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Retail Management

Bachelor Thesis

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Doing Business and Economic Prosperity as Indicators of Human Development

A quantitative study on mediating and moderating effects of Gross Domestic Product variables, Foreign Direct Investment and Doing Business on Human Development Index.

Student: Elizavéta Present Hasselgren

Academic Supervisor: Emelie Fröberg, PhD.

Abstract

Social responsibility indicators have become a popular complement to purely financial measurements over the past years. Corporations and governments show increased awareness and are actively pursuing creating better conditions for labourers and other citizens. This thesis tests a model where economic prosperity (GDP), which is moderated by regulation (DB), influences Human development (HDI) through foreign investor attraction (FDI). Based on archival data from 2010 to 2018 for 163 nations across the world, however, results are inconclusive compared to previous studies and applicable theory.

Key words: Human Development Index, Foreign Direct Investment, Doing Business, Regulation, Economic Prosperity

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List of Abbreviations

DB	Doing Business
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
HDI	Human Development Index
PPP GDP	Purchasing Power Parity Gross Domestic Product

1 Introduction

1.1 Background

In recent years, metrics of social responsibility and economic equality have been gaining momentum as tools for analysing the merit of both corporate and governmental policies. As nations become wealthier, a need arises for performance indicators involving social disparity factors as a complement to purely financial benchmarks. The United Nations Development Programme (2019) ranks countries on life and health, education and a decent standard of living.

Djankov, McLiesh, and Ramalho (2006) conclude that good business regulation has a positive effect on economic prosperity, which is one of the components of human development. Robert and Corcoran (2013) show that better business regulation results in higher foreign investor attraction, and Borensztein, De Gregorio and Lee (1995) prove that this in turn results in economic prosperity. The conclusions of this and similar studies have apparent real-life effects on governmental policies where countries have made it a national priority to increase its rating in international business regulation indicies – for instance Russia, where in 2012 President V. Putin ordered the government to initiate measures in order for the country to climb 100 places in the World Bank's Doing Business ranking within a time period of six years.

1.2 Research purpose and questions

This study aims to contribute to existing literature and studies by creating a model showing how and to what extent economic prosperity, regulation, and investor attraction affects the human development of a nation. The positive interaction between the latter three has been thoroughly studied, however, the regulatory effect on human development is not widely examined. Since policies and actions of governments and corporations affecting humanitary issues are under increased scrutiny, and a growing number of both governments and businesses pledge to work towards improving conditions for workers, consumers and citizens, for instance by implementing actions to reach the United Nations' 17 Sustainable Development Goals, it is of interest to investigate the interplay between the four aforementioned factors. This is accomplished by examining and determening the potential moderating and mediating effects of economic prosperity, regulation and investor attraction on human development indicators by the creation of a model framework based on previous studies and logic deductions. The conclusions can serve as guidelines for governments on what to prioritise in order to achieve a better standard of living for their citizens.

2 Theoretical Framework

2.1 Review of Related Literature

Human Development

Human capital was first theorised in the 19th century as an important component of economic growth (Smith, 1776). In the middle of the 20th century, macroeconomists Friedman (1962) and Becker (1964) further developed theories on the effects of private and government spending on human capital as a driver of growth. Schultz (1960) noted that college graduates received a higher lifetime income and defined this as investment in human capital. He also argued for education to decrease poverty. In the Lucas model (1988), worker productivity depends on aggregate skill level.

The Human Development Index was developed by A. Sen and M. ul Haq in 1990 for the United Nations Development Programme and is a statistic composite index of three types of dimensions: health, education and standard of living indicators. In 2010, IHDI – an inequality-adjusted index was introduced in order to measure potential human development, meaning a condition under which there would be no inequality. This negatively affected many top quartile countries as income disparity in some are relatively high, while on the other hand, some poorer countries, such as Moldova, gained positions in the ranking, albeit not in the scoring (United Nations Development Programme).

The importance of people-centred policies has increased over time due to a shift in the understanding of what defines a developed society. A high economic productivity is primarily accomplished by a healthy, educated and well-nourished labour force, and therefore, these factors, along with national income accounting indicators can be used to describe the economical development in a nation. Evidence has shown that environmental problems such as deforestation and soil erosion decrease as poverty declines, as well as it enabling a more democratic and equal society. Moreover, it can also have a stabilising affect on politics, and has shown to increase women's participation in the workforce, which further adds to economic development. The reason to why human development can serve as a better measurement than purely national income aspects is due to the variance within a country's literacy rate being lower than that of income. If a small percentage of a nation's population earn a significant amount of money, it will raise the average and thus appear more effective than it truly is. Moreover, the distribution of human development within a nation is indicative of the country's economic productivity, as a decrease in infant mortality is caused by more poor gaining access to better medical assistance.

Investments in human development (i.e. social spending) do not necessarily affect national income negatively in the short term. Pakistan achieved a Gross Domestic Product (GDP) growth of 6.5 percent per year between 1980 to 1986 while increasing government expenditure on education and health from 8.6 to 14.2 percent, thereby attaining simultaneous GDP and human development growth without these two components negatively affecting one another (Haq, 1995).

Regulation

Ease of Doing Business (DB) is an index created in 2004 which is used to rank different economies' performance in regulatory and practical aspects relating to conducting business. A nation's ranking in the index is the average of ten subindices out of twelve measurements (Appendix A). The idea is that an economy benefits from strong property rights and application of these, clear rules for all market players, and transparent resolution of commercial disputes – these are conditions under which new entrants can emerge and effective firms are able to invest and expand their operations. The methodology for calculating the scores for each country has changed over the past years: aspects relevant to receiving credit and minority investors rights were broadened in 2015, as did dealing with construction permits, electricity and property registration, contract enforcing in 2016, and tax payment in 2017 (Doing Business, 2020).

2.2 Review of Related Studies

Human Development

Multiple studies have shown a strong correlation between HDI components and different GDP per capita measurements with and without the income component for the HDI. For instance, Barro (2001) finds education level to be closely linked to income in a study of data between 1965 and 1995 for 100 countries worldwide, where one extra year of schooling (one standard deviation) for men raises the economic growth rate by 0.44 percent per year. Chandra and Islamia (2010) find evidence in data from India between 1951 and 2009 that economic growth results in higher government spending on education, but also that higher education tends to influence economic growth, albeit with some time lag. High levels of government expenditures on public health and low levels of poverty correlate to a healthier population, high employment rates, and reduced crime in EU member countries between 1995 and 2013. Moreover, Paliova et. Al (2019) find a positive relationship between public educational spending and long-term reduced income inequality, as well as smaller effects on per Capita Gross National Income.

Human development scores are closely correlated to economic indicators according to multiple studies. For instance, data from ten ASEAN member countries between 2000 and 2017 show a weak positive direct correlation between HDI and GDP per Capita (Elistia & Syahzuni, 2018). The same is found worldwide for per Capita PPP GDP and human development scores in 1990, 2000 and 2013, albeit the correlation is stronger for high and low income countries than for mid-income nations (Deb, Gap between GDP and HDI: Are the Rich Country, 2015). Moreover, in 2017, high income countries are found to have high human development scores, and nations ranking low to medium on the index and with high inequality were found to have lower income per capita (Paliova et al., 2019). The United Nations finds no automatic link between human development scores and hours worked, however, when comparing per Capita Gross National Income measured in 2011 international dollars to Human Development Index score, there appears to be a strong correlation (United Nations, 2015). Moreover, there is a correlation of the income component of the HDI to the education and health one which is 0.6 and 0.7 respectively for 2004 (Sušnik & van deer Zaag, 2017).

There is also critique on HDI as a driver of economic growth. In a study of 135 countries between 1970 and 2010 by Klugman et al. (2011), there is no statistically significant correlation between those variables. China is the country with the highest per capita economic growth during the period of study – 7.6 percent annually, compared to the worldwide average of 1.8 percent. Yet it ranked 64th out of the 135 countries on non-income related HDI component improvement in 2010. Only three of the fastest growing economies worldwide were also improving the most on the HDI.

Furthermore, there has been critique on the methods used in the HDI. Wolff et al. argues that the standard HDI has three significant sources of errors: measurement errors due to data revisions, formula revisions and thresholds in the classification of a country's development status. The lower the income group, the greater the variance in the HDI score from year to year due to lower quality raw data from the reporting country. Moreover, there is up to 45 percent risk of a developing country being mislabelled in terms of which income group it belongs to due to no revision being made of the arbitrary cut-off values of 0.5 and 0.8 up until 2010. There is also critique on the use of equal weight to all three components, meaning that if a country scores poorly on one, it cannot be compensated by superiority in another (Deb, The Human Development Index and Its Methodological Refinements, 2015).

Regulation

Djankov, McLiesh, and Ramalho (2006) find that business regulations resulting in better DB rankings significantly improve economic growth in a study of 135 countries. When a country improves from the worst to the best quartile in terms of business regulation, the annual economic growth increases by

an average of 2.3 percentage points, while improving from the second worst to the best quartile results in an increase of 0.9 percentage points. The study finds that the weight of improvements in education, inflation and government consumption are significantly lower than that of business regulations. However, some questionable data is used in the report. The dependent variable is the average GDP growth from 1993 to 2002, while the DB ranking of 2004 is used, which might cause biased results.

Robert and Corcoran (2013) examine whether a higher ease of Doing Business ranking results in higher foreign investor attraction, and find that overall, DB is highly significant – every two ranks is worth an additional 1% in terms of FDI. The Trade Rank variable possesses all explanatory power of the DB ranking when it comes to FDI. The study also shows that the DB ranking does not play a significant role in either sub-Saharan Africa or OECD countries, and that the results best apply to mid-income economies. Moreover, the data implies a clustering effect, where countries located in a better Trade Rank index component neighbourhood attract more FDI. However, the study also finds that better DB scores do not result in greater FDI inflow in the poorest region of the world. Data also suggests no correlation between improving trade across borders with the neighbouring countries in that region with a rise in FDI.

On average, however, Jayasuriya (2011) finds that an increase in the DB ranking increases FDI inflows into that economy by approximately 300 million USD. Yet the study finds is little evidence to support that countries which implement many reforms to improve its DB rankings benefit from significantly greater FDI inflows. Similarly to Robert and Corcoran (2013), the study determines that that in a sample of 56 developing countries, the overall DB rank does not affect FDI levels, further strengthening the thesis that while on average, DB ranking has some impact on FDI, this is not true for developing economies (Jayasuriya, 2011).

Investor Attraction

GDP variants are consistently used as determinants of FDI as high GDP growth is indicative of economies of scale, (Alfaro, Chanda, Kalemli-Ozcan, & Sayek, 2004) and high GDP per Capita indicate large market size, which is attractive to FDI (Walsh & Yu, 2010, and Jayasuriya, 2011).

Multiple studies show a positive direct or indirect effect of FDI on economic growth. Borensztein, De Gregorio and Lee (1995) find that one percentage point increase in FDI-to-GDP ratio from industrial countries to 69 developing nations over a period from 1970 to 1989, resulted in 0.8 percentage point

economic growth of the latter. Basu and Guariglia (2006) arrive at the same conclusion using panel data from 119 developing countries from 1970 to 1999. Alfaro et. al find that while FDI has a positive effect on aggregate economic growth rate, it is significantly stronger in nations with more developed financial markets. For the same level of FDI increase, regardless of the grounds of the increase, three times more additional growth is generated in nations which are more financially well-developed compared to those which are not. The reason for this is that well-developed local financial markets enable entrepreneurs to start their own businesses, which increases the number of assortments of intermediate goods, and in turn, results in positive effects on the final goods sector. Local financial markets enable backward linkages between foreign and domestic firms create benefits to turn into FDI spill overs.

Adams (2009) finds that for Sub-Saharan Africa over a period from 1990 to 2003, FDI and economic growth are positively correlated and significant in an OLS regression, and that while there might initially be a crowding-out effect from FDI on domestic investment, FDI has a positive net long-term effect.

2.3 Model Framework

A main model is developed for this study with the purpose of establishing the connection between economic prosperity, investor attraction, regulation and human development based on previous research and logic conclusions. Since multiple previous studies have shown that economic prosperity tends to result in higher human development determinants (Barro, 2001; Elistia & Syahzuni, 2018; Leitner & Stehrer, 2016; Paliova et al., 2019), it is likely that economic prosperity is a determinant of human development. These studies appear to arrive at logic deductions since their conclusions are consistent with the findings of the HDI ranking, where nations with higher GDP are most likely to be at the top of the ranking.

Moreover, previous studies have found a correlation between higher standards of regulation in the spheres that are relevant for businesses, and economic prosperity (Djankov et al., 2006; Jayasuriya, 2011). However, it appears problematic to draw the conclusion that better regulation automatically results in higher economic prosperity (Robert & Corcoran, 2013). It is likely that other factors than simply the determinants of Doing Business become relevant when examining the effect of regulation on economic growth, such as the maturity of local financial markets (Alfaro et al., 2004).

Since human development is neither consistent nor linear in an individual country or nation, but subject to shocks such as armed conflicts, financial or political instability, natural catastrophes etc. (United Nations Development Programme, 2019) it is also plausible that the same applies for economic prosperity, since that in itself is a component of the HDI, which the study measures.

The regulation aspect on human development has not previously been closely studied. However, since regulation has an effect, be it direct or indirect, on economic prosperity and economic prosperity influences human development, it is logical that both economic prosperity and regulation has an effect on human development. Since there does not appear to be a full cause and effect link between better regulation and human development, it is likely that regulation is a moderator on human development, as the strength of the regulatory impact on economic prosperity is determined by local conditions. The model framework is thus likely to be of the nature as shown in Figure 1.

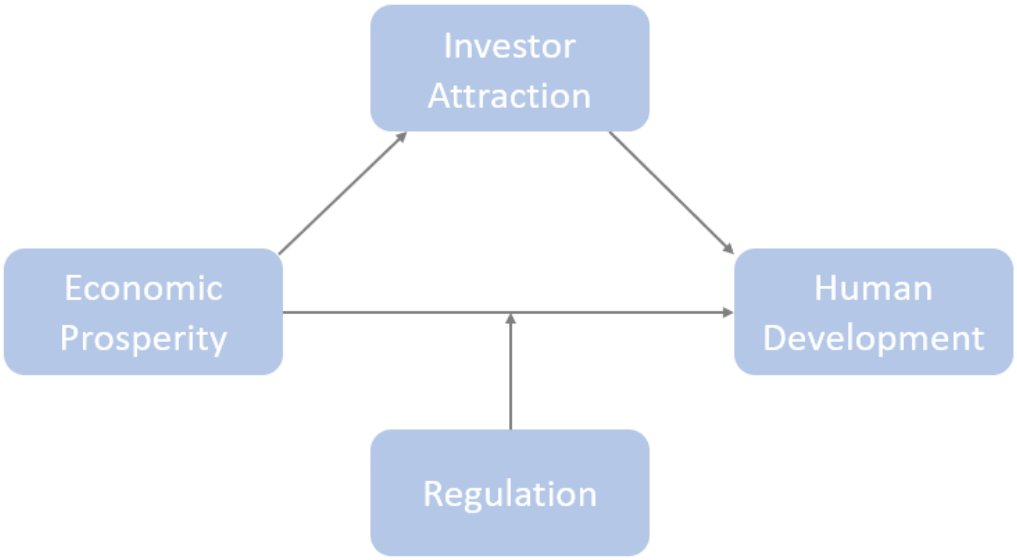

Figure 1

A rise in economic prosperity should also entail a rise in human development. It is also plausible that human development is a mediator on economic prosperity, however, due to the time lag between governmental social spending and increase in economic prosperity seen in some studies (Paliova et. al, 2019) it is difficult to measure this effect. Since there is a time lag between a government spending more on, for example, schooling of children, and the children contributing to the nation's economic prosperity by becoming workers, it is not feasible to study this effect over a short time period. Moreover, it is also plausible that regulation is a mediator on economic prosperity, however, since the model aims to determine the components on human development growth, it is not considered in this study.

2.4 Hypotheses

Multiple studies establish a link between high quality of components making up the HDI and higher income countries. Components include education (Barro, 2001 and Chandra & Islamia, 2010) and healthcare (Leitner & Stehrer, 2016). The results apply even when the income component of HDI is removed from the studies. Therefore, the following hypothesis is formulated:

H1. Higher levels of economic prosperity result in higher human development.

GDP variables and FDI inflow to a nation often correlate, where poorer countries often struggle to attract foreign investors. Multiple studies, among them Alfaro et. al. (2004) and Walsh & Yu (2010) indicate that higher GDP variables correlate to higher FDI, and thus the following hypothesis is formulated:

H2. Higher levels of economic prosperity imply higher levels of foreign investor attraction.

Businesses are vital components of an economy, and the protection of business rights create a better environment for economic growth. Since economic prosperity is affected by entrepreneur's ability to access capital (Alfaro et al., 2004), and human development is dependent on economic prosperity as in H.1 the following hypothesis is formulated:

H3. Foreign investor attraction results in higher human development.

The industrialised countries generally have better regulatory conditions for businesses to form, grow and close compared to developing nations. Previous studies (Djankov et al., 3006; Robert & Corcoran, 2013) show a correlation between the Doing Business ranking and a higher GDP in an economy. Data from the World Bank, United Nations, OECD and Eurostat gives indication of a relationship where the relationship between human development and economic prosperity is moderated by regulation (Appendix C): Therefore, the following hypothesis is formulated:

H4. Higher economic prosperity levels positively impact human development, and the better the regulation, the stronger is the economic prosperity effect.

3 Methodology

3.1 Data Model

The model in Figure 1 can be operationalised into a chart where a GDP variable represents economic prosperity. The higher the GDP variable, the higher is the economic prosperity of a nation. The human development can be represented by the Human Development Index. If the GDP variable increases, it should result in a higher HDI score due to the GDP variable being one of the determinants of HDI. FDI is a control variable which should, in theory, have a similar effect on HDI as a GDP variable. Therefore, it should also be considerated a mediator. Finally, regulation can be represented by the Doing Business score in this model. Since regulation has a moderating effect on human development in the model, so does DB on HDI.

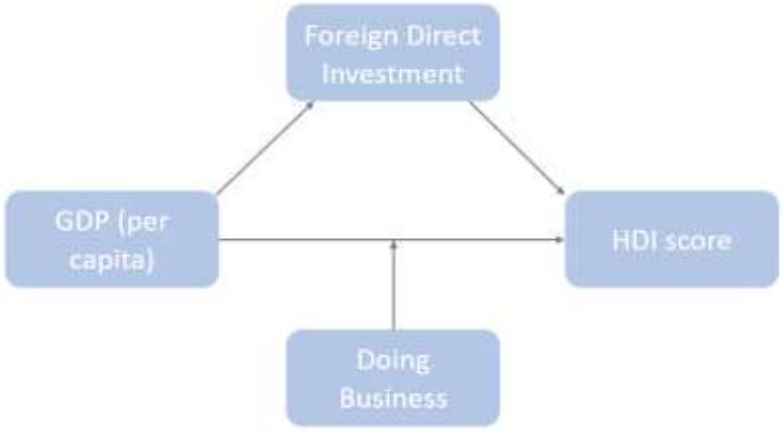

Figure 2

The GDP component for the model in Figure 2 uses the variable PPP GDP per Capita.

3.2 Measurements & Variables

Concept	Measurement	Variable	Description	Source
Human Development	Human Development Index	HDI	Average of "Long and Healthy Life" and "Knowledge" variables of the HDI	United Nations
Regulation	Doing Business score	DB	Doing Business score 2011-2019	World Bank
Economic Prosperity	PPP GDP per Capita	GDP	PPP Gross Domestic Product per Capita in 2011 international $	Eurostat/OECD /World Bank
Foreign Investor Attraction	Foreign Direct Investment as Percentage of GDP	FDI	Weighted average of inward Foreign Direct Investment as percentage of GDP into a nation	World Bank

Table 1

Of Human Development Index

There are three dimensions making up the components of the HDI: a long and healthy life, knowledge and a decent standard of living. Since 2010, the methodology uses a fixed maximum for normalisation of dimensional indices instead the worldwide observed highest value. The indicator of the long and healthy life dimension is life expectancy at birth and calculated by using a minimum value of 20 years and maximum of 85. The knowledge dimension indicators are expected years of schooling of children at school-entry age, and mean years of schooling of the adult population aged 25 and older, with a maximum score of 15 years for the first component and 18 for the second. The income dimension is given by gross national income per capita measured in constant 2011 international dollars with a maximum at $75,000. An international dollar has the same purchasing power over GDP as the U.S. dollar has in the United States. (Deb, The Human Development Index and Its Methodological Refinements, 2015). The HDI is calculated by the logarithm of income to reflect the diminishing importance of income with increasing Gross National Income. The scores for the three HDI component indices are aggregated into a composite index using the geometric mean (United Nations Development Programme, 2019).

The HDI variable in this thesis is the geometric mean of the normalised indices Long and Healthy Life, and Education dimensions in the HDI index. Since income is one dimension of the HDI, there is an expected multicollinearity when correlated against Purchasing Power Parity Gross Domestic Product and Foreign Direct Investment. To resolve this problem, I have removed the income dimension in the data I have used for the HDI variable.

HDI sub-data is primarily collected from different entities belonging to the United Nations such as: United Nations Department of Economic and Social Affairs, United Nations Economic Commission for Latin America and the Caribbean, International Labour Organisation, and United Nations Children's Fund. It is also taken from Eurostat and the International Monetary Fund, among other organisations.

Of Ease of Doing Business

Doing Business has collected data since 2004, however, many countries were not represented in the beginning of the data collection period, primarily island nations and countries in Sub-Saharan Africa, but also countries such as Cyprus, Belize and Luxembourg. The nations have been continuously ranked from 2005 onwards, with some data being available from 2004. Doing Business scores were generally available from 2010, with 16 missing in 2010 and no missing for 2020. The manner in which ease of Doing Business is measured has been subject to change three times, with some new aspects being

added or revised. The score is computed by aggregating the distance to frontier scores of different countries. Worldwide leading regulatory best practices is used as a benchmark. Simple average is used for the scoring.

There are ten components in Doing Business (see Appendix A for an overview), the first one being ease of starting a business, which in turn is made up of the number of procedures it takes, amount of days, cost of doing so, and paid-in minimum capital as a percentage of income per capita. This subcomponent has not changed since 2004, but data is incomplete for many countries until 2014 which is when all countries have been continually scored.

The second component is ease of dealing with construction permits, which was reworked in 2015 and 2016. It includes identical components to the previous sub index, with the difference being the cost, which is measured in percentage of warehouse value. Building quality control, quality control before, during, and after construction, liability and insurance regimes, and professional certifications index are also subcomponents. There is no data for this sub index for 2004 and 2005, and 26 countries are not scored for 2006, which is the first year this sub index was measured. In 2020, there was no data reported for four countries.

The third is ease of getting electricity, which includes all subcomponents of the first index, as well as transparency and reliability of tariffs, total duration and frequency of outages, mechanisms for monitoring outages, restoring service, and regulations, and financial deterrents aimed at limiting outages. There is a complete lack of data until 2010, when 18 countries were not reported for. In 2020, there was no data for three countries. The scoring system was reworked in 2016.

The fourth is ease of registering property, which apart from the subcomponents of the first index also includes quality of land administration, transparency of information, geographic coverage, land dispute resolution, and equal access to property rights. It was continually reported from 2005, when data was missing for 48 countries. It was reworked in 2017, and for 2020, data were missing for four countries.

The fifth is ease of getting credit, which was introduced in 2005 and reworked in 2015. Its subcomponents are strength of legal rights, depth of credit information, credit registry coverage, and credit bureau coverage. Data is missing for 45 countries in 2005, and four in 2020.

The sixth is how well minority shareholder protection is. It was first measured in 2006, when data was missing for one country, and in 2020 all nations were scored. It was reworked in 2015 and measures extent of disclosure, extent of director liability, ease of shareholder suits, extent of shareholder rights, extent of ownership and control, extent of corporate transparency, and strength of minority investor protection.

The seventh is ease of paying taxes, and was reworked in 2017. Apart from the same subcomponents as in the first index, it also considers total tax rate as percentage of profit, labour tax, time to comply with VAT refund, time to comply with corporate income tax, and postfiling. It was first measured in 2006, when data were missing for 26 countries. In 2020, there was no data missing.

The eight is ease of trading across borders, which was introduced in 2006 and reworked in 2016. It includes documentary and border compliance time to export and import, and costs associated with import and export. For 2006, data is missing for 27 countries, and for 2020, there is no data for three countries.

The ninth is ease of enforcing contracts, which was introduced in 2004 and reworked in 2017. For 2004, data was missing for 53 countries. For 2020, no data was missing. The components of this sub-index are number of procedures, time, filing and service measured in days, enforcement of judgement measured in days, cost as percentage of claim, attorney fees as percentage of claim, quality of juridical processes, court structure and proceedings, case management, court automation, and alternative dispute resolution.

The tenth is ease of resolving insolvency, which was introduced in 2004 and reworked in 2015. In 2004, data for 61 countries was missing. For 2020, the number was 21. The subcomponents are time, cost as a percentage of estate, recovery rate, strength of insolvency framework, commencement of proceedings, management of debtor's assets, reorganisation proceedings, and creditor participation (Doing Business, 2020).

The total Doing Business score is used for the time period from 2010 to 2019. Since the DB scores are presented a year after the measured time period, I have used the t+1 measurement for each year, meaning that the DB score in 2011 is applied on the year 2010.

Of Foreign Direct Investment

FDI net inflows as percentage of GDP is the value of inward direct investment to acquire 10 percent or more of voting stock in an enterprise operating in a country, made by non-resident investors in the economy of a country. It is the total of equity capital, reinvestment of earnings, other long-term capital, and short-term capital shown in the balance of payments. The aggregation method is the weighted average. The oldest available data is from 1970, however, in this thesis, only that of 2010 and forward is considered (World Bank, 2019). This variable is deemed as the best one for representing foreign investor attraction for the economy, as it excludes domestic investors. I have used the yearly FDI inflow as percentage of GDP in my models.

Of Purchasing Power Parity Gross Domestic Product per Capita

PPP GDP is the gross domestic product converted to international dollars using purchasing power parity rates. GDP is the total gross value added by all resident producers in a country, plus product taxes, minus subsidies not included in the value of the products. Depletion and degradation of natural resources are not included in the calculation. Per Capita PPP GDP is the PPP GDP, divided by the population of a given country. The aggregation method is the weighted average.

Most economies' data is taken from the 2011 International Comparison Program, or estimated using a statistical model based on in. For 47 high- and upper middle-income economies sub-data comes from Eurostat and the Organisation for Economic Co-operation and Development (OECD) and the U.S. Census Bureau: International Database. The informal economy is not included in this data (World Bank, 2019). PPP GDP per Capita is used in this thesis in order to minimise the differences between large and small countries in order to study the effect of this variable on HDI, and the PPP measurement to minimise foreign exchange volatility effects.

3.3 Data and Delimitation

All data is taken from internationally acknowledged institutions, but may still not be precise. Some countries are difficult to acquire truthful data from, for example war-torn nations such as the Syrian Arab Republic, or countries in domestic political turmoil such as Venezuela.

Some population statistics are estimates or old, for example Ukraine, which last conducted a census in 2001 and officially has a population of around 44 million inhabitants, but official estimates vary from 33 (Goldarb, 2019) to 37 million (Kyiv Post, 2020). This affects primarily the PPP GDP per Capita

numbers, which should be higher since the Gross Domestic Product is accomplished by a smaller population.

The informal economy is not included in the statistics even though it is relevant to this dataset, since more than 61 percent of the world's employed population earns its livelihood in the informal sector (Department of Statistics at the UN International Labour Organization (ILO), 2018).

189 nations have been reviewed in the HDI studies since its introduction in 1990, however, there is data missing for multiple countries and territories over the years. A further six nations are not included in the main HDI study, even though there is some data on them. Due to this, some countries and territories, for which I do not have enough information to draw conclusions, are excluded in this thesis.

Moreover, 190 nations in the world are examined in the annual Doing Business study, however, some countries have at least a few missing variables in the sub-indices, and some lack them altogether. For instance, Turkmenistan, the Democratic People's Republic of Korea, and the Republic of Cuba are fully excluded in the DB study, and therefore also in this thesis since there is a significant lack of data for those countries, which makes it impossible to draw conclusions on the factors constituting their economic growth. Even the data which does exist, such as GDP growth and FDI can be questioned due to the current and historical political situation in these countries. As some countries are, to a different extent, closed for international organisations such as the World Bank, no reliable information on relevant factors for DB scores can be collected.

In other cases, countries are war-torn, which also complicates the review of them. For instance, Yemen has retained the same DB score throughout the armed conflict. However, since the World Bank choses to publish these results, they have been included in this thesis. The same is applicable for Timor-Leste, as there is data on more than half of the DB factors and most of the economic ones. Somalia, on the other hand, is not included, since there is a complete lack of data on that country.

Some nations, such as South Sudan are relatively young, and therefore lack data before they became independent and are therefore also excluded. Even though some datapoints is calculated in different regions than in those it aims to analyse, the organisations behind them are deemed competent enough to compute plausible numbers on Foreign Direct Investment and GDP numbers. In total, 163 countries and territories remain in this thesis after removing the ones with apparent lack of probable data and missing information on crucial variables.

The timeframe of 2010 to 2018 is chosen due to the majority of countries being scored on all or most of the DB sub-indices from then and up until present day. Data became more detailed and reliable in

2010, including deeper analysis on, for instance, ease of access to electricity. This is the reason to this thesis focusing on that time period.

Data is primarily taken from the World Bank and United Nations databases and consists of four main parts: HDI scores, Doing Business scores, FDI inflow as percentage of GDP, and GDP per Capita in PPP between 2010 and 2018. In total, 163 countries which are represented in all databases and have no missing values for the main reviewed dimensions. Some of the nations which are not represented in the final dataset includes the Federal Republic of Somalia, Turkmenistan, and the Democratic Republic of Korea. For different reasons, precise data from those countries is difficult to collect.

I manually checked for data faults by using conditional formatting in Excel to find extreme outliers and discovered two likely errors: the HDI score for North Macedonia and Timor-Leste were increased by tenfold to 7.59 from 0.759 and to 6.26 from 0.626 respectively in 2019, the mistake likely being a misplaced dot. No other similarly large variations were found, where scoring or data differed by ten times the amount of previous or following years.

3.4 Data Analysis

R and SPSS are used to analyse the hypotheses. At first, a descriptive test is made in SPSS to ensure the data is probable, and some countries are removed from the analysis due to inconsistent reporting of the five variables, leaving a total observation of n=163 countries and t=9 years. The data is then converted in SPSS to be of the correct format for a time-series regression, and exported into R. Before I export it, I make a descriptives test as well as a correlation. In R, I then examine how much explanatory power the PPP GDP per Capita variable or the FDI posess on the variance of HDI. In order to establish whether the fixed or random effects model is better suitable in the regression analysis, a Hausman test is performed with the chi-square method. However, all Sub-models will be tested with all three possible regression models, the third being pooled effect. The reason for including the pooled model is that it has been a prefered approach in economic research for many years. However, as with all models, it has drawbacks: it may increase bias in estimation coefficients for the observed variables.

At first, I wish to determine the variance in HDI explained by PPP GDP per Capita (Hypothesis 1), and then by FDI (Hypothesis 2). I use the “plm”-function in R, which is a linear model function used for regression models, which is applied at first on PPP GDP per Capita and FDI to determine their respective impact on the variance on HDI, and then their combined effect. For the Model, I review the connection between the four variables by building sub-models, see Table 1. Sub-model 1 examines

the PPP GGP per Capita's effect on HDI. Sub-model 2 examines the PPP GDP per Capita's effect on FDI. Sub-model 3 examines the PPP GDP per Capita's effect on HDI through FDI by examining FDI'S effect on HDI. If there is a mediator effect, PPP GDP per Capita will affect both HDI and FDI, and the effect of PPP GDP per Capita should decrease or disappear when FDI is taken into consideration. Sub-model 4 examines if the effect of PPP GDP per Capita on HDI depends on regulation – i.e. the DB score, and investor attraction, i.e. FDI. This test is carried out to determine whether there is an interaction effect between the GDP and regulatory variables. Two further tests are carried out: the DB direct effect on HDI in order to examine them as separate main effects, and total GDP, not in per capita terms, in relation to FDI. A time lag of one year is applied to measure the effect of one variable on another. The reason for the specific time lag is that detailed data for the majority of observed nations is only available after 2010, meaning there are not many years to study. It is primarily the DB data which is missing.

Dependent variables are Human Development Index and Doing Business. Foreign Direct Investment is also considered, both as a dependent and an independent variable.

Sub-Model	1	2	3	4a	4b
Dependent Variable	HDI	FDI	HDI	HDI	HDI
GDP	X	X	X	X	X
FDI			X		X
DB				X	X
GDPxDB				X	X
GDPxDB+FDI					X

Table 2

3.5 Formulas

The basic linear panel model uses the following formula:

$$y_{it} = \alpha_{it} + \beta_{it}^{\top} x_{it} + u_{it}$$

where $i = 1,\ldots,n$ is the individual index, $t = 1,\ldots,T$ is the time index and u_{it} is a random disturbance term of mean 0, which requires assumptions to be made regarding the parameters, errors and exogeneity of the regressors. The common model is parameter homogeneity, where the parameters α and β are common for all i and t. In order to model individual heterogeneity, the error term is assumed to have two components where one is specific to the i and remains unchanged over different t, see formula:

$$(error\ component) y_{it} = \alpha + \beta^{\top} x_{it} + \mu_i + \epsilon_{it}$$

where ϵ_{it} is the idiosyncratic error is assumed well-behaved and independent from both the independent variables and the individual error component μ_i, which can be either independent of the regressors or correlated to them. If it is correlated, the fixed effects model is more suitable, and if it is not, the random effects model should be pursued. However, if the individual component is missing, the pooled ordinary least squares is best used.

All three models will be applied to the data since it is not known which is better suitable for the finished sub-models (1-4) as described in Figure 2. The significance level and explanatory values will be studied to determine which model has the best fit for the data.

The Hausman test is used to differentiate between fixed and random effects in panel data. In the linear model where $y = \beta X + \epsilon$, there are two estimators for β, which are β_0 and β_1 where the latter has the smallest asymptotic variance, albeit both are consistent in the null hypothesis. The random effects model should be used when the null hypothesis holds due to it being more efficient than fixed effects. However, if the null hypothesis does not hold, fixed effects should be used due to it remaining consistent, while the random effects model is not.

Hypothesis 1: Sub-model 1

Measures the GDP variable effect on HDI as (dependent variable ~ independent variable):

$$HDI_{t+1,i} \sim GDP_{t,i}$$

with the fixed effect (within), random and pooled models.

Hypothesis 2: Sub-model 2

Measures the GDP variable on FDI as:

$$FDI_{t,i} \sim GDP_{t,i}$$

with the fixed effect (within), random and pooled models.

Hypothesis 3: Sub-model 3

Measures the GDP variable effect on HDI though FDI as:

$$HDI_{t+1,i} \sim GDP_{t,i} + FDI_{t,i}$$

with the fixed effect (within), random and pooled models.

Hypothesis 4: Sub-model 4

Measures the GDP effect on HDI depending on DB as:

$$HDI_{t+1,i} \sim GDP_{t,i} + DB_{t,i} + GDP_{t,i} * DB_{t,i}$$

As well as with the including of the FDI variable as:

$$HDI_{t+1,i} \sim GDP_{t,i} + DB_{t,i} + GDP_{t,i} * DB_{t,i} + FDI_{t,i}$$

with the fixed effect (within), random and pooled models.

Separate Main Effects Control

Moreover, DB is also calculated as separate main effect to determine if the values change when the moderator is applied. The following is thus analysed:

$$HDI_{t+1,i} \sim DB_{t,i}$$

This test is likewise made with the fixed effects, random effects and pooled models.

4 Results

This section presents the analysed data according to the methods described in the methodology section. It consists of two parts, 4.1 which presents the pre-tests, and 4.2 which presents the results of the main Model.

4.1 Pre-tests

Some tests are performed before the main regression in order to determine the how to analyse the data. Firstly, a Hausman test is made in order to decide which effect model has a higher likelihood of being appropriate for the regression. Secondly, a fixed and random effects model is applied to the PPP GDP per Capita and FDI variables in a regression in order to visualise the difference between the applied models.

Descriptives

Descriptive Statistics						
	N	Minimum	Maximum	Mean	Median	Std. Deviation
HDI	1467	0.32143	0.94816	0.70940	0.74171	0.15
FDI	1467	-46.12	198.57	5.14	2.9372	10.48
DB	1467	26.9	89.5	60.935	60.935	12.54
GDP	1467	646	126898	18988	11487	20834.93

Table 3

There are 1467 observations in total for all four measurements across a period of 9 years from 2011 to 2019. The mean HDI score with the income component removed is around 0.71 and median slightly higher at 0.74, the mean FDI as percentage of GDP is 5.12% with a median of 2.94%, the mean DB score is 60.93 and median slightly larger at 61.20. The PPP GDP per Capita mean is 18 988 international

2011 USD and median considerably lower at 11 487. The minimum and maximum scores are 0.32 and 0.95 for HDI, -46% and 199% for FDI, 26.9 and 89.5 for DB, and 646 and 126 898 international 2011 USD. The standard deviation is 0.15, 10.5, 12.5 and 20 835 respectively.

Correlation Test

Correlations					
		HDI	FDI	DB	GDP
HDI	Pearson Correlation	1	0.027	.817**	.641**
	Sig. (2-tailed)		0.309	0.000	0.000
	N	1467	1459	1467	1467
FDI	Pearson Correlation	0.027	1	0.026	.081**
	Sig. (2-tailed)	0.309		0.312	0.002
	N	1459	1459	1459	1459
DB	Pearson Correlation	.817**	0.026	1	.614**
	Sig. (2-tailed)	0.000	0.312		0.000
	N	1467	1459	1467	1467
GDP	Pearson Correlation	.641**	.081**	.614**	1
	Sig. (2-tailed)	0.000	0.002	0.000	
	N	1467	1459	1467	1467

Table 4

**. Correlation is significant at the 0.01 level (2-tailed).

A correlation test shows strong correlation between HDI and the DB and GDP variables, as well as between GDP and DB. There is some statistically significant correlation between GDP and FDI, albeit small.

Hausman Test

At first, a Hausman test is performed to establish whether to use fixed or random effects when analysing the three variables PPP GDP per Capita ("GDP"), FDI and DB.

Hausman test			
Independent variable	GDP	FDI	DB
Chi^2	21.699	0.2708	178.33
df	1	1	1
p-value	3.19e-06	0.6028	2.20e-16

Table 5

Usually, when the p-value is considerable (higher than 0.05), the random effects model should be applied. Otherwise, the fixed effects is better suitable. The test shows a difference in which model is most suitable for further tests, and indicates that GDP and DB are likely endogenous when tested with HDI, and that therefore fixed effects controls for nations should be performed, while FDI is exogenous when tested with HDI. Therefore, it can be considered an independet test in the regression even though the data measures the same nations.

Fixed vs Random Effects Regression on GDP and FDI

A regression is made to determine the explanatory effect of the GDP variable and FDI on HDI variance, first using the fixed effects model, and secondly the random effects model. The first and fourth tests use PPP GDP per Capita, the second and fifth FDI, and the third both added together. Since the Hausman test implied GDP to be endogenous, fixed effects should be used for nations. In order to avoid multicollinearity, the GDP and FDI effect on HDI together will therefore only be performed with the fixed effects model.

Fixed effects model	Test 1	Test 2	Test 3
GDP	β_1		β_1
FDI		β_2	β_2
R^2	0.00791	0.00166	0.00992
F	10.32200	2.14111	6.44101

Table 6

The fixed effects model indicates that the explanatory power of the independent variable on the dependent variable variance is generally very low. A large F-value is indicative of significance, which can mainly be seen for Test 1 and 3 in the fixed effects model tests.

Random effects model	Test 4	Test 5
GDP	β_1	
FDI		β_2
R^2	0.00261	0.00071
Chi^2	3.83283	0.20637

Table 7

Using the random effects model, the conclusion is that the explanatory power of the independent variable on the dependent one is low. It also varies by variable tested – the random effect model gives better results for test 1 and 4, i.e. the PPP GDP per Capita variable. The fixed effects model grants

more favourable results on Tests 2 and 5, i.e. FDI. Therefore, regression results for the Model with Hypothesis 1 to 4 are unlikely to be favourable.

4.2 Model Analysis

This section presents the results for each of the hypotheses. Significance codes are equal throughout the sub-models and are labelled with asterisks where '***' 0.0001, '**' 0.001, and '*' 0.01 indicate the smallest significance level to reject the null hypothesis. The sub-models reviewed belong to the Framework Model as in Figure 2 and each number corresponds to the same hypothesis number.

The mediator effect of the GDP variable on HDI is very low in all tests, regardless of which model is used: fixed effects, random effects or pooled. The negative coefficient estimate suggests that the dependent variable decreases as the independent increases in the fixed effects model, meaning a negative relationship between GDP and HDI.

Hypothesis 1: Sub-model 1			
$HDI_{t+1,i} \sim GDP_{t,i}$			
Model	**Fixed effects**	**Random effects**	**Pooled**
Estimate	-2.70e-07*	3.75e-07**	4.54e-06***
SE	1.14e-07	1.21e-07	1.52e-07
R^2	0.00494	0.00735	0.40609

Table 8

In the other models, the variables have a positive relationship – however, it remains abysmal regardless of model. The R-squared value states to what extent the variance of one variable explains the variance of the second variable, which for Sub-model 1 is minute. Moreover, the standard error is of similar size to the estimation. For Sub-model 1, the pooled model gives the best values – however, the explanatory power of the GDP variable on HDI is so small that it becomes irrelevant. These results indicate that merely weak conclusions whether economic prosperity has a positive mediating effect on human development can be drawn based on this data. The fixed effects model, which according to the Hausman test is better suited for usage in the regression gives the lowest significance level.

Hypothesis 2: Sub-model 2			
$FDI_{t,i} \sim GDP_{t,i}$			
Model	**Fixed effects**	**Random effects**	**Pooled**
Estimate	-7.88e-05***	2.46e-05***	4.06e-05**
SE	1.06e-04	2.86e-06	1.31e-05
R^2	0.00043	0.00654	0.00654

Table 9

For Sub-model 2, as expected, results are similar as for Sub-model 1, with the difference being that all models (fixed effects, random effects, pooled) have a good significance level. The impact of the unit change in the independent variable on the dependent variable is low regardless on how the regression is modelled, though, and results are inconclusive since the fixed effects model suggests a negative effect, while the random effects and pooled models suggest the opposite. However, since the Hausman test indicates that FDI is of exogenous character, the fixed effects model can be perceived with more caution than the others. Furthermore, the R-squared value shows that only a small proportion of variation in the dependent variable can be attributed to the independent variable regardless of model. Moreover, the standard error is high relative to the estimate across all data, and particularly in the fixed effects model. In the fixed effects model for both Sub-model 1 and 2, GDP and FDI have a negative relationship, which it does not in the other models, however, as mentioned, FDI is likely of exogenous character and therefore the fixed effects model is likely to not be ideal.

For Sub-model 3, the best results are given by the pooled model as it has a high significance level for the GDP component. Together with the random effects model, it also has the best explanatory power of the regression, albeit it does not support overwhelming evidence for the Sub-Model as it explains less than half of the variance. The R-square of the random effects model is similar to that of the random effects model, albeit the latter is not statistically significant. The FDI component generally has low explanatory power and significance, while having a relatively high standard error across all models. Yet again, the fixed effects model suggests a negative relationship for the GDP component, as in Sub-Model 1 and 2. The endogenous GDP variable has rather low significance level in the fixed effects model, none in the random effects, and good in the pooled approach. The pooled model implies a negative effect of the FDI component, albeit not statistically significant. Overall, there appears to be an abysmal relationship between the determinants.

Hypothesis 3: Sub-model 3				
$HDI_{t+1,i} \sim GDP_{t,i} + FDI_{t,i}$				
	Model	**Fixed effects**	**Random effects**	**Pooled**
GDP	Estimate	-2.85e-07*	3.02e-07	4.56e-06***
	SE	1.14e-08	1.42e-05	1.53e-07
FDI	Estimate	4.21e-05	2.98e-05	-3.25e-04
	SE	2.66e-05	3.49e-03	2.93e-03
	R^2	0.00749	0.40270	0.40588

Table 10

The impact of the unit change in the independent variable on the dependent variable continues to be low across all effects models on Sub-model 4. That of the GDP and DB components are of unequal size regardless which model is used – the DB component's impact being considerably larger. The moderating effect of DB on HDI is only significant in the fixed effects and random effects models, while the explanatory power of the pooling model is considerably higher than the two others. In fact, the pooling model has good explanatory power with an R-squared value of 0.71545. There is an overall high significance level, excluding the combined effect in the pooled model. The GDPxDB is an interaction variable which determines whether the difference between GDP and DB is significant or not. The last part of the table, above the R-squared value, shows that there is no significant difference between the variables in the pooled model, while there is a negative one in the fixed and random effects approach. This implies that there is no significant moderating effect of DB on HDI according to the pooled model, while the two others imply that there is. Once again the relationship between the determinants is very small.

Hypothesis 4: Sub-model 4a				
$HDI_{t+1,i} \sim GDP_{t,i} * DB_{t,i}$				
	Model	**Fixed effects**	**Random effects**	**Pooled**
GDP	Estimate	2.02e-06***	4.51e-06***	7.38e-06***
	SE	4.60e-07	1.23e-04	7.28e-07
DB	Estimate	6.23e-04***	1.22E-03***	9.31E-3***
	SE	1.03e-04	1.23e-04	2.67e-04
GDPxDB	Estimate	-2.89e-08***	-4.80e-06***	-8.53e-08
	SE	5.58e-09	6.63e-09	1.05e-08
	R^2	0.03935	0.10290	0.71545

Table 11

The FDI component can also be added into Sub-model 4, see Table 12. It proved impossible to use the random effects model for Sub-model 4b in R, which means only the fixed effects and pooled models are presented. The Sub-model 4b shows similar results to Sub-model 4a, and the same conclusions can be drawn as with the rest of the Framework Model Sub-models. Explanatory power is weak in the fixed effect model while it is good at around 0.7 in the pooled approach. Generally, all components are significant, albeit their relationship is minute. The interaction variable GDPxDB shows significant differences between the components, as in Table 11, i.e. that there is a significant interaction effect by GDPxDB, albeit it is tiny in both models.

Furthermore, two control tests are carried out to analyse FDI and DB as separate main effects (see Table 13), as well as adding GDP without per capita terms (GDP total) to the FDI regression.

Hypothesis 4: Sub-model 4b			
$HDI_{t+1,i} \sim GDP_{t,i} * DB_{t,i} + FDI_{t,i}$			
	Model	**Fixed effects**	**Pooled**
GDP	Estimate	2.02e-06***	7.43e-06***
	SE	4.61e-07	7.34e-07
DB	Estimate	6.18e-04***	9.34e-03***
	SE	1.04e-04	2.70e-04
FDI	Estimate	4.69e-05	8.88e-05
	SE	2.62e-05	2.05e-04
GDPxDB	Estimate	-2.91e-08***	-8.61e-06***
	SE	5.60e-09	1.06e-08
	R^2	0.0415	0.71553

Table 12

The result in Table 12 shows a small positive effect which is significant across all models and has low explanatory power in the fixed and random effects model, as opposed to the pooled where it is decent at roughly 0.7 as in previous tables. Overall, DB as a separate main effect makes a difference in the model. There is a small, positive effect which is statistically significant and half the size compared to the results in Sub-model 4a and 4b (Table 11 and Table 12 respectively). A visualisation of the interplay between HDI and PPP GDP per Capita can be found in Appendix B, and between HDI, FDI and DB scores in Appendix C.

Control 1			
$HDI_{t+1,i} \sim DB_{t,i}$			
Model	**Fixed effects**	**Random effects**	**Pooled**
Estimate	2.99e-04***	5.64e-04***	9.64e-03***
SE	8.49e-05	9.44e-05	1.87-04
R^2	0.01089	0.02671	0.67152

Table 13

Furthermore, a second control test is carried out to analyse the effect of GDP in total terms on FDI. It shows higher significance level in the pooled model, however, once again, the explanatory power is weak. It also shows that the total GDP in PPP terms is less relevant on FDI than GDP per capita.

Control 2		
$FDI_{t,i} \sim GDP_{total,t,i}$		
Model	**Fixed effects**	**Pooled**
Estimate	5.565-12	-1.61e-12**
SE	3.72e-12	4.98e-13
R^2	0.00171	0.00709

Table 14

5 Discussion

The results point to difficulties in combining the theoretical framework with the data throughout all Sub-models made for this thesis. In this section, the hypotheses will be reviewed based on the results in 4.2, and there will be a discussion regarding the Model Framework and its implications. Limitations of the study as well as sources of error will be presented, as well as suggestions for further studies.

Overall, the results show that only a weak relationship exists between the four determinants HDI, PPP GDP per Capita, FDI and DB in the regression even though some appear to have a clear correlation in Table 4. This is expected due to the time lag of only one year, which is problematic due to the amount of time required for governments to rewrite policies and execute decisions, and implies that conclusions ought to be drawn with caution. Moreover, the results show inconsistency when applying the three available effect models – fixed effects, random effects and pooled. General breakdown of the data is presented in order according to hypothesis number, and deeper analysis as well as implications are presented afterwards.

A general theme can be seen already in the pre-tests in Table 6 and 7 in the significance of the individual explanatory effect of the PPP GDP per Capita and FDI on HDI. It is the R-squared value which tells how well the model fits the data and for Table 6 and 7, it is under 0.002 for all tests, meaning that only 2 percent of the data fits the regression model. The F value of overall significance is the hypothesis test for this relationship. The F value is the ratio of the mean regression sum of squares divided by the mean error sum of squares, which in turn is an estimate of population variance which accounts for the degrees of freedom used to calculate the estimate.

The first hypothesis:

H1: Higher levels of economic prosperity result in higher human development

is covered by Sub-model 1 where PPP GDP per Capita is tested against HDI. Three models are tested: fixed effects, random effects, and pooling. Out of the three, the pooled model carries the highest significance level and implies the Sub-model fits the data due to its high R-squared value. However, even if this is the case, only an extremely small relationship can be seen between GDP and HDI since the estimate is 0.0000454. The random effects model also has good significance level, however, the R-squared is small. The fixed effects model, which has a low significance level points to the opposite direction of H1. H1 can only be deemed to be true if the pooled model is applied, and even then, the explanatory power of the sub-model is abysmal. These results show that no strong conclusions whether GDP has a positive direct effect on HDI can be drawn based on this data.

The second hypothesis:

> **H2**. Higher levels of economic prosperity imply higher levels of foreign investor attraction

is covered by Sub-model 2, where the GDP variable PPP GDP per Capita is tested against FDI. All three models show a significant result, albeit the fixed effects points to a different direction compared to the other approaches as it presentes negative estimators. The explanatory power of the models are of identical size in the random effects and pooling model, and about ten times smaller in the fixed effects. Since the results point in different directions and both the estimates and the R-squared values are very low, H2 cannot be confirmed – there seems to be no definite relationship between the GDP variable and FDI as percentage of GDP. The data does not imply that the theories presented in the studies mentioned in section 2.2 hold. One of the reasons for this can be the fact that the economic prosperity variable used is not optimal. For a potential investor, a country's economic prosperity can be defined as both in GDP (implying either many consumers, or high purchasing power, or both) as well as per capita terms. This explains why countries with a rather high variance of per capita income, such as the United States, Brazil, Hong Kong etc. are at the top of FDI lists. The test in Table 14 shows that the control variable total GDP of a country (not on per capita terms) is a worse determinant when controlled with FDI than the per capita one.

The third hypothesis:

> **H3**. Foreign investor attraction results in higher human development

is covered by Sub-model 3 and concerns the GDP variable together with FDI. Only the pooling model has the highest significance level and implies a small, positive relationship of 0.00000456 of the GDP variable. The fixed effects model also has a decent significance level on the GDP variable, however, the estimate points to a negative relationship of -0.000000.85 instead. The significance for the FDI

component is low across all tests, however, the R-squared values are over 0.4 in both the random effects and pooling models. The FDI component has a negative effect in the pooling model. Once again, the test results are inconsistent and have low explanatory power, therefore no conclusions on whether H3 holds can be drawn. Even if one of the models would be correct, the estimate coefficient is so small that it the impact of the mediating effect of the GDP variable though FDI on HDI can be dismissed. The main problem is most probably the fact that the time lag between the dependent and independent variable is only one year, and the strength of the relationship ought to be examined over a longer period.

The fourth hypothesis:

> **H4**. Higher economic prosperity levels positively impact human development, and the better the regulation, the stronger is the economic prosperity effect

is covered by Sub-models 4a and 4b. Both tests find a high significance level of the GDP and DB variable impact, where the DB as a larger effect of around 0.01 to 0.09 in the random efects and pooled models, and slightly smaller in the fixed effects one. The moderating effect appears to be negative in all tests, with a high significance level in the fixed and random effect models. However, in the pooled model, where the explanatory power is many times higher than in the others, this relationship is not significant. In 4b, where the FDI determinant is added, it has no statistical significance. While there appears to be some sort, be it a small relationship, between the GDP, HDI and DB component, the fourth hypothesis also concerns FDI and therefore it cannot be deemed to hold.

Control 1 shows that the DB variable does have a direct effect on HDI, which is predictable given the previous tests and the data in Appendix C. The DB determinant is the most stable one used in the Model, even though the ranking approach has changed three times in the recent years. While this can have implications for the data, they are unlikely to be of great magnitude as countries' scores have not changed drastically.

These results do not prove the studies discussed in section 2, however, they do appear to generally point toward that direction. The estimators are very small, which is expected due to the time it takes for governmental policies to change. There are some exceptions, which could be a vaccination programme for instance, which would result in an almost immediate decrease in child mortality, thereby bringing up the life expectancy by multiple years in a short period of time. However, most processes take longer time, and therefore this Model is not expected to show a high impact of the determinants on HDI.

One of the problems with the data used is the fact that a much shorter period was measured compared to the studies of for instance Borensztein et al. (1995), Basu and Guariglia (2006), and Adams (2009), whose data measured over two decades or more. The longer the time period measured, the smaller would one-off impacts such as the global financial crisis of 2008, which was not recovered from for many years, the Arab spring in the early 2010s, the Crimea Crisis of 2014, etc. have on the dataset. Over long periods of time, matters tend to normalise, and a fairer representation would be given by the data. It can be argued that the period which was used in this study was one of high volatility in terms of global events. Apart from the ones mentioned, the population of the United Kingdom voted for Brexit, which caused a decrease of FDI for a period due to the unknown effects on expected capital regulations. Moreover, Donald J. Trump was elected President of the United States although most media and betting companies expected his opponent to win. During his first term, he implemented new regulations which affected the capital market both domestically, and indirectly globally as well. Therefore, it can be argued the FDI due to, in part by these two events, has changed. Since FDI is an important component of the Framework Model presented in this thesis, it is possible that it has been affected in a manner which it would not have been if data had been taken from further back in time. From 2014 until 2018, ISIS captured considerable parts of Iraq and Syria, which created instability in the region and affected everything from oil prices to government spending in Europe due to an inflow of refugees. This also affects investor confidence both in the war-torn region, but also in the countries which took in a considerable part of the refugees. The warn torn region and some neighbouring countries, such as Lebanon, are likely to have experienced a drop in standard of living, which explains the why there is a considerable variance of the mean in the data results. This model used a one year difference between the dependent and independent variables, a time period which might be too short in the analysis of regulatory and economic impact on HDI.

The FDI as a percentage of GDP is highly volatile for individual countries, see Appendix B. Cyprus had measurement of -43 percent in 2011, while in 2012, it was at 198 percent. Due to how fast capital moves across borders, a one-time effect has considerable influence on the measurement. Hungary's data for 2016 was 54 percent, and for 2018 it was -46 percent. The PPP GDP per Capita of that country has gone up from 14 percent in the same time period. This explains why the FDI determinant does not behave as expected in the Framework Model. In fact, it is the least significant component of the Model, which might be the case because of the time it takes to change investor perception of an economy and its regulations.

The stakeholders for whom this study would be of interest are policymakers of governmental bodies and investors considering placing capital in foreign countries. For policymakers, there would be an interest to know which components result in a higher standard of living for its population, and for investors, what to look for when relocating considerable amounts of capital abroad in order to maximise return. If the Framework Model would hold, FDI would be a main component in increasing the standard of living for the population, as would higher levels of economic prosperity. DB scores would moderate this effect. This way, it would be beneficial to improve its rankings in the DB indicies, the most important of which according to Robert and Corcoran (2013) is the trade component.

However, due to the data in this study not being able to prove the hypotheses, it cannot be definitively stated that the logic conclusions truly result in higher economic prosperity. Since the DB component appears to carry the highest provable value for the HDI, it can be recommended for governmental policymakers to improve their country's ranking in that rating. The effect might not come directly, though, albeit this study shows a positive relationship between the DB component and the HDI one with a lag of one time period – i.e. one year. According to the results in this study, it appears to be merit to Russian President Vladimir Putin's decision to prioritise gaining higher scores in the DB ranking. For Russia as an individual country, however, it has not had a positive effect on economic prosperity. That might be attributed to the beforementioned events, but can also mean that the Model does not hold for that particular country. However, when it comes to the HDI aspect, the country has gained a higher score during that period, which indicates that while the entire Model does not fully work, parts of it still can be relevant even on such short time frames.

Among others, Klugman et al. (2011) presents critique to relevant parts of this Model, which illustrates that there is no consencus among scholars regarding whether the determinants in this study are relevant and correlate to one another or not. As expected when working with economic or regulatory data, there are multiple factors which can affect it, and therefore conclusions might not be as straightforward as would been hoped for in a model. It is impossible to test for objective and direct effects as no country is expected to have a perfect relationship between a policy and its desired effect. Projects with the same aim can take widely different forms and result in different outcomes depending on a multitude of components. Corruption is a major factor which might not be as visible in the DB ranking as it is for potential investors, and therefore the same policy improvements in two countries can have a different effect on the human development.

Furthermore, there are multiple sources of errors. Doing Business has changed its scoring method three times over the course of the time period measured in this thesis. To make matters more complicated, they have changed different sub-parts of it at different time periods, which makes it difficult to truthfully measure one year against another. New sub-components have also been added which gives the measurement more detail and truthfulness, but also creates inconsistencies. There are also probably smaller sources of error on the GDP data, however, it should be consistent over time and not be of such magnitude that it fundamentally changes the results since the organisations responsible for gathering this data have incentives to present a fair picture as they are otherwise likely to be proven wrong by for instance investors who find arbitrage opportunities. Human Development Index is unlikely to be wrong to such an extent that it would considerably impact the result as the measurements are rather simple, albeit they can be subjective. Since this thesis removes the income component, only the schooling and life expectancy remains. It is not likely that this differs greatly from the true number.

Further studies should be performed over a longer time period. This would become possible if more detailed DB scores could be added retroactively. Moreover, the HDI and DB components could be studied in more detail in order to give indications to stakeholders, primarily national governments, but also lobby groups and think tanks, regarding what field would be beneficial to prioritise – for instance vaccination programmes, preventive healthcare, schooling programmes, trade regulations, workplace health and safety policies, electricity availability etc. The other determinants can also be studied in more depth, for instance on income groups within a country, or domestic investor confidence.

6 Conclusions

Overall, the Framework Model presented in this thesis does not hold, however, neither is it proven wrong. The data shows inconclusive results with generally low significance level and low explanatory power. The limitations of this study include the fact that a period of only nine years was considered while many other studies analysed data from more than two decades. Moreover, only one variable was used to represent foreign investor activity – FDI as percentage of GDP. For a better result, other variants should be used to make an index and then apply the index as a variable where I have used only the FDI as percentage of GDP. The human development component can also be developed further to contain more social parameters such as living space per person, time spent traveling to and from work, access to pre-school education, amount of hours worked compared to spare time, rights of

women and other groups which are prone to repression etc. This way, it would be a better proxy for human development than simply the HDI without the income component. Moreover, the effects should be studied with a greater time lag between the dependent and independent variables.

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Appendices

Appendix A

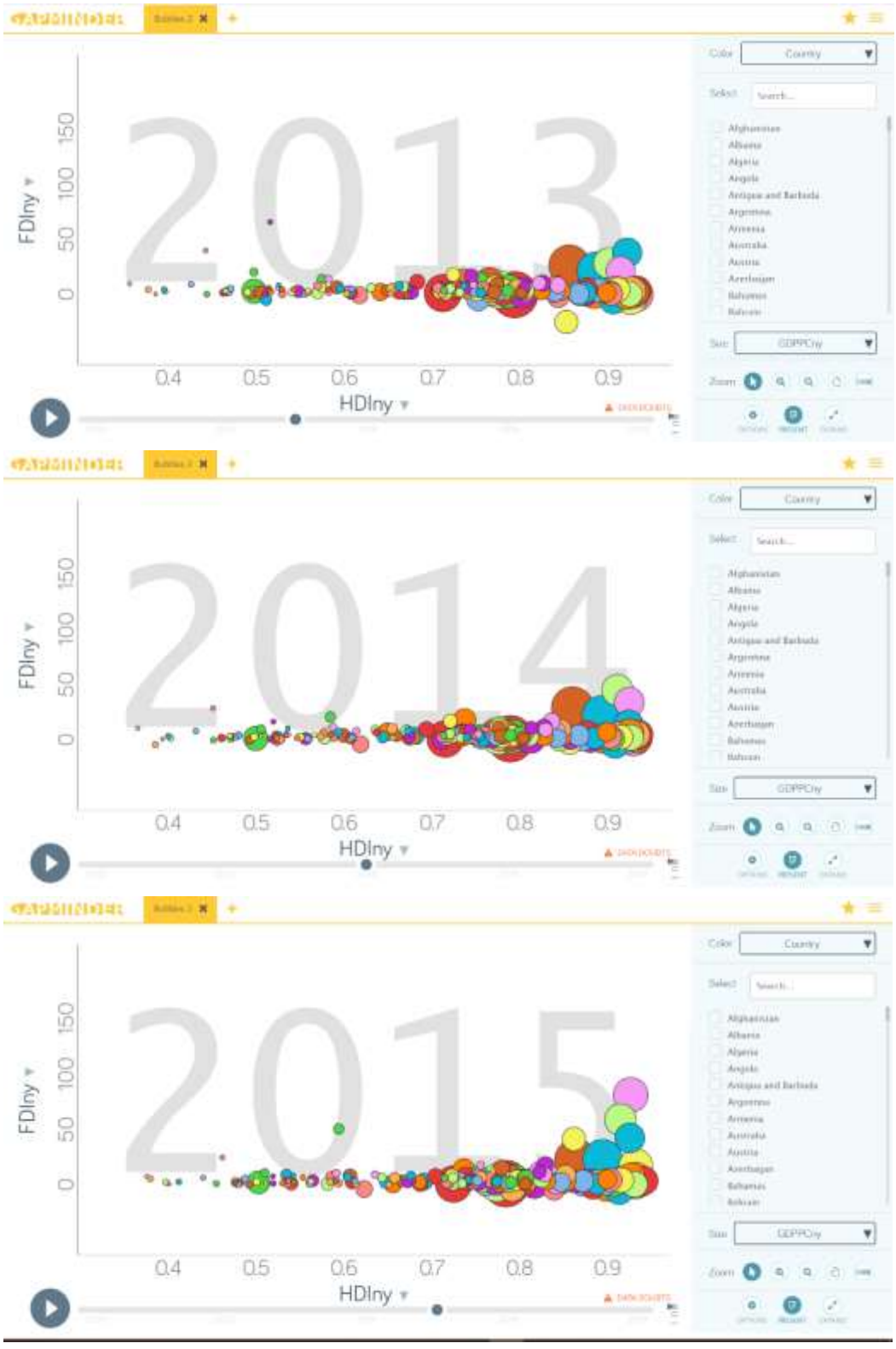
List of Doing Business Sub-indices

Starting a business	Procedures, time, cost, and minimum capital to start a limited liability company for men and women
Dealing with construction permits	Procedures, time, and cost to complete all formalities to build a warehouse and the quality control and safety mechanisms in the construction permitting system
Getting electricity	Procedures, time, and cost to get connected to the electrical grid; the reliability of the electricity supply; and the transparency of tariffs
Registering property	Procedures, time, and cost to transfer a property and the quality of the land administration system for men and women
Getting credit	Movable collateral laws and credit information systems
Protecting minority investors	Minority shareholders' rights in related-party transactions and in corporate governance
Paying taxes	Payments, time, and total tax and contribution rate for a firm to comply with all tax regulations as well as postfiling processes
Trading across borders	Time and cost to export the product of comparative advantage and to import auto parts
Enforcing contracts	Time and cost to resolve a commercial dispute and the quality of judicial processes for men and women
Resolving insolvency	Time, cost, outcome, and recovery rate for a commercial insolvency and the strength of the legal framework for insolvency
Employing workers	Flexibility in employment regulation
Contracting with the government	Procedures and time to participate in and win a works contract through public procurement and the public procurement regulatory framework

https://openknowledge.worldbank.org/bitstream/handle/10986/32436/9781464814402_Ch01.pdf

Appendix B

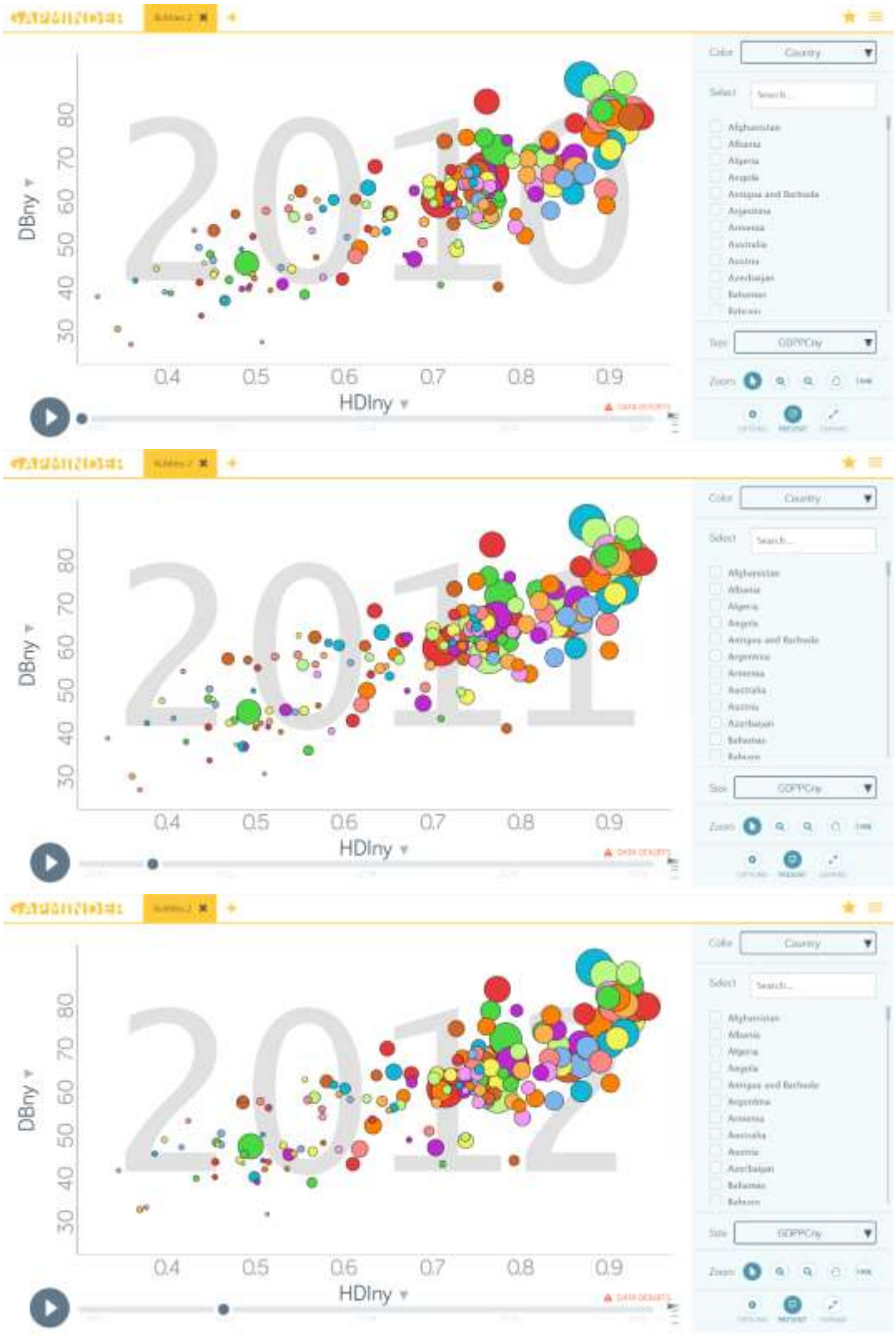
FDI and HDI interplay 2010-2018. Colour indicates country, size of bubble indicates size of PPP GDP per Capita. X axis is FDI as percentage of GDP and Y axis is HDI score without the income component. Gapminder software is used for illustrations.

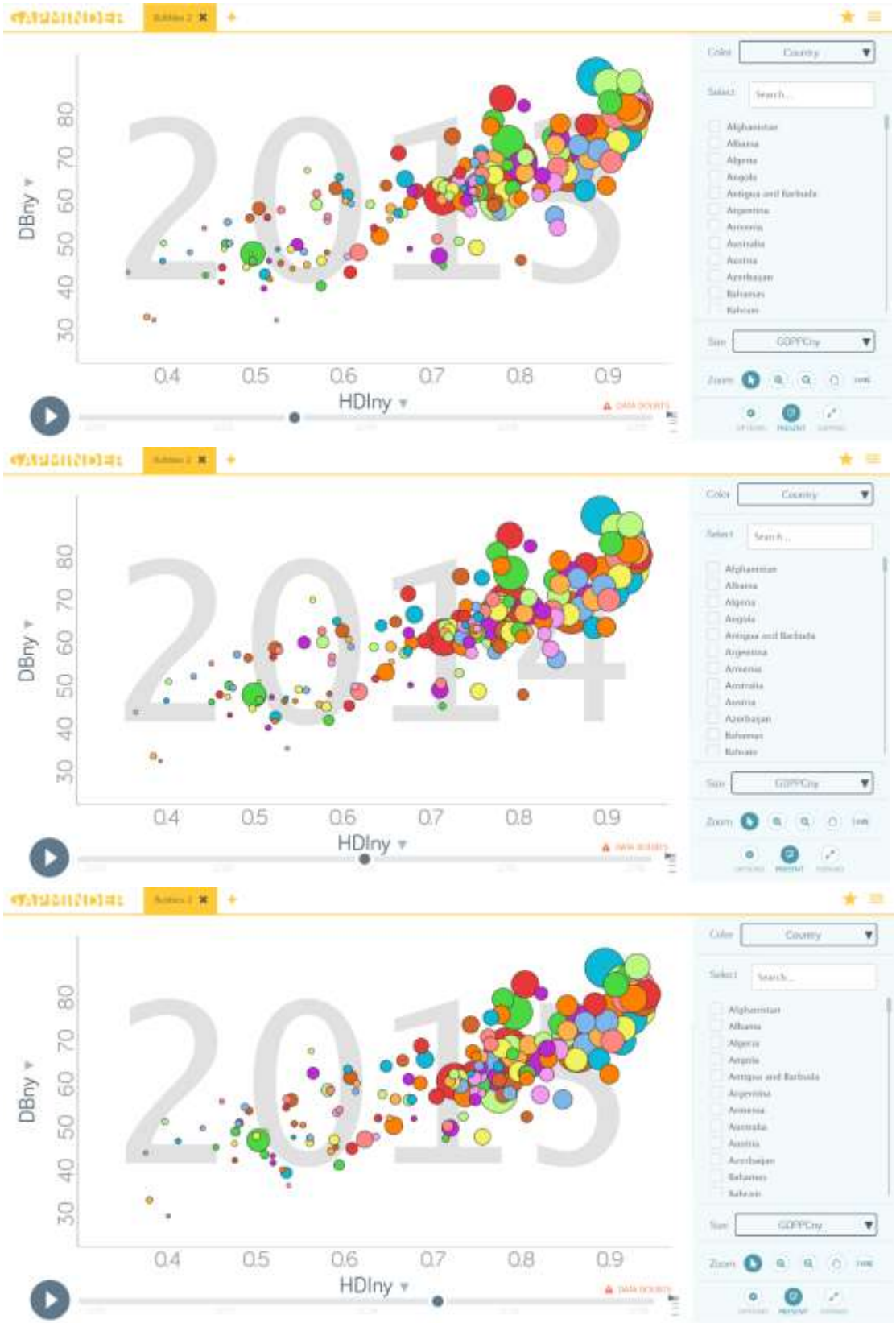

2013
2014
2015
FDIny
HDIny
0
50
100
150
0.4
0.5
0.6
0.7
0.8
0.9
Color
Country
Select
Size
GDPPCny
Zoom

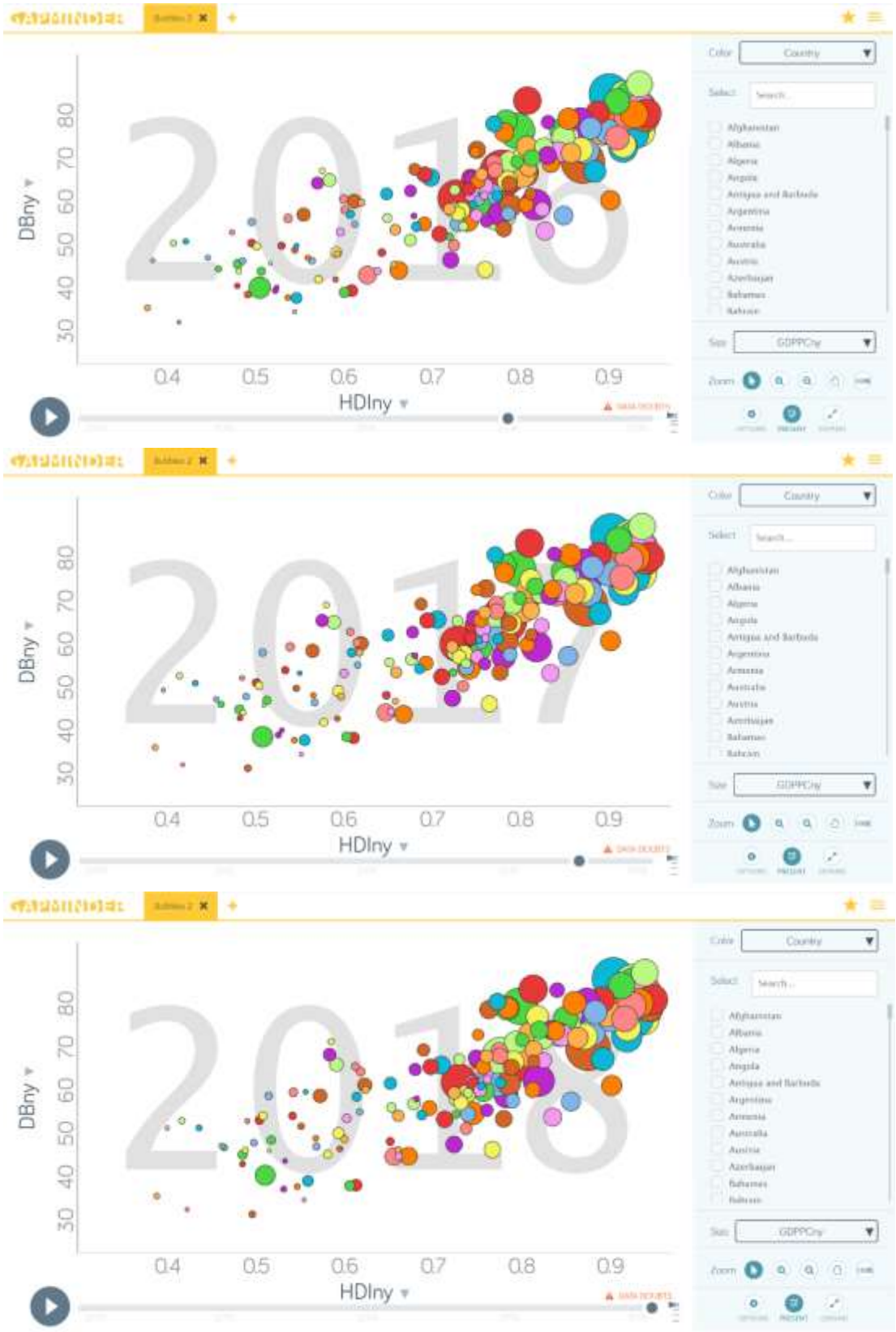

2016
2017
2018
FDIny
HDIny
0
50
100
150
0.4
0.5
0.6
0.7
0.8
0.9
Color
Country
Select
Size
GDPPCny
Zoom

Appendix C

DB and HDI interplay 2010-2018. Colour indicates country, size of bubble indicates size of PPP GDP per Capita. X axis is DB scores and Y axis is HDI score without the income component. Gapminder software is used for illustrations.




2013
2014
2015
DBny
HDIny
30
40
50
60
70
80
0.4
0.5
0.6
0.7
0.8
0.9
Color
Country
Select
Size
GDPPCny
Zoom


2016
2017
2018
DBny
HDIny
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80
0.4
0.5
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0.7
0.8
0.9
Color
Country
Size
GDPPCny
Zoom