaller and more remote PICs such as the ultra-small atoll economies Kiribati, Nauru, Marshall Islands, Micronesia, Palau, Samoa, Tonga and Tuvalu are too disadvantaged that it is unlikely that they will become independent from foreign aid. Even though this prediction was made in the 1980s a look at the current data in Table 1 shows that it holds true, as these countries are still top receivers of ODA today and heavily rely on it as a major source of income. On the other side, Knapman (1986) identifies countries such as Papua New Guinea, Fiji, the Solomons Islands and Vanuatu as countries which could become self-sufficient and independent from foreign aid. This prediction holds true in terms, as in Fiji and

Papua New Guinea ODA is less than three percent of their respective GNIs which is exceptionally low for PICs (World Bank, 2021). In the Solomon Islands and Vanuatu, on the other hand, ODA still accounts for a share of around 15 percent, which is the average in the PICs.

Jayaraman and Choong (2006a) further research the relationship of aid and economic growth in Fiji, covering a 33-year period from 1970-2002. They find that ODA is effective in accelerating growth. However, aid seems to be more effective for growth when not consumed by the government but utilized for capital expenditure. Thus, the authors suggest that effective public expenditure management is needed for aid to be optimally effective.

As highlighted by Knapman (1986), Castle (1980) and Grydehøj & Kelman (2020), the more remote island countries are, the less they can benefit from economies of scale. Thus, diminishing returns appear very quickly in very small economies which increases the demand for aid further. PICs face the dilemma that with increased money inflow into their economy the productivity of capital could decline to zero or become even negative. Especially if effective income-generating projects are scarce in the receiving countries, foreign aid goes into non-productive investments and foreign exchange-intensive projects. This can lead to imports of goods which are priced above the world market price, as the aid is tied to this project which makes it unproductive and ineffective to accelerate growth in the receiving countries. Ward and Proctor (1980, p. 475) thus constitute that:

“The Pacific is littered with abandoned and wholly unsuccessful projects in the agricultural sector, which were designed by economists, agronomists, financial analysts and engineers, whose best was not sufficient”.

The relationship of PICs with ODA is dualistic. On the one hand there is a need for ODA in the Pacific Region. For it to be effective, a well-designed project is required for ODA to actually accelerate economic growth. On the other hand, poorly designed projects, as described in the quote above, can hamper economic growth and create dependency of PICs on ODA as they are unable to self-sufficiently create economic growth and pursue their development path.

2.3 Impact of Remittances on Growth

Remittances increasingly become an important source of money inflow for developing countries. According to the World Bank (2020) in 2019 remittances to Low-and Middle-Income Countries (LMICs) reached a record of \$554 billion and surpassed FDI flows which is an important benchmark for monitoring flows of resources to developing countries. Even though due to the global pandemic remittances sharply decreased by nearly 20 percent in 2020, the World Bank (2020) estimates that remittances to LMICs will recover and bounce back to \$470 billion in 2021.

Thus, the magnitude and importance of remittances has been made clear. The impact of remittances to economic growth, however, is not as clear. Research on this topic is increasing since the 2000s and different theoretical ideas as well as empirical findings exist. Remittances can have a stimulating effect on the economy as investment gaps can be filled (Pradhan, Upadhyay & Upadhyaya, 2008). This can increase productivity and foster economic growth. Furthermore, it is assumed that remittances are effective in reducing poverty as usually the poor migrate and send money back to their families. In this manner household income increases which stimulates consumption which can work as a multiplier effect on aggregate demand and output (Stahl & Arnold, 1986). Other benefits of remittances include that unskilled workers who went abroad to work are more educated once they return home and thus a technology transfer is taking place. Furthermore, in comparison to foreign aid, remittances are free of liabilities and obligations to pay interest. Further remittances are also regarded as a more resilient source of funding than FDI which tends to be volatile in developing countries (Ratha, 2003). Adelman and Taylor (1990) conduct a study regarding the impact of remittances in Mexico and provide evidence that for each dollar of remittance received, the output increases by about three dollars. Desai, Kapur, McHale, and Rogers (2009) finds similar results for India and show that remittances from Indian migrant workers offset the tax revenue loss. According to them the financial loss of skilled workers emigrating is between 0.3 percent and 0.6 percent of GDP while remittances accounted for more than 2 percent of GDP, thus clearly offsetting the disadvantages. Several researchers also find a positive relationship of remittances and economic growth (Catrinescu, Leon-Ledesma, Piracha & Quillin, 2006; Faini, 2005; Taylor, 1992).

On the other hand, remittances can also make the economy dependent on external funding. Some even argue, that remittances may promote idleness among the recipients and remittances only have a limited impact on investments and savings as they are mainly used for daily consumption (Kapur & McHale, 2005). These observations are in line with the findings of the International Monetary Fund (IMF) (2005) which conducted a study of 101 developing countries and detected a positive, significant impact of remittances on poverty reduction but failed to identify an impact on economic growth. Other authors like Jahjah, Fullenkamp and Chami (2003) conduct a representative panel data study including 113 countries over the time period from 1970 – 1998. They overrule the idea that remittances are a significant source of capital for economic development. They find a negative relationship of remittances and economic growth. According to them, this is mainly due to the moral hazard problem. Remittances create a dependency of the recipients on them and induces them to substitute remittances for labour income, and thus lower their work effort. With little value-added and little productivity, output in the receiving countries will continue to stay low and makes recipients even more reliant on remittances in the future. Additionally, remittances can cause appreciation of the currency's value, lower net exports and adversely affect economic growth (Kapur & McHale, 2005). This finding is validated by Giuliano and Ruiz-Arranz (2005) who conduct a study covering over 100 countries for the 1975-2002 period with improved data compared to Jahjah's, Fullenkamp's and Chami's (2003) study. They identify that remittances may foster economic growth where the financial sector does not meet the credit needs of the population. However, they also highlight that remittances are mostly used for consumption. Thus, the authors view them as compensatory transfers between family members rather than strong drivers of economic growth. Kapur and McHale (2005) furthermore underline the importance of differentiating between skilled and unskilled workers as they inherit different opportunity costs. Migration of highly educated workers is detrimental for most developing countries as skilled people are scarce and educating them was expensive. When they leave to work abroad, their home country suffers from decreasing productivity and high costs to train replacements arise which negatively impacts economic growth.

As aforementioned the PICs are very special regarding their size, remoteness, vulnerability, and economy, thus drawing conclusion from findings from other countries can be misleading. In PICs remittances accounted for on average 10 percent of GDP in the period form 2000-2009 (Feeny, Iamsiraroj & McGillivray, 2014b). These numbers are higher than the remittances inflows of other SIDS and are emblematic for the greater economic challenges they face.

According to Feeny, Iamsiraroj and McGillivray (2014b) remittances were beneficial for their growth. From 1971 – 2010 average annual GDP growth was 0.94 percent. Remittances accounted for 1.68 percentage points to this growth. Thus, without remittances the countries would have experienced negative growth. The authors thus conclude that remittances have a positive impact on economic growth in the PICs and reduce growth volatility. Jongwanich (2007) agrees with Feeny, Iamsiraroj and McGillivray (2014b) as he also finds a positive impact of remittances on economic growth. He diverges slightly from the preceding authors as he only identifies a marginal impact. Jongwanich (2007) claims that remittances should not be regarded as main drivers of growth such as exports or FDI. This is in contrast with the results of Jayaraman, Chong and Kumar (2009) who provide further evidence from a case study in Samoa, a country receiving high amounts of remittances, which supports the argument that remittances are extremely important for Samoa's development process. Remittances in Samoa were used for household consumption, providing education, and more recently are increasingly providing stability of the balance of payments of the country by improving the current account and evening out trade imbalances. By adding liquidity to the banking system, credit to the private sector increased which resulted in greater economic activity, increasing exports and stimulated GDP growth. These findings are in line with the Brown (1994) and Walker and Brown (1995) who also attest the importance of remittances to savings and investments in Samoa and Tonga. Furthermore, Connell and Brown (2005) highlight that in Pacific island communities it is common to use remittances to construct or improve housing. Even though this is mostly regarded as consumption it stimulates the economy as it generates employment. Moreover, remittances are also used for investments. For example Kiribati seafarers invest a part of their income from overseas to fund small businesses back home (Borovnik, 2006). Hence, in conclusion remittances in the PICs overall seem to have a positive impact on economic growth.

2.4 Interaction of FDI, ODA and Remittances

The interaction of FDI, ODA and remittances is only limitedly researched. A study from Benmamoun and Lehnert (2013) investigates the relation of these sources of external money inflows for 182 countries using panel data over a 16 year period. They find that in low-income countries remittances contribute more to economic growth than ODA or FDI. If a country is highly indebted however, ODA is positively and significantly associated with economic growth. This induces that ODA is not dependent of the countries capacity of paying back their

debt. Usually, it is assumed that with higher levels of debt lending money for a country is more costly and hence has a smaller impact on economic growth as a share of the money must be used to pay back the debt. ODA, however, has a higher impact on growth if the country is indebted as other sources of external capital become more costly and less available. When low-income countries are not highly indebted however, remittances and FDI are a more efficient driver of economic growth than ODA. Thus, Benmamoun and Lehnert (2013) argue that low-income countries should reduce dependency on foreign aid and utilise FDI and remittances to finance investments. In the same vein Driffield and Jones (2013) assert that all sources of foreign capital have a positive impact on economic growth when accounting for the quality of institutions. In contrast to Benmamoun and Lehnert (2013) they find that FDI is slightly more effective in generating economic growth than remittances. They also underline the importance of institutional quality. While institutions itself are not strongly correlated with economic growth they are with FDI, ODA, and remittances. Protection of investors, maintenance of law and order and a high bureaucratic quality are all determinants of institutional quality which positively influence inward capital flows and consequently economic growth.

For the Pacific Island Region I believe, this paper will be the first to consider all three variables together and fill the gap of the interconnected impact from FDI, ODA, and remittances on economic growth in the PICs.

3 Methods

The research design of this thesis follows the growth model presented by Borensztein , Gregorio and Lee (1998). Their presented model argues that FDI has an impact on economic growth due to technology spillover effects and the accumulation of human capital.

3.1 Endogenous Growth Model

The model is built on the assumption that growth is endogenous and is mainly determined by the rate of technological progress (Romer, 1990). Exogenous growth theory differs from standard economic theory as it assumes that economic growth is the result of endogenous factors and not of external influences. Means of production in an economy can be influenced by the capital stock or levels of human capital. The model thus assumes that the stock of capital in an economy influences output levels positively in accordance with the level of sophistication of the industry. Through capital deepening technological progress is assumed to take place. The role of this capital deepening in from of external money inflows such as FDI, ODA, and remittances is empirically examined for economic growth in the pacific island countries. The model tries to explain the growth rate of GDP in the next period with the following equation. It uses parameters which are similar to the work of other researchers (Benmamoun & Lehnert, 2013; Driffield & Jones, 2013; Borensztein, Gregorio & Lee, 1998).

$$GDPgrowth_{i,t+1} = \beta_0 + \beta_1 \ln GDP_{i,t} + \beta_2 FDI_{i,t} + \beta_3 ODA_{i,t} + \beta_4 REM_{i,t} + \beta_5 HC_{i,t} + \beta_6 A_{i,t} + \varepsilon_{i,t}$$

Where subscript i depicts the country, and t the year. $GDP_{i,t}$ for example, is the GDP per capita for country i in year t. While $GDPgrowth_{i,t+1}$ is GDP growth for country i in the next period.

GDP = Gross domestic product (constant 2010 US\$)

FDI = Foreign Direct Investment (percentage of GDP)

ODA = Official Development Aid (percentage of GDP)

REM = Remittances (percentage of GDP)

HC = Human Capital (average years of schooling)

A = Government Expenditure, Inflation, Financial Depth, Political Stability

A is a set of variables that affects economic growth. A consists of control and policy variables which are regularly included as determinants of growth in cross-country studies (Borensztein, Gregorio & Lee, 1998).

In order for a successful implementation of more advanced technologies, a sufficient stock of human capital is necessary in the host countries (Nelson & Phelps, 1966; Benhabib & Spiegel, 1994). Thus, in the analysis the model is altered and an interaction term of human capital and each of the sources of external money is added to investigate this relationship. This is in line with Romer (1990) who argues that the stock of human capital determines economic growth. Human capital can be understood as a factor of production necessary for economic growth (Mincer, 1984). Human capital shifts production functions upwards as it is a source of new knowledge and in this manner generates economic growth. Growth of human capital is thus argued to be a condition and consequence of economic growth.

In this model the effect of FDI, ODA and remittances on economic growth in a framework of cross-country regressions utilizing panel data is investigated. The sample contains nine Pacific Island Countries, namely Fiji, Kiribati, Micronesia, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, and the Marshall Islands, over a time period from 1990 – 2019.

3.2 Tests

To determine which estimator to use for the model, a variety of test have been performed. When conducting a pooled OLS regression and testing it with a F-test it becomes apparent that OLS is not the best fit. Thus, is further verified when conducting the Breusch-Pagan test to check for homoscedasticity. To check for autocorrelation a Wooldridge test for autocorrelation in panel data is run. The null hypothesis of no first order autocorrelation can be accepted and thus, autocorrelation is not prevalent. The Hausman test, which is utilized to investigate whether a fixed effects or random effects model should be used suggests using the fixed effect model as the Hausman test has been rejected. To distinguish if a fixed effect or first difference model should be used the idiosyncratic error terms were compared. As these were not serially correlated the fixed effects model was preferred and is the model of choice. The test can be seen in Table 16 in Appendix A.

3.2.1 Stationarity Test

To check for stationarity, the Im-Pesaran-Shin test, a panel unit root test, was conducted. Motivated by the study of Jayaraman and Choong (2006a), the unit root is conducted on first differences, cross-sectional means to mitigate effects from cross-sectional correlation and a trend are used. The optimal lag structure is identified with the Schwarz information criterion.

H0: There is unit root: → data is not stationary.

H1: data is stationary.

All the variables are statistically significant as seen in Table 2. Thus, H0 can be rejected which implies that stationarity is given. Stationarity is important as otherwise analytical tools and statistical test are unable to produce a meaningful output. Unfortunately for the FDI variable there are not enough observations to obtain a result. However, stationarity is assumed as it is usually the case for macroeconomic parameters.

Table 2: Panel Unit Root Test

VARIABLES	Test Statistic	Probability
FDI	Not enough observations	
ODA	-12.4431	0.0000
Remittances	-9.5842	0.0000
GDP	-9.8504	0.0000
Government Expenditure	-7.0006	0.0000
Human Capital	-5.1212	0.0000
Trade openness	-7.2205	0.0000
Financial Depth	-3.5835	0.0002

3.2.2 Endogeneity Test

To test endogeneity among the variables a Fixed Effects and 2SLS regression is run (Semykina & Wooldridge, 2008). Testing for endogeneity is essential to check if there is a correlation between the variables and the error term. These can arise due to measurement errors, auto correlation and omitted variable bias. Testing if there is a correlation between FDI, ODA, remittances and GDP growth can be done by an instrumental variable approach. Following the assumption of Borenstein, Gregorio and Lee (1998) lagged value of FDI, ODA, remittances are used as an instrument variable. The two stages least square (2SLS) is used to account for solving the endogeneity problem. Table 3 shows the results of a Fixed Effects regression and

the second stage of the 2SLS. The test results of the FE and the 2SLS are similar regarding magnitude and significance with slightly different standard errors. Thus, it is concluded that endogeneity is not an issue here.

Table 3: Endogeneity Test

VARIABLES	FE	2SLS
Initial GDP growth	0.197* (0.102)	0.340*** (0.0916)
FDI/ lagged FDI	0.0385 (0.102)	0.148 (0.0846)
ODA / lagged ODA	0.148 (0.0996)	0.00874 (0.0681)
Remittances / lagged REM	-0.124 (0.172)	-0.0452 (0.0503)
Human Capital	0.00900 (0.824)	0.169 (0.157)
Government Expenditure	0.287 (0.181)	0.00313 (0.0323)
Inflation	0.0123 (0.112)	0.0937 (0.0895)
Constant	-7.549 (8.140)	-0.154 (1.624)
Observations	103	98
R-squared	0.165	0.169
Number of countryid	7	

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

3.3 Limitations

There are various limitations to the research. These include model-wise and data-wise limitations.

3.3.1 Model-wise

Model-wise the new growth theory (NGT) by Romer faces criticism. The model is based on neoclassical assumptions such as perfect factor mobility, marginal productivity rule of distribution or aggregate production functions which may not be applicable for developing countries as these are not fulfilled there. Developing countries often suffer from weak infrastructure, inadequate institutional quality and ineffective capital and goods market and thus fulfil neoclassic assumptions to a lesser degree than developed countries (Kirkpatrick, Parker

& Zhang, 2004). Furthermore, critiques argue that developing countries are poor due to a backward incentives system (Smarzynska, 2002). They experience allocation inefficiencies when trying to transform from traditional economies to market economies. Lastly, the NGT is concerned with long run growth rates whereas for developing countries, only the short- to medium-term growth rates are recorded. This is not an ideal condition to apply the NGT. On the other hand researchers argue that the NGT can offer an improved understanding of growth regularities among developing countries (Islam, 2004; Romer, 1992; Bardhan, 1995). The NGT catalysed a re-examination of cross-country implication of the neoclassical growth theory and provided valuable implications such as possibility of policy influence on the long-term growth rate, importance of technological diffusion in convergence, the role of institutions for growth, and the potency of trade for economic growth (Islam, 2004). Thus, besides the downsides, that the neoclassical framework may not be perfectly applicable the model is still regarded as meaningful for investigating economic growth in developing countries.

3.3.2 Estimator-wise

The fixed effects model even though it has many advantages such as that it allows to control for variables that vary over cross-sectional units but are constant over time and as it limits estimation biases compared to OLS. However, the fixed effects model also has limitations. These include omission of variables, low statistical power, measurement errors, time invariance or unobserved heterogeneity (Hill, Davis, Roos & French, 2020).

Other model specifications which are more commonly used in this setting is the General Method of Moments (GMM) Model. This model allows to control for endogeneity, handle lagged dependent variables, unobserved fixed effects, endogenous independent regressors, heteroskedasticity and autocorrelation across and within countries. The GMM model however was not applicable as a crucial condition that must be fulfilled is that there are more countries than years in the sample. As the Pacific Island Region is composed of a limited number of countries and data availability is flawed, the timespan which could have been investigated with the GMM model is less than 10 years.

Thus, the choice of econometric model was heavily dependent on which model was feasible with the scarce data at hand. The impossibility of applying a more sophisticated model can be seen as an indication that the dataset has many limitations. For example, it contains many missing values. Originally there are 330 observations, however for some controls like

government expenditure only 126 observations exist. This missing data can reduce the statistical power and bias the estimators which can lead to invalid conclusions (Kang, 2013). Thus, the results produced by the estimators should be regarded with caution. The study aims to observe a pattern and general trend the results are pointing towards.

4 Data

In this paper, the effect of external money inflow in the form of FDI, ODA, and Remittances on GDP growth is investigated. The researched area is the Pacific Island Countries.

The balanced panel data covers information about nine countries, namely Fiji, Kiribati, Micronesia, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, and the Marshall Islands. The studied 30-year period spans from 1990 to 2019 and is chosen due to data availability in order to obtain long-term effects of FDI, ODA, and remittances on GDP growth.

4.1 Source Material

The data was obtained from the World Bank, Human Development Index 2020 and the IMF. Data scarcity was overall an immense problem, as the area of Pacific Island States is under researched and data availability is exceptionally poor. Originally it was planned to include twelve Pacific Island States but for Nauru, Cook Islands and Tuvalu data was not available at a substantial level. Also, for Kiribati, Palau and the Marshall Islands the dataset is incomplete. In the case of Palau not even GDP data prior to the year of 2000 exists.

The data is quantitative, secondary, panel data. As highlighted, often observations are missing, the most basic indicators such as GDP are not available at all for a certain country, or the data is only available in current US dollars. The Consumer price index, necessary to calculate constant dollars, is only available for nine countries. This intensified the limitations of data availability. To overcome these missing observations, additional to the raw data linear interpolation is used to run the regressions. The analysis is once conducted with the raw data and once with the interpolated data and then critically compared. The interpolated data thus is just an additional test to investigate robustness of the results. All results for the interpolated data can be found in Appendix B.

The reliability of the data is questionable as statistical bureaus in these developing countries are not as advanced as in developed countries. However, the World Bank data is the best available

source, thus, the data is used regardless. The possibly low level of reliability of the data is however an important limitation which should be kept in mind when interpreting the results.

The data is representative as it is on the country level and should only represent the country. For regional analysis the majority of the countries of the regions are included which thus also leads to representative coverages of the regions.

The data is relevant for the research as the impact of external money inflow on economic growth is investigated. The biggest threat to validity is the scarcity of data as the dataset contains a substantial number of missing values. These missing values can decrease the internal validity of the study as the study results can be biased and deviate from the truth (Patino & Ferreira, 2018). External validity is low of the study, as the PICs are such a specific and unique set of countries which face special problems. It is unlikely that the results of this study give insights of the effectiveness of external money inflows to other regions. Only for other island state communities such as the Caribbean the study could give some valuable insights.

4.2 Data Description

Below the definitions for the variables which are used will be given and the importance for the study is discussed. An overview of all variables can be found in Table 17 in Appendix A.

➤ GDP growth per capita

“Annual percentage growth rate of GDP per capita is based on constant local currency. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products” (World Bank, 2021). The variable is measured in constant 2010 U.S. dollars and has been transformed to the natural logarithm to allow for percentage wise interpretation. GDP is used as dependent variable in the model.

➤ Foreign Direct Investment (% of GDP)

“Foreign direct investment refers to direct investment equity flows in the reporting economy. It is the sum of equity capital, reinvestment of earnings, and other capital. Direct investment is a category of cross-border investment associated with a resident in one economy having control or a significant degree of influence on the management of an enterprise that is resident in another economy” (World Bank 2021). Data is expressed as percentage of GDP.

➤ Official Development Aid (% of GNI)

“Net official aid refers to aid flows (net of repayments) from official donors to countries and territories in part II of the DAC list of recipients” (World Bank, 2021). The data is expressed as percentage of the Gross National Income (GNI). The GNI varies from GDP as it includes earnings from all citizens even when earned abroad and excludes the share of income by foreigners in the country which they remit back to their home country. As in Pacific Island countries the share of foreigners is low, ODA as percentage of GNI is assumed to be comparable to the other inflows which are measured as a percentage of GDP.

➤ Remittances (% of GDP)

“Personal remittances comprise personal transfers and compensation of employees. Personal transfers consist of all current transfers in cash or in kind made or received by resident households to or from non-resident households. Personal transfers thus include all current transfers between resident and non-resident individuals. Compensation of employees refers to the income of border, seasonal, and other short-term workers who are employed in an economy where they are not resident” (World Bank, 2021). The data is expressed as percentage of GDP.

➤ Human Capital

The data for the level of education is measured as the average number of years of education received by people ages 25 and older. It is converted from education attainment levels using official durations of each level. The data is obtained from the Human Development Report 2020 (Conceição, 2020), which is based on the following datasets from the UNESCO Institute for Statistics (2020), Barro and Lee (2018), ICF Macro Demographic and Health Surveys (Various years), UNICEF Multiple Indicator Cluster Surveys and OECD (2019). It is used because it is the most widely available data. However, average years of schooling do not give insights of the quality of schooling and the comparability of education across the PICs could vary. Thus, it is not the best proxy for human capital, but the advantages in terms of data-availability out-weight these disadvantages.

➤ Inflation

“Inflation as measured by the annual growth rate of the GDP implicit deflator shows the rate of price change in the economy as a whole. The GDP implicit deflator is the ratio of GDP in

current local currency to GDP in constant local currency” (World Bank, 2021). It is used as a control variable because it is an important proxy for macroeconomic stability.

➤ Government Expenditure (% of GDP)

“Government Expenditure includes all government current expenditures for purchases of goods and services. It also includes most expenditures on national defence and security but excludes government military expenditures that are part of government capital formation” (World Bank, 2021). It is used as a control as it is a further channel for investments and thus interacts with the effectiveness of other external money inflows. It is among the variables which are frequently used as determinants (Barro & Sala-i-Martin, 2001; Borensztein, Gregorio & Lee, 1998).

➤ Domestic credit to private sector (% of GDP)

“Domestic credit to private sector refers to financial resources provided to the private sector by financial corporations, such as through loans, purchases of nonequity securities, and trade credits and other accounts receivable, that establish a claim for repayment” (IMF, 2021). This variable is used to account for financial depth of the host / receiving economies of external money inflow. King and Levine (1993) demonstrate that financial development is closely associated with long-run growth.

➤ Gross fixed capital formation (% of GDP)

“Gross fixed capital formation includes land improvements plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings” (World Bank, 2021). This variable is used to detect how external investments compete with domestic investments. In particular, it is used to research if any crowding out processes are taking place.

➤ Political Stability and Absence of Violence/Terrorism

“The Worldwide Governance Indicators (WGI) summarizing the views on the quality of governance provided by a large number of enterprises, citizen and expert survey respondents in industrial and developing countries. These data are gathered from a number of survey institutes, think tanks, non-governmental organizations, international organizations, and private sector firms” (World Wide Governance Indicators, 2021). The estimate of governance ranges from approximately -2.5 (weak) to 2.5 (strong) governance performance. The measure is included to control for the desirability for foreign investors to invest in a certain country.

4.3 Overview of Scope of Data

Below the summary statistics present the mean, standard deviation, minimum and maximum values of the variables. Table 4 displays that government expenditure has the highest mean and standard deviation. FDI and remittances have a medium mean and a significant lower standard deviation than ODA. The high standard deviation of ODA can be interpreted as a nearly 14 percent fluctuation in the studied pacific island countries during the period 1990-2019. GDP growth also shows high volatility as it reaches from 15 percent per year to -16 percent per year. From the sources of external money inflow remittances and ODA always at least create a money inflow in the PICs while FDI also takes on negative values. Mean Human Capital is 7.8 years of schooling while the span of schooling is quite large ranging from 2.3 years to nearly 13 years.

Table 4: Summary Statistics

VARIABLES	N	mean	sd	min	Max
GDP annual growth	287	1.079	3.849	-16.58	15.51
Foreign Direct Investment (% of GDP)	255	3.216	4.217	-7.570	19.59
Remittances (% of GDP)	241	9.415	9.491	0.0100	42.34
Official Development Aid (% of GDP)	289	18.50	13.98	1.312	89.20
Inflation (GDP deflator, annual %)	316	4.669	6.758	-6.975	68.23
Government Expenditure (% of GDP)	145	28.23	16.19	14.56	73.88
Human Capital	235	7.834	2.661	2.300	12.90

The correlation matrix for the explanatory variables and the dependent variable GDP can be seen in Table 5. It indicates that GDP is negatively correlated with FDI, ODA and remittances and only positively related to human capital and trade. This is interesting, as standard economic theory usually attests a positive relationship of GDP and FDI, ODA, remittances as explained in the literature section. The correlation of FDI is striking. It is negatively related to ODA and remittances, and government expenditure. All sources of money for investments which potentially could compete with FDI. Human Capital is positively related with FDI and remittances but negatively with ODA. Implying that an increase in human capital leads to a decrease in ODA. This is in line with the theory that when a country slowly advances and levels of education rise, foreign aid begins slowly to diminish.

Table 5: Correlation Matrix

Variables	Inflation	GDP	FDI	ODA	Remittances	Human Capital	Gov. Expenses
Inflation	1.000						
GDP	-0.131**	1.000					
FDI	-0.017	-0.008	1.000				
ODA	-0.117**	-0.059	-0.056	1.000			
Remittances	-0.026	-0.038	-0.210***	0.270***	1.000		
Human Capital	-0.188***	0.055	0.116*	-0.086	0.452***	1.000	
Government Expenditure	-0.204**	-0.034	-0.162*	0.593***	0.229***	0.173*	1.000

*** p<0.01, ** p<0.05, * p<0.1

4.4 Limitations

Data for developing countries is mostly scarce and often unreliable. Jerven (2013) impressively showed how numbers massively diverge by compiling GDP data for SSA countries. Influenced by Jerven's (2013) work three different sources (Maddison database, World Bank, Penn World Tables) for GDP data for SSA economies were consulted to create an overview of the 2017 GDP per capita in SSA countries. The findings attest highly different GDP per capita amounts. The Maddison database and the Penn World Tables are in 2011 US constant Dollars, while the World Bank data is in 2010 US constant Dollars. As the CPI for 2011 was not available it was not possible to transform the World Bank data into 2011 US constant Dollars. However, as the countries are compared with other SSA-countries in a ranking, the absolute values of GDP are negligible. Big discrepancies exist for Chad, Sierra Leone and São Tomé & Príncipe as seen in Table 6. While according to the Penn World Tables Chad is among the poorest economies in SSA, the World Bank data puts it in the middle and according to the Maddison database Chad is one of the richer countries in SSA. For Sierra Leone and São Tomé & Príncipe the case is similar. The World Bank ranks Sierra Leone among the poorest countries in SSA while according to the Maddison database it is in the middle of the ranking compared to other SSA countries. Significant differences are also apparent when looking at the amount of GDP per capita. Amounts reported by the World Bank are significantly lower than from the Penn World Tables and the Maddison database. The variance of results for Angola for example spans from 3,409US\$ (World Bank) over 5,004US\$ (Penn World Tables) to 8,146US\$ (Maddison database). These discrepancies from different sources underline the difficulties of obtaining

reliable data. These difficulties also hold true for this study and are thus a reminder to treat the data with care and not interpret it as unalterable facts.

Table 6: GDP per capita 2017 in constant US\$ in Sub-Saharan Economies

Maddison		World Bank		Penn World Tables	
1. Central African Rep.	607	1. Burundi	214	1. Central African Rep.	726
2. Burundi	671	2. Central African Rep.	371	2. Burundi	744
3. Liberia	829	3. Congo, Dem. Rep.	409	3. Congo, Dem. Rep.	798
4. Congo, Dem. Rep.	829	4. Sierra Leone	467	4. Liberia	849
5. Niger	935	5. Madagascar	481	5. Niger	892
6. Malawi	1,119	6. Malawi	512	6. Malawi	1,003
7. Mozambique	1,125	7. Niger	535	7. Mozambique	1,207
8. Madagascar	1,400	8. Liberia	548	8. Chad	1,368
9. Togo	1,418	9. Ethiopia	548	9. Sierra Leone	1,404
10. Guinea-Bissau	1,483	10. Mozambique	589	10. Ethiopia	1,526
11. Burkina Faso	1,530	11. Guinea-Bissau	615	11. Togo	1,547
12. Guinea	1,563	12. Togo	661	12. Madagascar	1,595
13. Zimbabwe	1,582	13. Gambia	760	13. Burkina Faso	1,646
14. Mali	1,629	14. Mali	766	14. Guinea-Bissau	1,755
15. Sierra Leone	1,644	15. Burkina Faso	771	15. Uganda	1,785
16. Comoros	1,713	16. Rwanda	799	16. Rwanda	1,948
17. Ethiopia	1,753	17. Chad	817	17. Benin	1,963
18. Rwanda	1,819	18. Guinea	869	18. Zimbabwe	1,977
19. Gambia	1,819	19. Uganda	912	19. Guinea	2,142
20. Uganda	1,992	20. Tanzania	937	20. Gambia	2,352
21. Chad	2,066	27. Kenya	1,156	21. Mali	2,410
22. Benin	2,142	22. Benin	1,166	22. Tanzania	2,453
23. Senegal	2,520	23. Zimbabwe	1,263	23. Comoros	2,832
24. Lesotho	2,721	24. São Tomé & Príncipe	1,283	24. Kenya	2,987
25. Tanzania	2,763	25. Comoros	1,386	25. Mauritania	2,998
26. Cameroon	2,850	26. Lesotho	1,391	26. Lesotho	2,999
27. Djibouti	3,168	27. Cameroon	1,481	27. Senegal	3,140
28. Kenya	3,250	28. Senegal	1,495	28. Cameroon	3,156
29. Mauritania	3,431	29. Côte d'Ivoire	1,600	29. São Tomé & Príncipe	3,483
30. Zambia	3,498	30. Zambia	1,660	30. Djibouti	3,545
31. Côte d'Ivoire	3,559	31. Mauritania	1,715	31. Côte d'Ivoire	3,605
32. Sudan	3,566	32. Sudan	1,900	32. Zambia	3,965
33. São Tomé & Príncipe	3,721	33. Nigeria	2,399	33. Sudan	4,321
34. Ghana	4,104	34. Congo, Rep.	2,520	34. Nigeria	4,374
35. Nigeria	5,271	35. Angola	3,409	35. Congo, Rep.	4,581
36. Congo, Rep.	5,747	36. Eswatini	4,698	36. Angola	5,004
37. Cabo Verde	6,577	37. Namibia	6,013	37. Cabo Verde	6,655
38. Swaziland	7,963	38. South Africa	7,475	38. Eswatini	7,668
39. Angola	8,146	39. Gabon	9,212	39. Namibia	11,142

Sources: World Bank (2021), Maddison Project Database (2020), Penn World Tables 9.1 (2019)

For the Pacific island states the data is even more scarce than for SSA countries as GDP data is exclusively available from the World Bank and not from the Maddison database or the Penn World Tables. For current account data I was able to find data both from the World Bank (2021) and the ADB (2021) and directly from the National accounts. The data showed high inconsistencies and scarcity. For some countries data for 2018 was unavailable so data from other years was utilised. The data from the World Bank and the ADB differ greatly in magnitude. The highest difference is detected for Kiribati where the data varies more than 33 percentage points, as seen in Table 7, column 4. When comparing the data with regard to increases from the lower indicated account balance from one source to the higher current account balance of the other sources the differences become even more pronounced. For Micronesia for example, an increase from more than 1360 percent from -0.68 to -9.94 could be detected as seen in column 5. Overall, only for Fiji the current account balance is reported with the same magnitude in both databases.

Table 7: Current account balance 2018 as percentage of GDP

Country	World Bank	National Statistics Office, ADB	Difference (in percentage points)	Variance between WB and ADB
Fiji	-8.5%	-8.5%	0%	0%
Kiribati	37.64%	4.3%	33.34%	775.34%
Micronesia ^a	-0.68%	-9.94%	9.26%	1361%
Palau ^b	-18.10%	-10.93%	7.17%	160.38%
Papua New Guinea	22.61%	22.77%	0.16%	0.7%
Samoa	2.49%	0.82%	1.67%	67.07%
Solomon Islands	-2.99%	-3.49%	0.5%	16.72%
Tonga	-6.3%	-5.9%	0.4%	6.35%
Tuvalu ^a	18.15%	1.5%	16.65%	1110%
Vanuatu	9.33%	3.48%	5.85%	62.7%
Marshall Islands	23.97%	7.0%	16.97%	242.42%

a = data 2013, b = data 2017

These limitations affect the validity of the study. The scarce data situation is deterrent at first. However, as the area of PICs is severely under researched and the amounts of external money inflow make up for a significant share of the country's GDP in the region there is an urgency to investigate the determinants for economic growth and to determine the influencing factors. Thus, even though the numbers the study is based on should only be regarded as predictions and not as irrevocable facts this study still can observe a pattern and general direction the results are pointing towards. Hence, the aim of the study is to identify a general trend regarding the influence of external money inflow on economic growth.

5 Empirical Analysis

This section is structured into three parts. Firstly, how the data was econometrically analysed is presented. Secondly the results are critically discussed. Lastly, the findings are linked to the contemporary endogenous growth literature to ascertain if the findings are in line with the commonly described mechanisms of FDI, ODA, and Remittances on economic growth regarding stocks of human capital in an economy.

5.1 Data Analysis

To answer the question which effect external money inflow has on economic growth in PICs several econometric procedures are undertaken. This empirical analysis section is composed of four parts in which solely the results are presented. The first part provides pooled regression results for 9 PICs, namely Fiji, Kiribati, Micronesia, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, and the Marshall Islands. This part gives a rough overview of trends and which factors influence economic growth. The insights from this section are deepened by the second section which further examines the impact of FDI, ODA, and remittances on economic growth by growth accounting techniques and the usage of rolling averages. The third section provides insights about the effect of human capital onto the impact of external money inflow. The last section then investigates whether FDI crowds in or out domestic investment.

As mentioned in the data and method section the data suffers from many missing values. Thus, all regressions have been conducted with interpolated data as well. In this dissertation the raw data is presented but the interpolated data is discussed and highlighted if it significantly deviates from the raw data results. All tables for the data analysis of the interpolated data can be found in Appendix B.

5.1.1 Regression Analysis

To get an overview of the direction of impacts of external money inflow on GDP a fixed effect stepwise regression is conducted. As seen in Table 8 for all variations of the model, the initial

GDP is significant for explaining GDP growth in the following year. FDI seems to have a slightly positive impact on GDP, with the second model variation even suggesting a significant effect at the 10 percent level. For ODA the fixed effects estimator finds a neutral to slightly positive impact. The effect however remains insignificant. For remittances, the results attest the least clear trend. A negative significant impact is detected in the base model. When adding more controls however, the negative effect diminishes and becomes insignificantly positive. Human capital has a clear highly positive, significant relationship at the 1 percent level with respect to annual GDP growth. As discussed later in this thesis, the level of human capital will have an important impact on FDI effectiveness.

Table 8: Fixed effects model

VARIABLES	FE	FE	FE
Dependent variable is annual GDP growth of the next year			
Initial GDP	-3.885 (2.625)	-27.85*** (5.599)	-30.84*** (6.872)
FDI	0.0948 (0.0764)	0.192* (0.0971)	0.138 (0.0998)
ODA	0.0614 (0.0488)	0.0760 (0.0914)	0.00447 (0.0919)
Remittances	-0.207** (0.0899)	0.202 (0.170)	0.195 (0.288)
Human Capital		3.321*** (0.992)	4.562*** (1.193)
Government Expenditure		0.494*** (0.166)	0.174 (0.172)
Inflation		-0.0346 (0.0985)	0.0847 (0.0995)
Financial depth			0.160* (0.0837)
Political Stability			1.980 (1.483)
Constant	32.26 (20.94)	182.7*** (39.13)	200.2*** (47.65)
Observations	193	103	77
R-squared	0.063	0.319	0.350
Number of countryid	10	7	7

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

When testing the model with the interpolated data the positive relationship of ODA and GDP growth becomes significant while the effect of FDI on GDP growth remains positive but becomes insignificant as seen in Table 18 in Appendix B. The unclear relationship of remittances and GDP becomes clearer as the interpolated data suggest a negative relationship

among all models. These changes are due to the uncertainty of the observations as a substantial number of observations had been added by interpolation. Interpolation has been conducted following a linear trend. This simplifies the reality massively and thus the results should be regarded with care.

5.1.2 Growth Accounting

To further investigate the relationship of external money inflow on GDP growth, various growth accounting techniques have been tested. Regular growth accounting methods rely on labour growth, total factor productivity and labour hours. As this data is not freely available for the PICs three different approaches have been conducted.

Firstly, absolute changes are examined. The effect of the absolute change in levels of FDI, ODA, remittances on the subsequent period of GDP is analysed. This was conducted for one-year changes and for three-year change periods. However, the results were mainly insignificant. Also checking for regional trends for Melanesia, Polynesia, Micronesia or grouping countries due to their development status or population size did not offer meaningful insights.

Secondly, the compound annual growth rate (CAGR) was utilized to investigate the impact of external money inflow on economic growth. The CAGR is the geometric progression ratio and provides a constant growth rate over the time period and is one of the most accurate ways to determine the growth rate (Anson, Fabozzi & Jones, 2011). The difference of the final period is subtracted by the initial period and then divided by the number of years. The CAGR is described by the following equation:

$$CAGR = \left(\frac{Ending\ Value}{Beginning\ Value} \right)^{\frac{1}{n}} - 1$$

However, also the CAGR method did not lead to meaningful results, underscoring the frailness of the relationship.

Lastly, instead of absolute changes or the growth accounting method, rolling averages of the change of GDP, FDI, ODA, and remittances were taken. The rolling averages were calculated on basis of the growth rates of GDP, FDI, ODA and remittances. By using geometric rolling averages, a smoother impact relationship was established which allowed for more meaningful long-term interpretation compared to three-year cut off periods as investigated earlier. In Table

9 below are the results of the impact of external money inflows on GDP growth focusing on a three-year impact using a fixed effects estimator. The base model contains the rolling average for each of the external money inflows, a variable for human capital and government expenditure as control term. The extended model also contains controls for financial depth, inflation and political stability. The change of GDP seems to be influenced significantly positive by the change of FDI. The positive trend is not observed in the interpolated data output which suggest an insignificant negative relationship. Results can be found in Appendix B in Table 19.

The pattern of ODA indicates that ODA inflows are slightly significantly negative for GDP growth. When using interpolated data, the results become insignificant but support the raw data's findings. The explanatory power of the interpolated data overall however is really low. This is due to the high number of interpolated observations, which limit the explanatory power substantially. See Table 19 in Appendix B. Remittances show a neutral to slightly positive impact on GDP growth. The interpolated data verifies the observed trend.

Table 9: Impact of external money inflows on GDP growth, 3 Year average impact

VARIABLES	FDI	FDI	ODA	ODA	REM	REM
Dependent variable is the rolling average annual growth rate of GDP						
Rolling Average	0.213*	0.0685**	-0.0289	-0.0989*	0.0292	0.00763
FDI / ODA / REM	(0.112)	(0.0277)	(0.0499)	(0.0553)	(0.0553)	(0.0499)
Human Capital	-0.313*	0.188***	-0.340	0.152**	-0.316*	0.233***
	(0.174)	(0.0594)	(0.207)	(0.0717)	(0.180)	(0.0643)
Government Expenditure	0.0548**	-0.0575***	0.0509**	-0.0309*	0.0586***	-0.0477***
	(0.0215)	(0.0106)	(0.0210)	(0.0166)	(0.0205)	(0.0123)
Political Stability		-0.00363		0.00886		-0.110
		(0.0742)		(0.0782)		(0.0967)
Financial Depth		0.0108		-0.0286		-0.00273
		(0.0277)		(0.0336)		(0.0336)
Inflation		0.0184**		0.0142		0.0171*
		(0.00804)		(0.00873)		(0.00859)
Constant	3.277**	1.385***	4.534*	2.633***	3.512***	1.124**
	(1.275)	(0.419)	(2.340)	(0.844)	(1.301)	(0.475)
Observations	112	47	127	47	121	46
R-squared	0.098	0.510	0.071	0.475	0.074	0.415
Number of countryid	7	4	8	4	8	4

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

When looking at countries with high and low human capital separately it becomes apparent that the effectiveness of FDI is significantly more pronounced in societies with higher human capital. In economies with low human capital FDI has a negative impact on economic growth,

see Table 10. This reflects the theory of Borensztein, Gregorio and Lee (1998) who argue that for FDI to be effective a certain threshold of human capital in an economy has to be met for the spillover effects to take place and the positive externalities of FDI to be absorbed by the local economy.

ODA seems to have a positive impact in all economies regardless of human capital. The effect however is non-significant as seen in Table 10 and 11. Remittances on the other hand seem to be more effective to growth in countries with low human capital than countries with higher human capital where a negative trend was detected. The results of the interpolated data point in the same direction as can be seen in Tables 20 and 21 in Appendix B. The mostly insignificant results traverse through the whole study and were expected due to the poor quality of the data.

Table 10: Impact of external money inflows on GDP growth, 3 Year average impact, HC<7.8

VARIABLES	FDI	FDI	ODA	ODA	REM	REM
Dependent variable is the rolling average annual growth rate of GDP						
Rolling Average	-0.341	-0.150	-0.163	0.103	-0.103	0.289
FDI / ODA / REM	(0.467)	(0.478)	(0.218)	(0.292)	(0.556)	(0.509)
Human Capital	-0.886	-0.793	-1.145	0.307	-0.477	0.239
	(1.122)	(2.851)	(1.363)	(1.600)	(1.119)	(1.965)
Government	0.0386	0.0363	-0.00179	-0.00433	0.0208	-0.0127
Expenditure	(0.0681)	(0.0607)	(0.0639)	(0.0944)	(0.0684)	(0.0716)
Political Stability		0.901**		0.850**		0.995*
		(0.382)		(0.387)		(0.485)
Financial Depth		0.0137		-0.0178		0.105
		(0.289)		(0.262)		(0.326)
Inflation		-0.00214		0.00891		0.0310
		(0.0582)		(0.0592)		(0.0705)
Constant	8.545	6.782	11.29	-1.437	5.538	-0.923
	(6.626)	(18.63)	(9.709)	(10.82)	(6.250)	(11.97)
Observations	42	21	42	21	39	20
R-squared	0.020	0.334	0.021	0.335	0.006	0.301
Number of countryid	4	2	4	2	4	2

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 11: Impact of external money inflows on GDP growth, 3 Year average impact, HC>7.8

VARIABLES	FDI	FDI	ODA	ODA	REM	REM
Dependent variable is the rolling average annual growth rate of GDP						
Rolling Average	0.166*	0.0880**	-0.0277	0.0488	-0.0254	-0.0356
FDI / ODA / REM	(0.0933)	(0.0393)	(0.0473)	(0.0962)	(0.0375)	(0.0519)
Human Capital	0.0447	0.0128	0.0694	0.132***	0.154	0.154**
	(0.131)	(0.0600)	(0.130)	(0.0408)	(0.133)	(0.0570)
Government	0.000242	0.0213	0.0170	0.0118	0.00983	0.0109
Expenditure	(0.0304)	(0.0127)	(0.0247)	(0.0136)	(0.0247)	(0.0132)
Political Stability		0.124**		0.0858		0.0776
		(0.0531)		(0.0698)		(0.0707)
Financial Depth		-0.00804		0.0629***		0.0667***
		(0.0366)		(0.0211)		(0.0219)
Inflation		0.00297		0.0106**		0.0108**
		(0.00553)		(0.00491)		(0.00488)
Constant	1.498	1.281**	1.503	-0.248	0.727	0.228
	(1.381)	(0.557)	(1.718)	(0.838)	(1.376)	(0.290)
Observations	67	25	82	25	79	25
R-squared	0.084	0.822	0.026	0.773	0.020	0.776
Number of countryid	4	2	5	2	5	2

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

5.1.3 Impact of Human Capital

To estimate the effect of human capital on economic growth an interaction term of the external money inflow and human capital is included into general model of the paper. This follows the approach of Borensztein, Gregorio & Lee (1998) who included an interaction term for human capital, (measured as gross secondary school enrolment) and FDI to determine if human capital affects economic growth through the interaction term. By including both, the interaction term and the original values, the effect of these variables on growth by themselves and through the interaction term is accounted for. The regression is run for varying levels of human capital to detect if there are difference for countries with higher levels of human capital such as Fiji, Marshall Islands, Palau, Samoa or Tonga and countries with lower levels of human capital such as Kiribati, Micronesia, Papua New Guinea, Solomon Islands or Vanuatu regarding the effectiveness of FDI, ODA, and remittances.

Table 12: Regression Human Capital Interaction term

VARIABLES	FE	FE	FE
Dependent variable is annual GDP growth of the next year			
Initial GDP	-15.52*** (4.215)	-26.70*** (5.731)	-33.06*** (7.044)
FDI	0.182 (0.273)	-0.116 (0.391)	-0.628 (0.529)
ODA	0.262 (0.166)	0.337 (0.236)	-0.0115 (0.230)
Remittances	0.0257 (0.345)	0.326 (0.769)	0.819 (0.952)
Human Capital	3.492*** (0.977)	3.440** (1.353)	4.405** (1.668)
Human Capital x FDI	-0.00782 (0.0301)	0.0305 (0.0405)	0.0803 (0.0532)
Human Capital x ODA	-0.0289 (0.0212)	-0.0325 (0.0277)	0.00267 (0.0256)
Human Capital x REM	-0.0220 (0.0355)	-0.0178 (0.0816)	-0.0846 (0.108)
Government Expenditure		0.463*** (0.176)	0.315 (0.189)
Inflation		-0.0582 (0.104)	0.0585 (0.104)
Financial Depth			0.170* (0.0862)
Political Stability			2.133 (1.532)
Constant	97.94*** (29.18)	173.7*** (40.11)	216.4*** (48.19)
Observations	172	103	77
R-squared	0.158	0.340	0.388
Number of countryid	9	7	7

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

In Table 12 above the results for the overall effect are displayed. The interaction term of FDI and human capital suggest a neutral to slightly negative impact and is insignificant. While FDI overall also has a negative insignificant coefficient. These results do not give a clear tendency whether the levels of human capital in the host countries determine the growth effect of FDI on GDP. ODA and remittances seem to have a positive effect on growth while the interaction term remains negative. This is reversed to the results for FDI. To further investigate this, regression for high and low levels of human capital are conducted.

When comparing the impact of human capital in countries with average years of schooling below 7.8 years and above, the difference becomes more apparent. 7.8 years of schooling are

used as a cut-off point as this is the mean years of schooling in the PICs. Furthermore, when taking a higher threshold of average years of schooling there are not enough observations for a meaningful interpretation. The results for a higher stock of human capital show that the coefficient on FDI is negative and insignificant, while the interaction term with human capital is positive as seen in Table 13. This contrasts with countries with the interpolated data as seen in Table 22 in Appendix B and the raw data regressions for human capital stocks lower than 7.8 as seen in Table 14. For these countries FDI as well as the interaction term are negatively related with economic growth as displayed in Table 14. The results for countries with higher human capital suggest that the level of human capital in the host country determines the growth effect of FDI on GDP.

Table 13: Regression Human Capital Interaction term, HC>7.8

VARIABLES	FE	FE	FE
Dependent variable is annual GDP growth of the next year			
Initial GDP	-14.07** (6.093)	-27.27*** (7.614)	-39.57*** (11.86)
FDI	-0.0707 (0.662)	-0.0607 (0.698)	-0.212 (1.013)
ODA	0.869 (0.532)	0.853 (0.589)	0.717 (0.740)
Remittances	0.360 (0.556)	1.456* (0.829)	2.635 (1.618)
Human Capital	3.314** (1.399)	6.003*** (1.762)	8.081** (3.321)
Human Capital x FDI	0.0169 (0.0644)	0.0209 (0.0675)	0.0355 (0.0956)
Human Capital x ODA	-0.0707 (0.0501)	-0.0667 (0.0541)	-0.0537 (0.0659)
Human Capital x REM	-0.0430 (0.0537)	-0.124 (0.0865)	-0.242 (0.156)
Government Expenditure		0.306* (0.177)	0.332 (0.205)
Inflation		0.0755 (0.114)	0.108 (0.134)
Financial Depth			0.215* (0.125)
Political Stability			0.322 (1.854)
Constant	83.39** (41.87)	154.7*** (50.41)	229.7*** (70.50)
Observations	94	68	53
R-squared	0.188	0.346	0.420
Number of countryid	5	4	4

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 14: Regression Human Capital Interaction term, HC<7.8

VARIABLES	FE	FE	FE
Dependent variable is annual GDP growth of the next year			
Initial GDP	-22.22*** (6.284)	-33.93*** (9.518)	-69.49* (29.63)
FDI	0.112 (0.708)	0.646 (1.034)	-0.479 (1.629)
ODA	0.406 (0.477)	0.883 (1.326)	0.488 (1.731)
Remittances	21.54*** (6.777)	31.69** (11.38)	0.741 (14.56)
Human Capital	7.458*** (1.907)	-1.785 (6.777)	-4.751 (12.29)
Human Capital x FDI	0.0356 (0.140)	-0.103 (0.237)	0.0562 (0.310)
Human Capital x ODA	-0.0972 (0.0830)	-0.166 (0.273)	-0.127 (0.354)
Human Capital x REM	-3.155*** (0.990)	-4.745** (1.685)	-0.0659 (2.198)
Government Expenditure		-0.200 (0.532)	0.896 (0.949)
Inflation		-0.163 (0.185)	-0.241 (0.218)
Financial Depth			0.237 (0.294)
Political Stability			5.818 (4.476)
Constant	133.3*** (43.26)	264.8*** (86.14)	531.8* (263.4)
Observations	77	34	23
R-squared	0.322	0.733	0.814
Number of countryid	6	4	4

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

These results imply a complementary effect between FDI and human capital on GDP growth. FDI is less effective for catalysing economic growth in countries with lower stocks of human capital. The results of this analysis could have been more pronounced when more and better data would have been available.

For ODA the results suggest that regardless of the levels of low human capital, ODA has a positive effect on growth. Also, the interaction term is negatively correlated with growth. This implies, that higher levels of human capital are not necessary to attract ODA. Thus, one more year of schooling is not efficient in attracting higher amounts of ODA.

Remittances overall seem to have the biggest, most significant impact on growth. Regardless of the stock of capital remittances positively influence growth. However, in countries with lower human capital this effect is especially pronounced. The results of the interpolated data confirm this, as seen in Table 23 in Appendix B. The interaction term of remittances and growth however remain negative similar as in the findings regarding ODA. These results are in line with findings by Fayissa and Nsiah (2010) who find positive effects of remittances on economic growth. Remittances provide an alternative way for financing investments and work as a bridge to overcome liquidity constraints.

Thus, overall due to low data quality and many missing observations interpretation and conducting of the analysis is challenging. The results do not clearly indicate significant results and even when they do due to the above-mentioned problems they should only be regarded as trends. These data shortages most probably led to the are being under-researched. This paper, however, tries to appoint importance to the development of PICs by researching effects from external money inflows. The findings should work as a starting point for future research and can be proven right or wrong in the future.

5.1.4 Impacts of FDI on Domestic Investment

In this section the contribution of FDI on economic growth is further analysed. This is only conducted for FDI as FDI is especially prone to crowd out domestic investment (Fahinde, Abodohou, Mohiuddin & Su, 2015; Driffield & Jones, 2013). Remittances are usually found to foster investment as private domestic savings on their own might not be sufficient (Fahinde et al., 2015). ODA is excluded because it is usually concerned with infrastructure, education, and healthcare rather than garnering better investment (OECD, 2021). Thus, to examine the crowding-out impact of FDI the relationship of FDI with total investment is researched. FDI could positively influence economic growth by solely augmenting capital accumulation in the host country. For this to be effective FDI is required to not crowd-out domestic investments by competing on product or capital markets. Furthermore, if FDI is more productive and efficient than domestic investment it would increase economic growth.

Following, Table 15 shows an estimation of determinants on total fixed investment. The results suggest that FDI crowds in investment when human capital is high but crowds out investment when human capital is low. The crowding in effect can be identified, as the coefficients of FDI are above one and highly significant. Thus, FDI increases total investment more than one for

one. The interaction term with human capital is highly significant, however negative. This implies, that foreign and domestic investments are sensitive to the productivity of FDI.

For low levels of human capital FDI seems to crowd out investment. This can be seen, as the coefficient of FDI is either negative or below one. The relationship of the interaction term of FDI and human capital is negative and insignificant. This implies that domestic investment is not sensitive to the productivity of FDI.

Table 15: FDI and aggregate investment rates: panel of three decades (1990–2019)

VARIABLES	All levels of Human Capital included				Human Capital >7.8 years of schooling			
Dependent variable is the average ratio of investment to GDP over each decade								
GDP	0.570 (3.401)	0.836 (3.375)	-1.389 (6.018)	-3.620 (5.215)	0.363 (4.181)	-2.591 (3.756)	-6.175 (5.326)	-7.294 (4.787)
Human Capital	1.722*** (0.651)	1.934*** (0.658)	1.931* (1.055)	1.488 (0.944)	1.576** (0.717)	2.814*** (0.692)	2.540** (0.955)	2.373** (0.909)
Government Expenditure	0.0741 (0.0991)	0.0404 (0.100)	-0.0428 (0.158)	-0.0484 (0.137)	0.0512 (0.125)	-0.0942 (0.115)	-0.0843 (0.141)	-0.0841 (0.127)
FDI	-0.0528 (0.0670)	0.357 (0.256)	0.596 (0.478)	0.405 (0.417)	-0.0251 (0.0690)	1.810*** (0.418)	1.754*** (0.580)	1.611*** (0.536)
FDI x Human Capital		-0.0440 (0.0266)	-0.0739 (0.0482)	-0.0512 (0.0422)		-0.180*** (0.0405)	-0.169*** (0.0550)	-0.153*** (0.0509)
Political Stability			-1.397 (1.337)	-0.667 (1.171)			1.449 (1.294)	1.860 (1.160)
Financial Depth				0.281*** (0.0576)				0.199*** (0.0560)
Inflation				-0.0728 (0.0806)				0.0132 (0.0806)
Constant	0.603 (24.09)	-2.474 (23.96)	19.39 (44.07)	34.87 (38.14)	2.475 (29.46)	18.97 (26.31)	51.60 (39.48)	57.43 (35.28)
Observations	110	110	77	77	75	75	53	53
R-squared	0.117	0.141	0.092	0.346	0.158	0.352	0.253	0.433
Number of countryid	7	7	7	7	4	4	4	4

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

The regressions run with the interpolated data support the findings of the raw data. Full results can be seen in Appendix B in Table 24. The general trend of FDI being more effective in countries which meet a minimum threshold of human capital can be verified.

5.2 Discussion of Results

The results overall should be understood as general trends and directions and not as pure facts. This point cannot be stressed enough as the data foundation of this study is exceptionally weak. The data should only be regarded as estimates and not as inalterable facts. In this section the results above are linked to literature and critically discussed. As well as the hypothesis are tested and verified or falsified.

5.2.1 FDI Results linked to Literature

In this section the results are linked to the literature and the hypothesis, that FDI has a positive impact on economic growth if human capital is low / high, is discussed. The results for FDI can be interpreted in line with the theory of Borensztein, Gregorio and Lee (1998) who argue that FDI is only effective when a certain minimum threshold of human capital is met. This claim can be verified by this study as generally the results point towards this direction. The overall impact of FDI seems to be positive. When differentiating between economies with lower and higher levels of human capital the effect is more pronounced. In countries with higher human capital stock, FDI seems to be beneficial for growth and crowds in investment. This is the case in Fiji, Palau, Samoa and Tonga as these countries' human capital stock is higher than 7.8 years of schooling on average. These findings are in line with Feeny, Iamsiraroj and McGillivray (2014a) who find a positive impact for FDI on growth in Fiji, Kiribati, Papua New Guinea, Samoa, Solomon Islands, Tonga and Vanuatu. However, they highlight that the effect in these countries is smaller than the average growth effect of FDI globally. A reason could be that FDI crowds out domestic investments in the Pacific which reduces the effectiveness of FDI. They underline that especially Kiribati, the Solomon Islands and Papua New Guinea are performing worse than Samoa and Fiji. These findings are in line with the results found in this study which suggest that FDI is more effective in Fiji, Palau, Samoa and Tonga while not as beneficial in stimulating growth in Micronesia, Papua New Guinea, Solomon Islands, Vanuatu and Kiriabati. These findings give empirical proof to the theoretical foundation of Read (2008) who notes that this crowding-out effect is most likely to take place in economies where the supply of particular skills or human capital is constrained as it is the case in these PICs. The results found in this study also complement the empirical findings of other studies discussed in the literature review such as Chen's and Singh's (2017) and Jayaraman's and Choong's (2006b). Overall, the results

are thus in line with the expected pattern. The first hypothesis, that FDI has a positive impact on economic growth if human capital stock is low is thus falsified, while the rival hypothesis is verified. This study contributes to the slowly growing body of literature regarding FDI in the Pacific by confirming results of other studies and extending the analysis to a more recent time period.

5.2.2 ODA Results linked to Literature

The hypothesis formulated in this thesis is that “ODA has a positive impact on growth if human capital is low / high.” The findings suggest that ODA overall seems to have a positive impact on growth regardless of the level of human capital. This is in accordance with standard economic theory that assumes that ODA has a positive impact on growth. However, as discussed in the literature review, PICs are still highly reliant on ODA and it is unlikely that they will become independent from foreign aid anytime in the future soon. After thirty years of receiving more aid per capita than most other developing countries ODA still was not a catalyst for growth. This is also visible in the results of the empirical analysis. The effect of ODA is positive but very small in magnitude. Hence, the question arises if ODA is optimally utilised in the PICs. This question is beyond the framework of this study. However, as ODA as a growth catalyst had been stagnant at best, the way foreign aid is managed and utilized in the PICs should be revisited. This follows the results of Jayaraman and Choong (2006a), who researched the effectiveness of ODA in Fiji, and suggests that aid should not be consumed by the government but utilized for capital expenditure. Thus, while ODA does not seem to have a negative impact on economic growth the way how it is utilised should be changed in order for it to not create negative impacts. Ward and Proctor (1980) for example issued a warning that if foreign-aid goes into non-productive projects these projects are not beneficial for growth. As aid can be tied to certain requirements which can lead to imports of goods at a price above world market or other ineffective results. Thus, the PICs should regard foreign aid with care when aiming to accelerate growth in the future as the result did not identify ODA as a strong driver of growth. When evaluating the hypothesis, it becomes apparent that both hypotheses hold true as ODA seems to have a positive impact on growth regardless of the stock of human capital. However, it has to be highlighted that that the magnitude of the effect of ODA on growth is small.

5.2.3 Remittances Results linked to Literature

The hypothesis which is tested regarding remittances is that remittances have a positive impact on economic growth if human capital is low / high. When only looking at the regression analysis remittances seem to have a negative impact on economic growth. When further investigating the case however, the trend seems to point more in the direction that remittances are more effective in countries with a low stock of human capital such as Micronesia, Papua New Guinea, the Solomon Islands, Vanuatu, or Kiribati. This trend has been observed both in the growth accounting analysis and in the regression including human capital. This validates the findings of Adelman & Taylor (1990) and Pradhan, Upadhyay and Upadhyaya (2008) who find positive effects of remittances on economic growth. Feeny, Iamsiraroj and McGillivray (2014b) research remittances in SIDS including Fiji, Papua New Guinea, Samoa, Solomon Islands, Tonga and Vanuatu from the Pacific. They find that in the Pacific remittances were a strong motor for economic growth and reduced economic volatility. They even claim that without remittances these countries would have experienced negative growth rates. The results of this study cannot support this strong claim of economic shrinking but supports the positive impact on growth which can especially be seen in Table 14. Jayaraman, Chong and Kumar (2009) further find compelling evidence for the effectiveness of remittances in Samoa, the second biggest receiver of remittances among the PICs after Tonga. They underline that remittances were first used for consumption, providing education, and only recently gained importance for liquidity in the banking system and as source of financial capital for investments. This diverges from the findings in this study. Samoa is regarded as a country with higher human capital in which remittances have a positive effect however not as pronounced as in countries with lower human capital. Due to limited observations no regression especially for Samoa was feasible to conduct. However, the time period studied by Jayaraman, Chong and Kumar (2009) is from 1981-2008 and thus begins 10 years earlier than the studied period of this paper. As education data for Samoa prior to 1990 appears to be unavailable it is not traceable whether significant improvements in terms of schooling have taken place and how these would be related to remittances. Thus, the findings by Jayaraman, Chong and Kumar (2009) cannot be verified in this study. However, assuming education was lower in the 1980s than 1990s in Samoa, as average years of schooling are gradually rising globally, the positive effect of remittances overall in Samoa seems to be undoubtedly. Thus, both hypotheses are validated. However, the magnitude of remittances is higher in countries with low human capital than countries with higher human capital. Overall, the effect of remittances is in line with the findings of other

researchers. By examining more recent data from a longer time period this paper aims to add valuable insights to prior findings by supporting and extending them.

5.2.4 Interconnectedness of FDI, ODA and Remittances

Finally, the interconnectedness of FDI, ODA and Remittances is investigated. This had been rarely done in the literature in general and appears to be a novel idea for the Pacific Island Region. Similarly to Driffield and Jones (2013) this study finds that all sources of external money inflow are beneficial to growth in PICs in the studied time period. Distinguishing which source of external money inflow is most beneficial for economic growth however is difficult. According to Benmamoun and Lehnert (2013) remittances are most effective, while Driffield and Jones (2013) argue in favour of FDI. Driffield and Jones (2013) view is supported by Jongwanich (2007) who especially analyses the Pacific region and also identifies FDI as the main driver of growth over remittances. The results of this study however suggest something different. By adding a control of the stock of human capital allows to distinguish more pronounced among the PICs. The studies of Benmamoun and Lehnert (2013) and Driffield and Jones (2013) only look at the global side and draw conclusions for low-income countries in general. Jongwanich's (2007) analysis is more pronounced as it specifically covers the Pacific region but still does not distinguish between levels of human capital or other characteristics. Thus, this paper fills the gap by providing a more pronounced analysis accounting for different levels of human capital. The results suggest that in countries with low human capital remittances seem to be more effective in stimulating growth by providing financial capital which can be used for small local investments and increasing human capital by being able to afford to send children to school longer or by attending job trainings. In countries with higher human capital however, FDI appears to be more effective in fostering economic growth. ODA seems to be a relatively stable source of income but is ineffective when used for government consumption. As the economies of the PICs are small and dependent on it seems like it is a necessity for them. However, it did not prove to have substantial positive impacts on growth.

6 Conclusion

This study was set out to assess the impact of foreign money inflow into PICs in the time period from 1990 to 2019 on economic growth. To do so, the thesis used panel data for nine PICs, namely Fiji, Kiribati, Micronesia, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, and the Marshall Islands, to analyse the impact of external capital inflows in a fixed effects model. In later stages of the analysis human capital was used to control for different levels of development and to produce a more nuanced picture of when which types of external capital are beneficial for stimulating growth.

6.1 Chapter Summary

For the purpose of analysing the growth effect of external capital on PICs, the first empirical part provides the fixed effects regression results for the nine PICs. The results suggest a positive impact of FDI, ODA and remittances. In order to further analyse the impact of external capital on economic growth, rolling averages over three-year periods were conducted and inflow rates were compared with GDP growth rates of three years in the future to identify if lagged economic growth took place. The results imply that FDI had a significant positive effect, ODA a slightly negative effect and remittances a slight positive effect on GDP growth. In the next part of the empirical analysis the impact of human capital was introduced. An interaction term of human capital with each external capital inflow source was created to account for interrelated effects on growth. The results imply that FDI is more effective for catalysing economic growth when human capital is high, ODA has a slight positive effect on growth regardless of levels of human capital and remittances have a significant positive impact on growth in countries with low levels of human capital. In the last part of the empirical analysis, it was researched whether FDI crowds out domestic investment. It seems that FDI crowds out investment in countries with low human capital while it crowds in investment in countries with higher human capital.

6.2 Research Results and Practical Implications

The most notable results of this thesis for PICs are the following:

1. FDI seems to have a stronger effect on economic growth when human capital is high.
2. ODA only seems to have a low impact on economic growth, regardless of levels of human capital.
3. Remittances seem to have a stronger effect on economic growth in countries with low human capital.

Hence, the level of human capital in the host / receiving country plays an important role to assess, which external capital inflows stimulate the economy most. These findings are thus in line with the social capability theory from Abramovitz (1986). An implication of these findings for policy makers is that they should emphasize on the importance of education and design policies which are well tailored to the needs of each individual country. As Ward and Proctor (1980) highlighted, there have been already too many unsuccessful projects in the PICs which were badly designed and were not beneficial for growth. As the PICs are too small and too dependent on these external sources of income it is especially important to evaluate precisely in which areas they are used most efficiently and ideally stimulate economic growth.

6.3 Future Research

Several questions however remain unresolved. As the data foundation is weak, only trends can be observed. It is difficult to draw strong conclusions. With the broader availability of data in the future, the research can produce more meaningful results. Thus, future studies are required to prove the findings of this paper and establish a stronger relationship of external money inflow and economic growth in PICs.

Also, other important determinants such as black-market premium on foreign exchange, a measure of quality of institutions and variables accessing the impact on the environment should be included in further research as they can hold new valuable insights. These variables were not included in this study due to data scarcity but are considered as insightful. This study only gives a picture of the situation in PICs from 1990-2019, however in the future the development path of PICs is likely to encounter enhanced challenges. Especially the environmental constraint is

expected to impose greater pressure on PICs and thus imposes a need for further research. The PICs are among the first to already experience the effects of global warming and few countries in the world are affected as severely as them. Hence, solutions for a successful development path are urgently needed. By further researching the issue and extending the analysis on economic growth to economic growth in accordance with environmental constraints valuable insights for policies for the PICs to successfully undergo a sustainable development path can be detected.

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Appendix A

Table 16: Model decision

VARIABLES	FE	First difference	Error
GDP	0.153 (0.132)	-0.378** (0.151)	
FDI	-0.00657 (0.109)	-0.0859 (0.114)	
ODA	0.0209 (0.106)	0.0790 (0.120)	
Remittances	-0.416 (0.307)	-1.038** (0.505)	
Human Capital	0.822 (1.073)	6.176 (4.452)	
Government Expenditure	0.0421 (0.194)	0.231 (0.249)	
Inflation	0.0981 (0.114)	-0.145 (0.128)	
Financial Depth	0.00520 (0.101)	0.0428 (0.146)	
Political Stability	1.021 (1.760)	0.213 (2.731)	
Idiosyncratic Error Terms			-0.106 (0.138)
Constant	-6.121 (10.83)	-0.861 (0.632)	
Observations	77	63	56
R-squared	0.154	0.288	0.011
Number of countryid	7	7	

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 17: Overview of Variables

Variable	Measurement	Source
GDP	Annual growth rate per capita	World Bank
FDI	% of GDP	World Bank
ODA	% of GNI	World Bank
Remittance	% of GDP	World Bank
Human Capital	Average years of schooling	Human Development Index
Inflation	GDP deflator, annual %	World Bank
Government Expenditure	% of GDP	World Bank
Domestic credit to private sector	% of GDP	World Bank
Gross fixed capital formation	% of GDP	World Bank
Political stability	-2.5 – 2.5	Worldwide Governance Indicators

Dependent variable: GDP annual growth rate, other variables are used as controls.

Appendix B

All tables are tables with interpolated data.

Table 18: Fixed effects model, interpolated data

VARIABLES	FE	FE	FE
Dependent variable is ln real per capita GDP of the next year in 2010 US\$			
Initial GDP	-4.515* (2.366)	-8.377*** (3.176)	-17.85*** (3.933)
FDI	0.101 (0.0705)	0.0685 (0.0743)	0.0983 (0.0796)
ODA	0.0448 (0.0422)	0.0855* (0.0482)	0.00792 (0.0542)
Remittances	-0.236*** (0.0794)	-0.112 (0.102)	-0.0847 (0.124)
Human Capital		0.698 (0.527)	3.360*** (0.793)
Government Expenditure		0.0930*** (0.0357)	-0.0221 (0.0548)
Financial depth		0.0359 (0.0440)	0.0341 (0.0467)
Inflation			0.0857* (0.0463)
Political Stability			1.322 (1.025)
Constant	37.93** (18.91)	58.80** (23.21)	115.4*** (27.75)
Observations	235	199	134
R-squared	0.079	0.130	0.237
Number of countryid	10	7	7

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 19: Impact of external money inflows on GDP growth 3 Year average impact, (varying controls) (FE, interpolated data)

VARIABLES	FDI	FDI	ODA	ODA	REM	REM
Dependent variable is the rolling average of real GDP in 2010 constant US\$						
Rolling Average	-0.132	-0.682	-0.0129	0.0768	0.122	-0.169
FDI/ODA/REM	(0.266)	(0.433)	(0.0524)	(0.197)	(0.185)	(0.668)
Human Capital	-0.0318	0.193	-0.0425	0.109	-0.223	-0.0452
	(0.401)	(0.740)	(0.484)	(0.880)	(0.539)	(0.766)
Government	0.0288	0.0827	-0.00806	0.0340	0.0117	0.0517
Expenditure	(0.0378)	(0.0656)	(0.0347)	(0.0698)	(0.0389)	(0.0675)
Inflation		1.075		0.844		0.942
		(1.107)		(1.135)		(1.260)
Political Stability		-0.101*		-0.0775		-0.0700
		(0.0565)		(0.0588)		(0.0543)
Financial Depth		-0.0260		-0.0330		-0.0335
		(0.0532)		(0.0535)		(0.0542)
Constant	3.820	4.569	5.324	3.108	5.312	5.532
	(2.924)	(5.159)	(4.301)	(7.116)	(3.657)	(5.705)
Observations	179	128	212	128	208	126
R-squared	0.004	0.046	0.000	0.027	0.002	0.026
Number of countryid	7	7	8	7	8	7

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 20: Impact of external money inflows on GDP growth 3 Year average impact, HC<7.8 (varying controls) (FE, interpolated data)

VARIABLES	FDI	FDI	ODA	ODA	REM	REM
Dependent variable is the rolling average of real GDP in 2010 constant US\$						
Rolling Average	-0.322	-0.973	-0.0538	0.295	0.160	1.633
FDI /ODA/ REM	(0.745)	(1.139)	(0.122)	(0.385)	(0.295)	(1.849)
Human Capital	-0.330	-0.00417	-0.158	-0.403	-0.426	-2.282
	(0.972)	(1.961)	(0.869)	(1.720)	(1.036)	(1.805)
Government	0.302*	0.293	-0.0439	0.313	0.0221	0.308
Expenditure	(0.158)	(0.221)	(0.122)	(0.222)	(0.0798)	(0.221)
Inflation		2.187		2.201		3.592
		(2.664)		(2.698)		(2.604)
Political Stability		-0.0696		-0.0902		-0.125
		(0.186)		(0.184)		(0.185)
Financial Depth		-0.153		-0.183		-0.148
		(0.0963)		(0.119)		(0.0937)
Constant	1.129	2.284	9.853	0.689	8.214	8.692
	(8.693)	(16.26)	(10.91)	(18.61)	(8.271)	(12.63)
Observations	78	60	111	60	115	60
R-squared	0.050	0.083	0.002	0.081	0.003	0.084
Number of countryid	4	4	5	4	5	4

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 21: Impact of external money inflows on GDP growth 3 Year average impact, HC>7.8
(varying controls) (FE, interpolated data)

VARIABLES	FDI	FDI	ODA	ODA	REM	REM
Dependent variable is the rolling average of real GDP in 2010 constant US\$						
Rolling Average	0.0868	0.621	0.0317	0.0503	0.0564	0.598
FDI/ODA/REM	(0.213)	(0.397)	(0.0564)	(0.205)	(0.312)	(0.543)
Human Capital	0.307	1.427*	0.280	0.786	0.0780	0.925
	(0.397)	(0.736)	(0.330)	(0.681)	(0.394)	(0.605)
Government	-0.00800	-0.0676	-0.00497	-0.0229	0.0129	-0.0202
Expenditure	(0.0244)	(0.0470)	(0.0189)	(0.0582)	(0.0253)	(0.0409)
Inflation		0.137		0.277		-0.448
		(0.640)		(0.653)		(0.825)
Political Stability		-0.0299		-0.0311		-0.0339
		(0.0240)		(0.0245)		(0.0245)
Financial Depth		0.0802		0.0242		0.0788
		(0.0588)		(0.0472)		(0.0627)
Constant	1.463	-6.339	1.390	-1.323	2.185	-3.888
	(2.349)	(4.674)	(2.111)	(4.447)	(2.445)	(3.755)
Observations	100	67	100	67	92	65
R-squared	0.007	0.122	0.008	0.085	0.007	0.125
Number of countryid	4	4	4	4	4	4

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 22: Regression, HC interaction term, HC>7.8 years of schooling

VARIABLES	FE	FE	FE
Dependent variable is annual per capita GDP growth of the next year			
Initial GDP	-15.52*** (4.215)	-21.26*** (4.600)	-21.85*** (5.005)
FDI	0.182 (0.273)	-0.110 (0.279)	0.136 (0.306)
ODA	0.262 (0.166)	0.306* (0.167)	-0.0194 (0.167)
Remittances	0.0257 (0.345)	0.517 (0.413)	1.063* (0.538)
Human Capital	3.492*** (0.977)	4.056*** (1.000)	5.235*** (1.189)
Human Capital x FDI	-0.00782 (0.0301)	0.0251 (0.0306)	-0.00162 (0.0328)
Human Capital x ODA	-0.0289 (0.0212)	-0.0238 (0.0221)	0.00601 (0.0211)
Human Capital x REM	-0.0220 (0.0355)	-0.0548 (0.0391)	-0.125** (0.0536)
Government Expenditure		0.203*** (0.0608)	-0.0209 (0.0741)
Inflation		-0.0110 (0.0529)	0.0413 (0.0490)
Financial Depth			0.155** (0.0707)
Political Stability			1.706 (1.239)
Constant	97.94*** (29.18)	132.1*** (31.45)	130.8*** (33.32)
Observations	172	147	121
R-squared	0.158	0.259	0.261
Number of countryid	9	7	7

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 23: Regression, HC interaction term, HC<7.8 years of schooling

VARIABLES	FE	FE	FE
Dependent variable is annual per capita GDP growth of the next year			
Initial GDP	-22.22*** (6.284)	-24.82*** (6.567)	-25.45*** (7.304)
FDI	0.112 (0.708)	0.684 (0.822)	1.090 (1.111)
ODA	0.406 (0.477)	0.464 (0.840)	-1.479 (0.915)
Remittances	21.54*** (6.777)	28.52*** (8.958)	25.02*** (8.679)
Human Capital	7.458*** (1.907)	8.835*** (2.320)	8.300*** (2.777)
Human Capital x FDI	0.0356 (0.140)	-0.117 (0.171)	-0.193 (0.216)
Human Capital x ODA	-0.0972 (0.0830)	-0.107 (0.168)	0.272 (0.182)
Human Capital x REM	-3.155*** (0.990)	-4.211*** (1.324)	-3.739*** (1.294)
Government Expenditure		0.180** (0.0744)	-0.0759 (0.0981)
Inflation		-0.00397 (0.0668)	0.0540 (0.0524)
Financial Depth			-0.141 (0.195)
Political Stability			4.503** (2.138)
Constant	133.3*** (43.26)	139.1*** (46.38)	152.8*** (45.92)
Observations	77	69	58
R-squared	0.322	0.406	0.432
Number of countryid	6	4	4

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 24: FDI and aggregate investment rates: panel of three decades (1990–2019) interpolated data

VARIABLES	All levels of Human Capital included				Human Capital >7.8 years of schooling			
Dependent variable is the average ratio of investment to GDP over each decade								
GDP	16.33*** (5.159)	-5.137 (3.594)	-12.38** (5.709)	-14.10*** (4.689)	-0.195 (4.396)	-4.421 (3.859)	-6.753 (5.160)	-7.937* (4.140)
Human Capital	-1.628* (0.849)	3.774*** (0.621)	3.704*** (0.942)	2.564*** (0.794)	2.795*** (0.707)	4.255*** (0.650)	3.540*** (0.878)	2.568*** (0.780)
Government Expenditure	-0.351*** (0.0602)	0.125* (0.0653)	0.233** (0.104)	0.151* (0.0869)	-0.0997 (0.0780)	-0.0860 (0.0682)	-0.0493 (0.0996)	-0.0809 (0.0809)
FDI	-0.0905 (0.126)	0.408* (0.235)	0.236 (0.356)	0.00638 (0.295)	-0.115 (0.0718)	2.398*** (0.400)	2.322*** (0.548)	1.627*** (0.470)
FDI x Human Capital		-0.0598** (0.0247)	-0.0427 (0.0374)	-0.0109 (0.0311)		-0.241*** (0.0379)	-0.223*** (0.0515)	-0.154*** (0.0444)
Political Stability			-2.073* (1.210)	-1.911* (0.993)			2.272* (1.253)	1.834* (0.996)
Financial Depth				0.264*** (0.0384)				0.177*** (0.0303)
Inflation				-0.0280 (0.0414)				-0.00116 (0.0683)
Constant	-84.85** (37.99)	28.93 (25.67)	86.43** (41.52)	105.6*** (34.18)	0.747 (30.84)	20.75 (26.88)	45.35 (37.75)	61.49** (30.14)
Observations	180	146	107	107	98	90	65	65
R-squared	0.217	0.345	0.265	0.516	0.336	0.558	0.396	0.634
Number of countryid	7	7	7	7	5	4	4	4

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1