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CURRENT RELATION BETWEEN ECOLOGICAL FOOTPRINT AND COUNTRY RISK PREMIUM

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Abstract

In a context of yearly ecological overshoot, policies and financial initiatives for a sustainable management of natural resources appear in increasing number.

This dissertation aims to illustrate the current trends of foreign investments with regard for nature conservation by examining the potential relation between ecological footprint per capita (from the Global Footprint Network database) and country risk premium (as published yearly by Aswath Damodaran).

The analysis is conducted on a panel of 91 countries (43 developed countries and 48 emerging countries) across 17 years (from 2000 to 2016), using panel data analysis methods such as pooled regression, fixed effect and random effect models.

The findings show a significant correlation between the variables, with more intensity for developed countries. The best goodness-of-fit is found using a "random" model for times effects, with the inverse of ecological footprint values as explanatory variables. Therefore the results suggest that the relation between ecological footprint and country risk premium follows an inverse trend, meaning that countries with a very low ecological footprint tend to have unusually high risk premia, and that risk premia tend to get closer to 0% when the ecological footprint is high. The results can be interpreted as a complementarity relation rather than a cause to effect relation, meaning that increased attractiveness to foreign investors by the mean of low country risk premium currently implies a higher consumption of biocapacity.

JEL : Q56 : Environment and development, Sustainability

G15 : International financial markets

Keywords : Ecological footprint, Country risk premium, Investment, Ecological Sustainability

Resumo

Num contexto de superação ecológica anual, a políticas e iniciativas financeiras para uma gestão sustentável dos recursos naturais são cada vez mais numerosas.

Esta dissertação tem como objetivo ilustrar as tendências atuais dos investimentos estrangeiros em relação à conservação da natureza examinando a relação potencial entre a pegada ecológica per capita (dos dados de Global Footprint Network) e o risco por país (publicado anualmente pela Aswath Damodaran).

A análise foi realizada num painel de 91 países (43 países desenvolvidos e 48 emergentes) ao longo de 17 anos (de 2000 a 2016), utilizando métodos de análise de dados em painel, como modelos de regressão combinados, efeito fixo e efeito aleatório.

Os resultados mostram uma correlação significativa entre as variáveis, com maior intensidade para os países desenvolvidos. A melhor qualidade de ajuste é encontrada usando um modelo "aleatório" para os efeitos de tempo, com o inverso dos valores da pegada ecológica como variáveis explicativas. Portanto, os resultados sugerem que a relação entre pegada ecológica e prêmio de risco por país seguem uma tendência inversa, significando que países com uma pegada ecológica muito baixa tendem a ter prêmios de alto risco, e que os prêmios de risco tendem a se aproximar de 0% quando a pegada ecológica é alta. Os resultados podem ser interpretados como uma relação de complementaridade ao invés de uma causa para efetuar a relação, o que significa que o aumento da atratividade para os investidores estrangeiros pela média do baixo prêmio de risco por país implica atualmente um maior consumo de biocapacidade.

JEL : Q56 : Meio ambiente e desenvolvimento, Sustentabilidade
G15 : Mercados financeiros internacionais

Palavras-chave : Pegada ecológica, Risco por país, Investimento, Sustentabilidade ecológica

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List of abbreviations

CDS : Credit Default Swap
CRP : Country Risk Premium
EF : Ecological Footprint
EFc : Ecological Footprint of consumption
EFp : Ecological Footprint of production
Eft : Ecological Footprint of trade
ERISC : Environmental Risk Integration in Sovereign Credit analysis
EU : European Union
GDP : Gross Domestic Product
Gha : global hectare
GWP : Gross World Product
Ha : hectare
HDI : Human Development Index
IFC : International Finance Corporation
IHDP : International Human Dimension Programme
IMF : International Monetary Fund
IUCN : International Union for Conservation of Nature
IWI : Inclusive Wealth Index
MSA : Mean Species Abundance
OLS : Ordinary Least Squares
UN : United nations
UNEP : United Nations Environment Programme
UNU : United Nations University
US$: United States Dollar
USA : United States of America

1 Introduction

The 21st century has come with growing concerns for ecological sustainability. The constant seek for economic growth has led to over-exploiting natural resources (Wackernagel *et al.*, 2002), and today, all of the developed countries produce, consume and trade beyond nature's regenerative capacity. All industries share a part of responsibility and a part of consequent risk, and the financial sector is not an exception. It even is an critical sector in the way it is related to all others, giving access to capital, investments, debt and insurances, showing the path and leading the way of the global economy.

This dissertation aims to identify the current trend in international finance regarding ecological sustainability by examining the relation between ecological footprint per capita and country risk premium. Ecological footprint is a measure of consumption of natural resources created by the Global Footprint Network (Borucke *et al.*, 2013). Country risk premium measures is computed with sovereign credit ratings and measures the risk associated to investments in a specific country (Damodaran, 2013). The link between these two factors would somehow illustrate the current link between sustainability and economic growth, natural capital preservation and financial profitability.

After providing a review of the literature concerning the current ecological context and the previous findings regarding country risk premium and environmental performance, this dissertation will display a statistical panel data analysis to examine the existence, intensity and nature of the relation between ecological footprint and country risk premium.

2 Literature review

2.1 Natural capital and ecological context

"*Natural capital is the spectrum of physical assets within the natural environment that deliver economic value through ecosystem services*" (Voora and Venema, 2008). The benefits flowing from natural capital can be benefits to society (e.g. mangroves preventing floods, plants photosynthesis providing oxygen) or benefits to economy (e.g. raw materials, energy, pollination, biodiversity). Natural capital is made of renewable and non-renewable resources. Renewable resources are generated continuously, which is called Earth's regenerative capacity, and while some of these resources are destroyed or transformed every year (fruits rotting, animals dying,…), some of it remains and increases the natural capital stock. Our economy cannot be sustainable if we draw on natural capital beyond its regenerative capacity, as it means taking from the natural capital stock and entirely depleting it at some point. Facing this reality, Wackernagel *et al.* (2002) figured that the only way to prevent this was to have knowledge of how much of the total biocapacity Humanity was using. By comparing estimates of the yearly biocapacity and human use of natural resources, they found that the consumption had begun exceeding the biocapacity in the early 1980s. They called this phenomenon the ecological overshoot of human economy.

In a similar perspective, the first estimation of the world's natural capital in monetary value was made in 1997. It was valued at 33 trillion 1995US$ per year (Costanza *et al.*, 1997), the equivalent in US$ of 2019 is 55 trillion US$. The same team of researchers updated their work in 2014 (Costanza *et al.*, 2014) with more accurate estimates both for the value of the different kinds of ecosystems in US$/year/ha (de Groot *et al.*, 2012) and for the total area of each ecosystem, taking into account the degradation of natural capital between the two studies. The new natural capital valuation was made at 125 trillion 2007US$ of per year (154 trillion US$ per year in 2019), with a total degradation estimated to 24.5 trillion US$ per year between 1997 and 2014. As a tool for comparison, the GWP (Gross World Product) was estimated at 84.74 trillion US$ in 2018 according to the IMF[1].

As explained by Aronson *et al.* (2006), natural capital constitutes a limiting factor of economic growth, and as indicated previously, humanity is not only ignoring it but

[1] https://www.imf.org/external/datamapper/NGDPD@WEO/OEMDC/ADVEC/WEOWORLD

degrading it, thus enhancing its limiting effect and ironically dooming economic growth for the sake of economic growth. In addition to this, the foreseen growth of global population (United Nations Department of Economic and Social Affairs, 2017) and demand for energy and food (Valin *et al.*, 2014) in the coming decades call for an increased need and therefore an increased use of natural resources. If the trend is not reversed, this path will ultimately lead to an ecological and economic crisis (Steffen *et al.*, 2018; Laybourn-Langton *et al.*, 2019).

2.2 A growing concern for nature preservation

Although the world remains on the path of overconsumption and ecological crisis, it is noticeable that there has been a rising concern and awareness about natural resources management and nature conservation in the beginning of this century. There is a considerable amount of initiatives in favour of the environment that have been created in the last 30 years.

- The Equator Principles : A set of 10 principles constituting a risk management framework for assessing and managing environmental and social risks (The Equator Principles, 2013). The framework is officially adopted by 96 financial institutions in 37 countries.
- The UN Principles for Responsible Investment : A set of 6 principles to lead investors and asset managers to incorporating ESG factors in their financial decisions(Principles for Responsible Investment, 2019).
- The IFC Performance Standards : A set of standards created in 2012 that the clients of the International Finance Corporation have to apply[2].
- The Banking Environment Initiative : An initiative created in 2010 and convened by the University of Cambridge Institute for Sustainability Leadership to lead the banking industry into directing capital towards environmentally and socially sustainable economic development[3].
- The UNEP Finance Initiative : a partnership between United Nations and financing sector created in 1992 to promote sustainable finance. More than 240

[2] https://www.ifc.org/wps/wcm/connect/Topics_Ext_Content/IFC_External_Corporate_Site/Sustainability-At-IFC/Policies-Standards/Performance-Standards

[3] https://www.cisl.cam.ac.uk/business-action/sustainable-finance/banking-environment-initiative

financial institutions works with the United Nations Environment Programme for this initiative[4].

- The Dutch Association of Investors for Sustainable Development (VBDO) : An association of financial institutions created in 1995 in Netherlands aiming to create a sustainable capital market[5].
- The Natural Capital Finance Alliance : An association providing tools and methods for financial institutions to manage the risks of their environmental impacts and dependencies[6]

All of these initiatives appearing at the end of the 20th century and the beginning of the 21st show that there is a will from the financial sector to orientate their industry towards environmental sustainability.

As mentioned earlier, environmental performance is not always linked to financial performance, but studies have shown that carbon emissions can lead to lower financial performance (Ganda and Milondzo, 2018). Whether or not one leads to the other, it has also been shown that some investors are taking companies from high carbon emitting industries out of their portfolio and that even if companies are not directly impacted on capital markets, "carbo intensive" industries are underperforming (Sebag, 2018).

This recent emphasis of ecology has also lead to growing need for research and data on this topic. A good example of environment related data collection is the work of the Global Footprint Network, who have kept up on Wackernagel's work in estimating the consumption and production of the world's countries. They've developed a methodology to measure a country's ecological footprint and biocapacity (Borucke *et al.*, 2013) in a bid to assess their sustainability. There is similar to Wackernagel's in the way that they convert everything in the same unit (global hectare) in order to be able to compare the countries between them. The ecological footprint of a country is the sum of the ecological footprint of its consumption and the one of its trade balance. The biocapacity is the total natural resource production capacity of the country. They also get similar results, although a bit more alarming as they indicate that Earth's overshoot day (the day of the year at which on year of regenerative capacity has been used) is earlier than the 31st of December since 1970[7].

[4] https://www.unepfi.org/about/
[5] https://www.vbdo.nl/en/
[6] https://naturalcapital.finance/about-ncfa/
[7] https://www.overshootday.org/newsroom/past-earth-overshoot-days/

Another organisation, CDP, assesses the environmental performance of cities and companies since 2003. Their database for companies is one of the largest and is the result of yearly surveys about carbon emissions, water use, forest use and the different related policies or decisions made by the companies. The rise of awareness also reaches financial institutions who are starting to take environmental performance into consideration for investments, insurances or loans. The CDP database has been used in 2018 by Euronext to create a new index called "Euronext CDP Environment Finance" and nicknamed "the green CAC 40" made of the 40 firms with the highest CDP rankings among the SBF 120. A similar index already exists in the USA, the Global Climate Change Leaders index from STOXX, which outperformed the STOXX Global 1800 in 2018 (Fay, 2018). Other environmental initiatives have been launched by financial institutions. Sycomore Asset Management has created the NEC (Net Environmental Contribution) in partnership with BNP Paribas (Péladan, 2018). It is a tool based on a specific industry's environmental impact to compare products and companies against their competitors on a scale from -100% to +100% (Most negative to most positive contribution). A good example for initiatives in more specific fields is CDC (Caisse des Dépôts et Consignations). The bank has used the help of GLOBIO and their MSA (Mean Species Abundance) square meter measure to create a method to assess a company's impact on biodiversity (CDC Biodiversité, 2017).

This relatively new practice of measuring environmental performance for companies and countries in every possible way as lead to the identification of new links of responsibility and impact. Globalisation an international trade can now make countries responsible for a fair part of another country's ecological impact, even if located on the other side of the globe. Steen-Olsen *et al.* (2012) have studied the several aspects of the ecological footprint of European Union citizens. They have found that EU citizens' carbon footprint is twice higher than the world's average, 31% of which happens outside of the EU and is due to European demand and consumption. They also indicate the same results for land use. Another study from Lenzen *et al.* (2012) has estimated countries' impact on species around the world by linking more than 7000 threatened species from the IUCN red list to more than 15000 commodities from 187 countries and analysing the flows of these commodities. The results show that developed countries (mainly United States, countries from the EU and Japan) tend to be net importers of such commodities, threatening species in developing countries that are exporters. The reason for these trades can either be the lack of exotic products in demanding countries (no coffee or cocoa production in

European countries), or species protection policies implemented in developed countries preventing them from having a production that could be harmful to local species, leading them to buy the commodities from countries where such policies don't exist. Their study also shows that the two main factors of threats to species related to international trade are agriculture (139 species are threatened by palm oil, rubber or cocoa production in Malaysia) or trade related pollution (304 species threatened by pollution in China). This study has lead the same authors to create world maps showing the number of species threatened by one country in different areas (Moran and Kanemoto, 2017). The results show for example that USA's consumption mainly impacts species in central America, western Europe and southern Asia, where Europe's consumption mainly affects Asia, especially western, and Africa.

2.3 Natural capital investment and economic benefits

The exact reasons why ecological damage is not yet slowing down as a result of growing awareness are not easy to understand. The first reason coming to mind is financial performance and opinions on its relation with environmental performance in a company vary depending on the industry and context (Molina-Azorín *et al.*, 2009; Muhammad *et al.*, 2015; Nor *et al.*, 2016; Di Pillo *et al.*, 2017; Alexopoulos *et al.*, 2018). However, several studies have shown that investments in natural capital conservation and/or restoration is beneficial. The failure to protect biodiversity was estimated at 140 billion US$/year, while developing a global network of nature resources to prevent the loss would cost 45 billion US$ (Balmford *et al.*, 2002). Another study estimates the potential loss at 14 trillion US$/year by 2050 (Braat *et al.*, 2008). Sumaila *et al.* (2017) have shown how reaching Aichi biodiversity targets by 2020 (agreed upon by the 193 countries of the Convention on Biological Diversity) would be economically beneficial. They estimate that reaching the goal and reversing biodiversity loss in the entire world by 2020 would require investments from 150 to 440 billion US$, which represents 0.002 to 0.007% of the Gross World Product. They take as an example the case of fisheries. The world's fisheries account for 16% of the global protein intake and suffer a 50 billion US$ yearly loss due to unsustainable fishing. They estimates that the removal of harming fisheries would cost 20 billion US$ and generate yearly returns of 124.8 US$. They also indicate that halving the deforestation rate by 2030 would avoid 3.7 trillion US$ of climate change related damage. Another study regarding potential climate change related damage was conducted in 2015 (The Economist Intelligence Unit, 2015). The researchers used the DICE model (a model of the global economy including climate change made by William Nordhaus) to compute the climate change value-at-risk, they have estimated several Values-at-risk both on a private and governmental point of view, and for several increases of temperature between now and year 2100. The values range from 4.2 to 43 trillion US$ of potential loss. Studies have also shown that direct investment in natural capital restoration projects yield positive returns in the long term, with varying risks and potential returns based on the nature of the ecosystem restored (de Groot *et al.*, 2013; Blignaut *et al.*, 2014).

2.4 Environmental performance and country risk premium

The most extensive researches about the links between economy, finance and ecology around the world are made by the United Nations Environment Programme. Their main goal is to include environmental factors in usual economic and financial indicators. They have started by creating a wealth measure that includes ecological development to assess a country's sustainability (UNU-IHDP and UNEP, 2012). It is called the IWI (Inclusive Wealth Index) and is computed using countries' natural, manufactured, human and social capital. It is intended as a replacement of GDP (Gross Domestic Product) and HDI (Human Development Index). They show that countries' growth rates are very different if IWI is used rather than GDP, mainly because it uses a stock metric (capital) instead of flows, which according to UNEP is more representative. This way, the average growth rate per annum of Nigeria during the two decades preceding 2012 could vary from +2.5% (GDP) to -1.8% (IWI).

The UN Environmental programme has also conducted researches on the impact of natural resources use on sovereign debt rating. Sovereign credit rating is an independent assessment of the creditworthiness of a country or sovereign entity[8]. The main institutions delivering these ratings are Moody's and Standard & Poor's. UNEP's reports about sovereign debt are called ERISC (Environmental Risk Integration in Sovereign Credit Analysis). In the first one (UNEP, 2012) they study the cases of five countries with different rankings from AA+ to BB (ratings from S&P) and analyse their exposure to natural resources related risks (effects of commodities price volatility and variation of the

[8] https://www.investopedia.com/terms/s/sovereign-credit-rating.asp

biocapacity on GDP). Their results lead them to the conclusion that countries have a certain level of climate risk resilience which can be measured using economic indicators and make them less exposed to potential losses due to environmental changes. They suggest as a conclusion that climate risk resilience could be used in sovereign credit rating. This report lead Moody's to adapt their methodology and explain how climate change was accounted for in their ratings (Moody's, 2016). They explain that climate risk is not directly valued but is taken into account in the way it affects economic strength, institutional strength, fiscal strength and mostly susceptibility to event risk. Their parameter called susceptibility is the main tool for climate risk assessment as it is a function of two components. It is made at about 70% of the country's exposure to climate change risks which is determined using the geographic location and area as well as the economic diversification (if a country's entire economy relies on the production of one specific commodity, the country is extremely sensitive to any event affecting this production). The second component is resilience, as suggested in the ERISC report. Resilience is assessed using a country's development level: its wealth, fiscal flexibility, debt level, environmental policies, insurance or saving funds for natural disasters,… Anything that constitutes a resource for adaptation to particular ecological events is taken into account for the resilience. The degree to which a country is exposed to climate change risk and the degree to which it is able to adapt to ecological changes both constitute its susceptibility. Moody's found that when separated, susceptibility had a strong correlation with creditworthiness rating. Susceptible countries tend to be developing countries that are often net exporters of natural resources and therefore more exposed and sensitive to climate shocks. S&P has also communicated about the climate change factor in their ratings (S&P Global Ratings, 2015). They assessed the way climate change increases natural catastrophes related risk, the estimate the increase at 20%. They also indicated that variations in credit ratings due to climate change were negligible for developed countries but more important for emerging countries, and that catastrophe insurance (also cited by Moody's for resilience) could lower the climate change risk.

The latest ERISC report showed a particular focus on food prices volatility (UNEP, 2016). They argue that the growing population and demand for food will increase the gap between food supply and demand along with variability in food production and therefore increase the volatility of food prices, which is why it is important to assess the sensitivity of countries to food prices volatility. Their main method is to submit the countries to a stress test of food price shock, simulating a sudden doubling of food prices and to analyse the effects it would have on countries. The results show that such an event would negatively affect the GDP of 101 out of the 110 countries analysed, and the current account of 69 of them. The rarer cases of positive effects happen for net food exporters, but it is not representative as it is the case of a price increase: a similar price shock with prices suddenly decreasing would have a negative impact on net exporters, which also makes them sensitive. It is more relevant to look at the level of impact among the countries. The results also show that high sovereign credit ratings correlate with low vulnerability to food prices volatility. When comparing these results with the ecological footprint of the countries in 2005, they remark that countries with high ecological footprints (and therefore high responsibility in climate change and environment issues) are the less vulnerable to food price shocks. An interesting aspect of the report is that the researchers revaluated the sovereign credit ratings of 78 countries taking into account the vulnerability to food prices volatility. They found that 58 out of the 78 countries would be downgraded.

Obviously, sovereign credit ratings are used by investors to know the risk of governmental bonds in every country of the world, but they are also used in other types of investment like equity investment to compute the risk related to a specific foreign country. As explained by Arouri *et al.* (2012) and (Horn *et al.*, 2017), even if the standard CAPM formula is often used to estimate the cost of equity, it is not enough for emerging markets as they bring additional risks. It is a growing matter because developing countries are becoming more important in the global economy while conserving higher risks and required returns (Bekaert and Harvey, 2014). The share of GDP of emerging countries in the world keeps increasing but the total market capitalisation doesn’t grow accordingly, which is how the authors justify that even in a globalisation context it still makes sense to differentiate developed countries and emerging countries for investments. In addition to this, Ernst and Gleißner (2012) find that using a premium while computing cost of equity tends to make estimations closer to reality.

While the utility of the country risk premium is justified, its computation remains controversial. Aswath Damodaran is one of the most cited references in terms of market risk premium, especially for country risk premium (Fernàndez *et al.*, 2011). The first one consists in using the CDS (Credit Default Swap) yield spread between the concerned country and the one of the USA (which is considered without default risk), this method is simple and effective but is limited to countries with a CDS yield and sometimes results in a negative risk premium when the country’s CDS yield is lower than USA’s, which is counterintuitive. The second method consists in computing the average CDS spread between countries and USA for each credit rating class and using the results to determine the risk premium for each country with its credit rating (Damodaran, 2013). This is how he is able to yearly make available a list of country risk premia (CRP) for all the countries with sovereign credit ratings[9]. The CRP can then be used to add country risk to cost of equity. Although there are alternatives and critics to Damodaran's method, it is very often used and shown to be relatively close to the mean cost of equity estimates computed by the different methods (Horn *et al.*, 2017). When investing abroad, it is now very common for investors to take country risk into account. The studies of Busse and Hefeker (2005) and Hayakawa *et al.* (2011) respectively based on panels of 93 countries over 22 years and 83 countries over 19 years both show that country risks have a negative impact on foreign direct investments inflow, which is doubled for emerging countries.

[9] http://people.stern.nyu.edu/adamodar/New_Home_Page/dataarchived.html

3 Theory and hypotheses

The research conducted by UNEP (2012 and 2016) indicates a link between environmental impact and sovereign credit ratings, either in the degree to which countries are vulnerable to climate risks or in their own impact on natural capital. As country risk premia are often computed with the help of sovereign credit ratings, it is possible to suggest that a country's risk premium (and therefore its attractiveness to investors) is somehow related to its impact (positive or negative) on natural resources. In order to compare countries between them in an ecological dimension, the best tool is the Global Footprint Network's ecological footprint per capita. It allows comparison without scale issues.

It would not be relevant to expect a model that fully explains the variance of country risk premia with only one variable (ecological footprint). It goes without saying that explaining country risk premium requires multiple explanatory variables. Rather than fully explaining a country risk premium, the goal of this dissertation is to identify a potential relationship between ecological footprint and country risk premium, which will be examined using several hypotheses.

H1 : There is a significant correlation between the ecological footprint and the risk premium.

Ha : There is no significant correlation.

This first hypothesis is the beginning of the analysis, the presence of a correlation between these variables would induce the possibility of relating them in a model. A positive correlation would mean that countries with a high consumption of natural resources tend to have a higher risk premium and therefore to be considered riskier. On the contrary, a negative relationship would indicate that investments are safer in countries with a high ecological footprint. The absence of significant correlation would mean that country risk is not associated in any case with environmental performance. The validation of this first hypothesis is suggested by the work of the UNEP in their ERISC studies and by the several evidences of investors' growing interest for environmental performance.

H2 : The relationship between ecological footprint and country risk premium varies across time.

Ha : Time has no influence on the relationship.

As said earlier, environmental sustainability has gained interest in the financial sector in the last 30 years (Molina-Azorín *et al.*, 2009; Di Pillo *et al.*, 2017; Alexopoulos *et al.*, 2018; Ganda and Milondzo, 2018; Sebag, 2018). The growing concern for ecology may have increased the correlation or affected the relationship in a way, or unobserved factors could lead to different results across the years. The absence of time influence on the slope can either indicate that the relationship has always been the same regardless of the year or that the analysis is not conducted on a long enough time period.

H3 : The relationship between ecological footprint and country risk premium varies across countries.
Ha : The specific country has no influence on the relationship.
This hypothesis is the same kind as the second one, it is possible that some characteristics of a country, as for example susceptibility as used in Moody's methodology (Moody's, 2016), affect the relationship. The verification of the alternative hypothesis would suggest that the ecological footprint affects all the countries' risk premia in the same way.

H4 : The correlation between ecological footprint and country risk premium for emerging countries is different from developed countries.
Ha : The development of the country does not affect the relationship.
This hypothesis is a potential derivation of the third hypothesis, as developed countries tend to have lower risk premiums they could be affected in a different way than emerging countries. The data leading to this hypothesis comes from Hayakawa *et al.* (2011), who found that country risk affects foreign direct investment inflow to a higher degree for emerging countries than for developed countries.

4 Data and Sources

This study examines the relationship between two variables : ecological footprint and country risk premium. As the goal is to compare countries to obtain a global trend, data from as many countries as possible is needed. For data availability reasons, the selected time period is 2000 to 2016.

4.1 Country risk premium

The data used for country risk premia (CRP) comes from Aswath Damodaran's website[10]. As he uses two different methods to compute the premia (Damodaran, 2013), the sovereign credit rates method (using Moody's ratings) has been selected because it is computed for more countries (as mentioned earlier the CDS yield method is applicable only on countries with credit default swaps). In his databases, Damodaran offers the possibility to multiply the risk premia by the rate ratio of equity volatility over government bond volatility for each country in order to adjust the CRP to the additional volatility of the equity market. It was not done for this study for two reasons. First, Damodaran only gives the data about the concerned volatilities in the last years' databases and a lot of countries are missing at least one of the two, there is a big lack of data to compute the ratio for each country and each year. Second, Damodaran sometimes uses an average equity/government bond volatility ratio of 1.5 to adjust the CRP. Doing so in this study would be irrelevant as multiplying all of the values by 1.5 would not change the results. After selecting the countries for which the data was available for all the years (2000-2016), 91 countries remained.

4.2 Ecological footprint

The ecological footprint is a measure of impact on the environment. It was created by the Global Footprint Network. The advantage of this measure is that it represents a common unit to compare anything in the way it affects the environment. The method to measure a country's ecological footprint of consumption (EFc) starts with measuring the ecological footprint of production (EFp) (Borucke *et al.*, 2013). The EFp is the total bio-productive

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[10] http://pages.stern.nyu.edu/~adamodar/

area of land necessary to produce all of the primary goods harvested in the country (cropland, grazing land, forestland and fishing grounds), to support the built up area (cities) and to absorb the emitted carbon (forestland again). Once the total necessary area in hectares of each type of land is measured, it is converted to global hectares (gha). A global hectare is an hectare of land with the world's average productivity. The conversion is made by multiplying the area of each land type by an equivalence factor (how many times does an hectare of this land type produce the production of a gha). Once all of the bio-productive areas are converted into gha they can be added. The sum is the EFp. The same steps are used to measure the necessary area to produce internationally traded goods and absorb the emissions related to their trade. This is how the ecological footprints for import and export are computed, the difference between which gives the ecological footprint of trade (EFt). Adding the EFt and EFp gives the EFc, which is simply called ecological footprint or EF in this paper. The major advantage of this measure is that it allows comparison by measuring all of the productions and emissions with the same unit. In order to avoid scale issues in the analysis, the data that will be used is the EFc per capita. A very large amount of the data measured by the Global Footprint Network is available for free and downloadable on their website[11]. The data was available for all the 17 years and the 91 countries selected with the CRP data. This results in a balanced panel dataset of 2 variables for 91 countries over 17 years, meaning 3094 values.

Using a triennial country classification data set of emerging countries and least developed countries from the United Nations, our 91 countries were classified in least developed countries, emerging countries and developed countries. 48 of the countries are emerging countries and 43 are developed countries, there are no least developed countries in the dataset and no country in the dataset had its classification changed across the years. Two additional datasets will then be created, one for emerging countries and one for developed countries.

[11] http://data.footprintnetwork.org/#/

5 Methodology

The analysis of the dataset will start with descriptive statistics (such as mean, median, maximum, minimum or standard deviation) and graphs to evaluate the global trend, what can be expected and eventually plan additional tests.

The first step in the analysis of the relationship between the variables will be a correlation test. The three most frequently used methods for correlation testing are the methods of Pearson, Spearman and Kendall. Pearson's method is an analysis of the common variance changes between the two variables. Spearman and Kendall compute correlation by ranking the data, Spearman's formula examines the correlation between values sharing the same rank and Kendall's formula counts the number of times that two originally associated values end up in the same rank or close to each other. The most commonly used is Pearson's method but it has been proven to be significant only in the case of normally distributed data (Kowalski, 1972). If the data is not normally distributed, it is preferable to use rank based methods such as Spearman's and Kendall's. A Shapiro test and an analysis of the data distribution's descriptive statistics will therefore be conducted before the correlation test.

The main part of the analysis is a panel analysis. To do so, the "plm" package (Croissant and Millo, 2008) will be used in R (a statistical computing software). The goal will be to find the most efficient model explaining CRP with EF in order to get the best idea possible of the relation between these two variables. The first model to be tested will be a pooled OLS (Ordinary Least Squared) regression which will examine the global linear relation between the two variables with the same intercept and the same slope for every country and every year, in the type of the following equation :

$$\boldsymbol{CRP_{it} = a_0 + a_1 EF_{it} + u_{it}} \ \textbf{(1)}$$

Where $\mathbf{a_0}$ is the intercept, $\mathbf{a_1}$ is the coefficient, **u** is the error, **i** is the country and **t** is the year ($\mathbf{CRP_{it}}$ and $\mathbf{EF_{it}}$ are therefore the CRP and EF for a given country in a given year).

The next step is to look for individual effects from the countries, from time or from both. The individual effects can be fixed effects (variation of the intercept) or random effects (variation in the error).

In order to examine fixed effects (individual variation of the intercept), a “within” model will be used because of the great number of countries (a LSDV model would require creating 91 dummy variables). The following effects will be tested :

- One way country fixed effect :

$$\boldsymbol{CRP_{it} = a_{0i} + a_1 EF_{it} + u_{it}} \text{ (2)}$$

- One way time fixed effect :

$$\boldsymbol{CRP_{it} = a_{0t} + a_1 EF_{it} + u_{it}} \text{ (3)}$$

- Two ways fixed effect :

$$\boldsymbol{CRP_{it} = a_{0it} + a_1 EF_{it} + u_{it}} \text{ (4)}$$

The random effects, (part of the error that can be associated to the countries or the year without being related to EF) are tested using a “random” model :

- One way country random effect :

$$\boldsymbol{CRP_{it} = a_0 + a_1 EF_{it} + V_i + \varepsilon_{it}} \text{ (5)}$$

- One way time random effect :

$$\boldsymbol{CRP_{it} = a_0 + a_1 EF_{it} + V_t + \varepsilon_{it}} \text{ (6)}$$

- Two ways random effect :

$$\boldsymbol{CRP_{it} = a_0 + a_1 EF_{it} + V_{it} + \varepsilon_{it}} \text{ (7)}$$

The significance of the “within” models will be verified with F-tests and the significance of the “”random models will be verified with the Breusch-Pagan test (Breusch and Pagan, 1980). If a “within” or a “random” model is found to be significant, it will be preferred to the OLS model as it takes into account individual effects. A Hausman test will be used to examine the correlation between the random effects and the variables, if the Null hypothesis (no correlation between random effects and variables) is rejected, the fixed effect model will be preferred.

In order to examine the verification of the hypothesis H4, these steps will be repeated for the data set of emerging countries and the data set of developed countries and the results will be compared.

6 Results.

6.1 Presentation and analysis of the results

6.1.1 Dataset with the entire list of countries

The analysis starts by examining the characteristics of the data set.

Variables	n	Mean	sd	Median	Min	Max	Range	Skew	Kurtosis
CRP	1547	0.02	0.02	0.01	0.00	0.18	0.18	1.59	2.53
EF	1547	4.46	2.72	4.03	0.58	17.72	17.14	1.42	3.08

Table 1 : Descriptive statistics of the entire dataset.

The table shows that CRPs range from 0% to 18% (Equator in 2008) with a mean of 2% and a median of 1%, which means that half of the countries in the dataset have a risk premium lower than 1%. The EF range from 0.58 to 17.72 gha/capita (Venezuela in 2016 and Luxembourg in 2003 respectively), with a mean of 4.46 gha/capita close to the median of 4.03 gha/capita. For comparison, in 2016 the world had a biocapacity of 1.63 gha/capita[12].

The following graph represents the mean and the standard deviation around the mean of CRP per country. It is intended to illustrate heterogeneity between countries. Each country was associated to a number for the graph's readability, the correspondence table can be found in appendices[13].

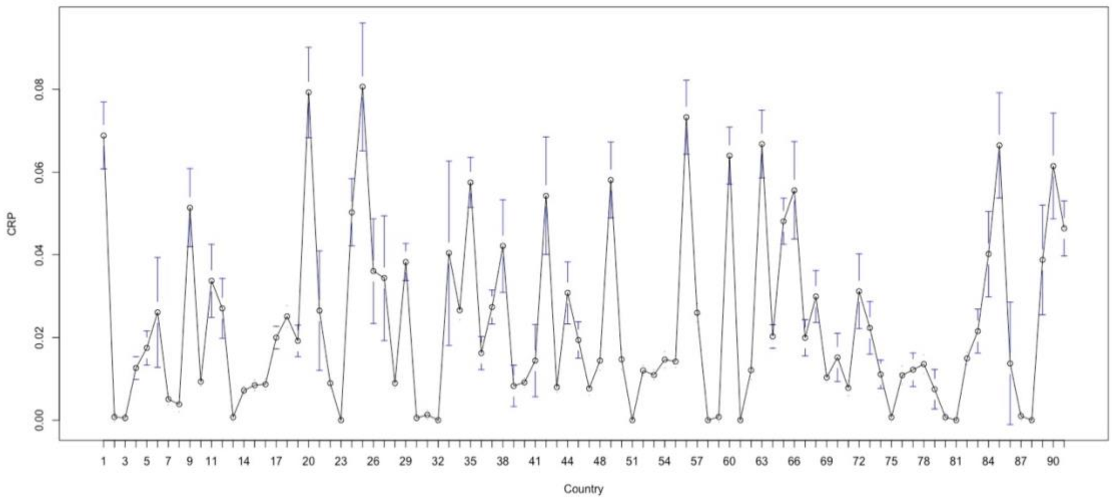

Figure 1 : Mean and standard deviation of country risk premium by country.

[12] http://data.footprintnetwork.org/#/countryTrends?type=BCpc,EFCpc&cn=5001

[13] See Appendix 1 : List of countries of the dataset.

In order to get an idea of the general trend to be expected between the variables, two illustrations will be used. The first one displays the value of the dataset with EF on the horizontal axis and CRP on the vertical axis. The second figure is a set of graphs showing the same relation for each year with a trend line.

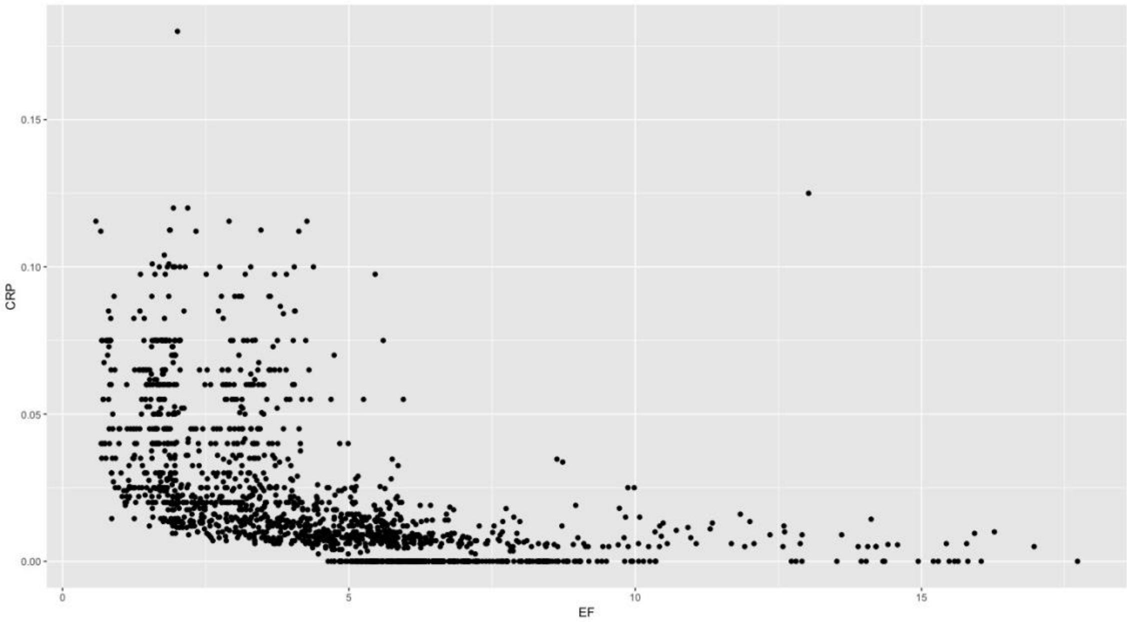

Figure 2 : Observations of country risk premium and ecological footprint.

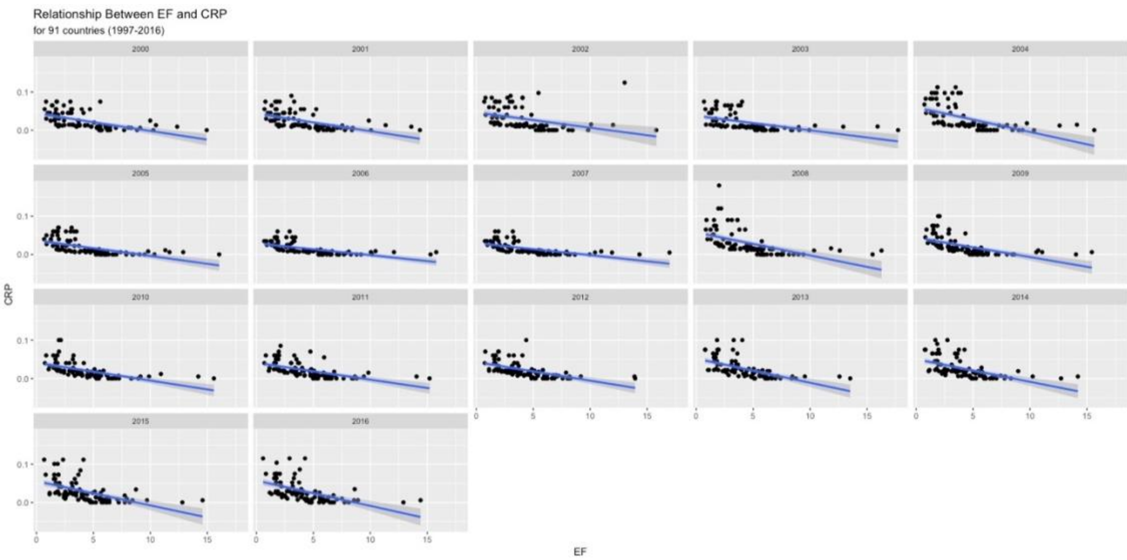

Figure 3 : Observations a trendlines of country risk premium (y axis) and ecological footprint (x axis) per year.

First, these figures suggest a negative trend between the two variables. Countries with a high ecological footprint seem to have a lower risk premium (close or equal to 0%). Based on the trendlines on Figure 3, it is possible to assume that trend remains the same across the years. Another assumption can be made based on Figure 2 : values of CRP seem to go higher than suggested by the trend for values of EF between 0 and 5, therefore it can be suggested that the relation between the variables may not be linear. The observed data seem to match an inverse relation more than a linear one. To verify this additional hypothesis, another dataset will be created by replacing EF by 1/EF. An additional set of tests will be conducted on the new dataset after the first dataset in order to compare them.

In order to choose between the several correlation tests available, normality tests have been conducted on the variables.

```
        Shapiro-Wilk normality test

data:  R$CRP
W = 0.81978, p-value < 2.2e-16
```

Figure 4 : Shapiro test on CRP for all countries.

```
        Shapiro-Wilk normality test

data:  R$EF
W = 0.89622, p-value < 2.2e-16
```

Figure 5 : Shapiro test on EF for all countries.

The Null hypothesis of the Shapiro-Wilk normality test is that the distribution of the data matches a normal distribution. The p-value of the test are low enough to reject this hypothesis and conclude that neither the variables are normally distributed. Therefore, the most appropriate correlation tests to be conducted are Kendall's and Spearman's.

```
        Kendall's rank correlation tau

data:  R$CRP and R$EF
z = -32.379, p-value < 2.2e-16
alternative hypothesis: true tau is not equal to 0
sample estimates:
       tau
-0.5608418
```

Figure 6 : Kendall's correlation test between EF and CRP for all countries.

```
        Spearman's rank correlation rho

data:  R$CRP and R$EF
S = 1.089e+09, p-value < 2.2e-16
alternative hypothesis: true rho is not equal to 0
sample estimates:
       rho
-0.7648981
```

Figure 7 : Spearman's correlation test between EF and CRP for all countries.

It is important to note that R reported a warning : Spearman's test excludes the rank "ties", that is when several values of one of the variables are equal and cannot be ranked. As several developed countries have a CRP of 0%, they are excluded from the test which is why this test is less reliable than Kendall's. Several conclusions can be made from these tests. First, a significant correlation exists between EF and CRP as the p-value is small enough to reject the Null hypothesis of absence of correlation. Second, the relation is negative according to both tests. Third, the correlation can be said of medium strength with Kendall's correlation coefficient tau = -0.5608.

Now that evidence for a correlation between EF and CRP have been given, the analysis will aim for finding the nature of this correlation. To do so, several models of panel analysis will be tested. The first model to be tested is a pooled OLS regression.

```
Pooling Model

Call:
plm(formula = CRP ~ EF, data = R, model = "pooling")

Balanced Panel: n = 91, T = 17, N = 1547

Residuals:
      Min.    1st Qu.     Median    3rd Qu.       Max.
-0.0260922 -0.0142929 -0.0071204  0.0066647  0.1449821

Coefficients:
               Estimate  Std. Error t-value  Pr(>|t|)
(Intercept)  0.04475758  0.00103632  43.189 < 2.2e-16 ***
EF          -0.00485140  0.00019851 -24.439 < 2.2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Total Sum of Squares:    0.96212
Residual Sum of Squares: 0.69387
R-Squared:      0.2788
Adj. R-Squared: 0.27834
F-statistic: 597.272 on 1 and 1545 DF, p-value: < 2.22e-16
```

Figure 8 : Pooling OLS model results for all countries.

Fischer’s test shows that the pooled OLS regression is good, it is significantly different from 0 at the 0.001 level (p-value > 2.22e-16). The result shows that the coefficient for EF has the same degree of significance. Once again it is a negative coefficient and it suggests that a 1% increase of the EF would decrease the CRP by 0.04%. The R squared indicates that the variance of the EF explains 27.88% of the CRP’s variance, which is weak but high enough to validate the hypothesis of correlation.

The purpose of the next tests is to examine the presence of individual effects in the relation between EF and CRP. The first step is to check the presence of fixed effects with a “within” model. After testing the within model with individual effects, time effects and both effects, only the time fixed effect model showed relevant results.

```
Oneway (time) effect Within Model

Call:
plm(formula = CRP ~ EF, data = R, effect = "time", model = "within")

Balanced Panel: n = 91, T = 17, N = 1547

Residuals:
      Min.    1st Qu.     Median    3rd Qu.       Max.
-0.0272162 -0.0136815 -0.0065670  0.0074868  0.1380139

Coefficients:
      Estimate  Std. Error t-value  Pr(>|t|)
EF -0.00482185  0.00019561  -24.65 < 2.2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Total Sum of Squares:    0.92803
Residual Sum of Squares: 0.66411
R-Squared:      0.28438
Adj. R-Squared: 0.27642
F-statistic: 607.608 on 1 and 1529 DF, p-value: < 2.22e-16
```

Figure 9 : "Within" time effect model results for all countries.

The model's summary shows that the time fixed effects are significant to the 0.001 level for each year. The higher R-squared and F-statistic reveal an increased goodness-of-fit in the fixed effect model, meaning the model is better than the pooled OLS. It must however be verified with an F-test for time effects, the result of which confirms the significance of time effects. The conclusion to take from this test is that the observed year has a significant effect on the intercept of the model.

```
        F test for time effects

data:  CRP ~ EF
F = 4.2825, df1 = 16, df2 = 1529, p-value = 2.91e-08
alternative hypothesis: significant effects
```

Figure 10 : F-test for time effects results for all countries.

The next step is to look for random effects. As for fixed effects, random effect can be from time, individual (country) or both. After testing all three, the only significant is time effect again, which is consistent with the previous findings.

```
Oneway (time) effect Random Effect Model
   (Swamy-Arora's transformation)

Call:
plm(formula = CRP ~ EF, data = R, effect = "time", model = "random")

Balanced Panel: n = 91, T = 17, N = 1547

Effects:
                    var   std.dev share
idiosyncratic 4.344e-04 2.084e-02 0.966
time          1.523e-05 3.903e-03 0.034
theta: 0.5116

Residuals:
      Min.    1st Qu.     Median    3rd Qu.       Max.
-0.0259025 -0.0139015 -0.0072807  0.0068213  0.1412783

Coefficients:
               Estimate  Std. Error z-value  Pr(>|z|)
(Intercept)  0.04465733  0.00139194  32.083 < 2.2e-16 ***
EF          -0.00482892  0.00019554 -24.695 < 2.2e-16 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Total Sum of Squares:    0.93616
Residual Sum of Squares: 0.67122
R-Squared:      0.28301
Adj. R-Squared: 0.28255
Chisq: 609.843 on 1 DF, p-value: < 2.22e-16
```

Figure 11 : "Random" time effect model results for all countries.

Again, this regression is significant and even has a slightly improved goodness-of-fit from the fixed effect model. The detail of the effects show that random time effect significantly explain an additional 3.4% of the error. The intercept and coefficient are both significant to the 0.001 degree, the coefficient is still negative. The conclusion that can be made from this is that 3.4% of the residual's variation can be attributed to the specific year of the observation. The significance for the presence of random time effects can be tested with a Breusch-Pagan test.

```
        Lagrange Multiplier Test - (Breusch-Pagan) for balanced panels

data:  CRP ~ EF
chisq = 4325.1, df = 1, p-value < 2.2e-16
alternative hypothesis: significant effects
```

Figure 12 : Breusch-Pagan test for random time effects for all countries.

The p-value is low enough to reject the Null hypothesis of absence of significant effects. It means than there is a significant random effect in the panel data and that the random effect model is able to deal better with heterogeneity than the OLS model. After testing seven models, the pooled OLS, "within" fixed time effects and "random" time effects models are significant. As both the "within" and the "random" models show an increase of goodness-of-fit and take into account the presence of individual effects, both should be preferred to the OLS pooled regression. In order to find the best model between "within" and "random", a Hausman test can be conducted. The Null hypothesis of this test is that random effects are not correlated to the model's variables. If the Null is rejected, the fixed effect model should be preferred as the random effects aren't random. If it isn't, the best model is the random model.

```
        Hausman Test

data:  CRP ~ EF
chisq = 1.7665, df = 1, p-value = 0.1838
alternative hypothesis: one model is inconsistent
```

Figure 13 : Hausman test for all countries.

The p-value of the Hausman test is too high to significantly reject the Null hypothesis, therefore, it holds and indicates that the random effects are not significantly correlated to any of the variables.

In the end, the best model to explain CRP with EF is the random time effects model. It is the model with the best goodness-of-fit. Our final equation for this dataset is the following:

$$\boldsymbol{CRP_{it} = 0.0447 + (-0.0048\ EF_{it}) + V_t + \varepsilon_{it}} \ \textbf{(8)}$$

With $\mathbf{V_t}$ being specific to each year :

t	Vt	t	Vt
2000	2.56e-05	**2009**	-1.34e-03
2001	-3.91e-04	**2010**	-2.31e-03
2002	3.94e-03	**2011**	-1.59e-03
2003	-1.97e-03	**2012**	-1.63e-03
2004	5.75e-03	**2013**	6.03e-04
2005	-3.29e-03	**2014**	6.62e-04
2006	-5.58e-03	**2015**	3.23e-03
2007	-5.25e-03	**2016**	3.56e-03
2008	5.59e-03		

Table 2 : Random effects per year for all countries.

6.1.2 Results when using 1/EF as the explanatory variable

As mentioned at the beginning of the result analysis, the different models have also been tested on the relation between CRP and 1/EF before comparing emerging countries and developed countries.
Not surprisingly, testing 1/EF for normality did not give a different result than for EF, which is why Kendall's correlation test was chosen.

```
        Kendall's rank correlation tau

data:  R$CRP and R$EF
z = 32.379, p-value < 2.2e-16
alternative hypothesis: true tau is not equal to 0
sample estimates:
      tau
0.5608418
```

Figure 14 : Kendall's correlation test for CRP and 1/EF.

The result of the correlation test is still significant, the p-value is low enough to reject the H0 hypothesis of non-correlation. The correlation coefficient (tau) is the exact same than for EF with opposite sign, which is coherent because when EF increases, 1/EF decreases so the correlation results still indicate a negative relation between CRP and EF.

Again, the pooled OLS regression was tested first.

```
Pooling Model

Call:
plm(formula = CRP ~ EF, data = R, model = "pooling")

Balanced Panel: n = 91, T = 17, N = 1547

Residuals:
      Min.    1st Qu.     Median    3rd Qu.       Max.
-0.0569055 -0.0121290 -0.0061121  0.0042097  0.1471768

Coefficients:
              Estimate Std. Error t-value  Pr(>|t|)
(Intercept) 0.00399221 0.00090103  4.4307 1.005e-05 ***
EF          0.05788105 0.00220917 26.2004 < 2.2e-16 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Total Sum of Squares:    0.96212
Residual Sum of Squares: 0.66614
R-Squared:      0.30763
Adj. R-Squared: 0.30718
F-statistic: 686.46 on 1 and 1545 DF, p-value: < 2.22e-16
```

Figure 15 : Pooled OLS regression summary between CRP and 1/EF.

As for EF, the regression and the coefficient are significant to the 0.001level. However, the goodness-of-fit has increased as R-squared is now 0.3076, which means that 30.76% of the variance of CRP can be explained by 1/EF.

The other models have then been tested in order to examine the presence of individual effects, and still not surprisingly, both "within" model for fixed time effects and "random" model with time effects showed a significant increase of goodness-of-fit. After the Breusch-Pagan test and the Hausman test, the random effect model is once more the one that was selected:

```
Oneway (time) effect Random Effect Model
   (Swamy-Arora's transformation)

Call:
plm(formula = CRP ~ EF, data = R, effect = "time", model = "random")

Balanced Panel: n = 91, T = 17, N = 1547

Effects:
                    var   std.dev share
idiosyncratic 0.0004148 0.0203656 0.958
time          0.0000183 0.0042775 0.042
theta: 0.5534

Residuals:
      Min.    1st Qu.     Median    3rd Qu.       Max.
-0.0548872 -0.0115557 -0.0055792  0.0036895  0.1434186

Coefficients:
             Estimate Std. Error z-value Pr(>|z|)
(Intercept) 0.0040297  0.0013629  2.9567  0.00311 **
EF          0.0577678  0.0021683 26.6422  < 2e-16 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Total Sum of Squares:    0.93482
Residual Sum of Squares: 0.64054
R-Squared:      0.3148
Adj. R-Squared: 0.31435
Chisq: 709.807 on 1 DF, p-value: < 2.22e-16
```

Figure 16 : "Random" time effect model summary between CRP and 1/EF.

```
        Lagrange Multiplier Test - (Breusch-Pagan) for balanced panels

data:  CRP ~ EF
chisq = 4128.4, df = 1, p-value < 2.2e-16
alternative hypothesis: significant effects
```

Figure 17 : Breusch-Pagan test for time effects for CRP and 1/EF.

```
        Hausman Test

data:  CRP ~ EF
chisq = 0.19806, df = 1, p-value = 0.6563
alternative hypothesis: one model is inconsistent
```

Figure 18 : Hausman test for CRP and 1/EF.

In comparison to the model using EF as an explanatory variable, this one explains 31.48% of the variance of CRP, which is 3% more than the previous model. As there is no particular loss of significance in the other indicators, this model can be preferred. The equation is :

$$\boldsymbol{CRP_{it} = 0.0040 + \frac{0.0578}{EF_{it}} + V_t + \varepsilon_{it}} \ \textbf{(9)}$$

t	Vt
2000	-0,0005
2001	-0,0008
2002	0,0038
2003	-0,0028
2004	0,0056
2005	-0,0039
2006	-0,0064
2007	-0,0060
2008	0,0055
2009	-0,0011
2010	-0,0022
2011	-0,0013
2012	-0,0011
2013	0,0014
2014	0,0015
2015	0,0040
2016	0,0045

Table 3 : Random effects per year for all countries using 1/EF.

In the context of this dissertation, this kind of model is more coherent as the lower limit of $\mathbf{CRP_{it}}$ is 0, which matches the reality more than the first model because a country risk premium cannot be lower than 0%. The following graph compares the observations with this model.

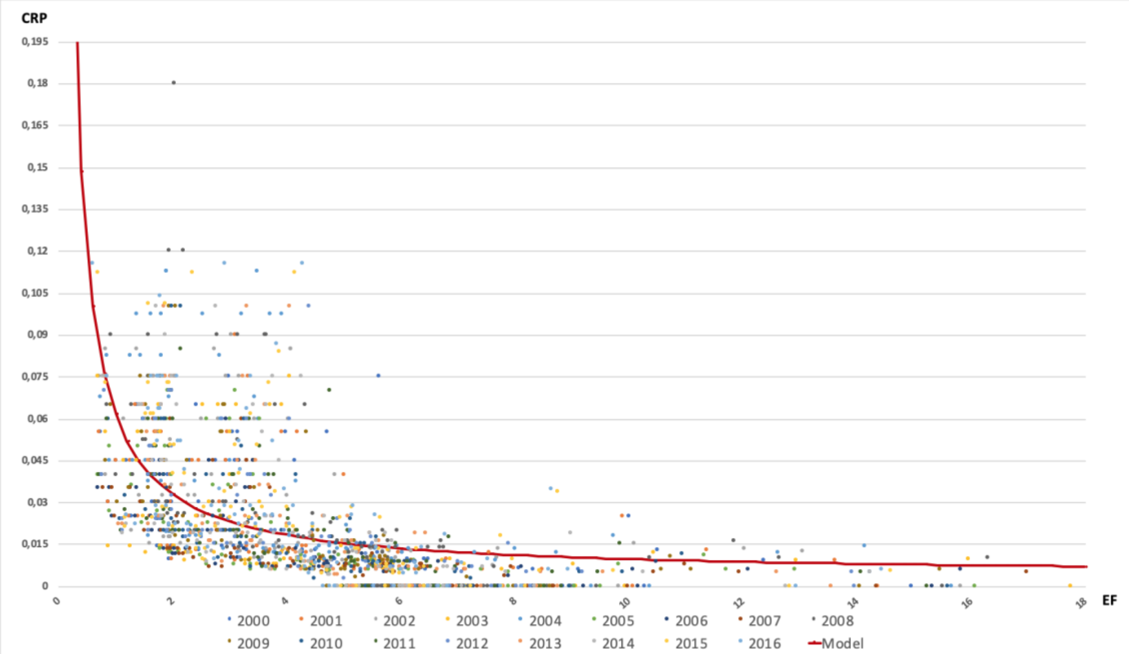

Figure 19 : Observations of EF and CRP per year and representation of the "random" model using 1/EF .

6.1.3 Comparison between emerging and developed countries

After these findings, the same process has been repeated four times to analyse separately emerging countries and developed countries (using EF and using 1/EF for each) and compare the results.

To begin with, here is a comparison of the characteristics of the two sets.

Variables	n	Mean	sd	Median	Min	Max	Range	Skew	Kurtosis
CRP	816	0.03	0.03	0.02	0.00	0.18	0.18	1.31	1.67
EF	816	0.44	0.27	0.39	0.06	1.72	1.66	1.45	2.74

Table 4 : Descriptive statistics of the emerging countries dataset.

Variables	n	Mean	sd	Median	Min	Max	Range	Skew	Kurtosis
CRP	731	0.01	0.02	0.01	0.0	0.12	0.12	2.49	6.90
EF	731	5.66	2.17	5.47	1.4	17.72	16.32	1.70	5.97

Table 5 : Descriptive statistics of the developed countries dataset.

Although the mean of CRP for emerging countries is higher than for developing countries (3% against 1%), CRP ranges are similar. On the other hand, the values of ecological footprint are completely different. The average ecological footprint per capita in developed countries is almost 13 times higher than in emerging countries and the maximal value of EF/capita for emerging countries is slightly higher than the minimal value of EF/capita in developed countries.

- Emerging countries

The analysis of the data regarding emerging countries showed similar results to the full sample. The best model was found using 1/EF as an explanatory variable.

The pooled OLS regression showed a high significance but with a weaker R-squared of 0.1983.

```
Pooling Model

Call:
plm(formula = CRP ~ EF, data = R, model = "pooling")

Balanced Panel: n = 48, T = 17, N = 816

Residuals:
      Min.    1st Qu.     Median    3rd Qu.       Max.
-0.0468347 -0.0136384 -0.0086435  0.0087168  0.1461839

Coefficients:
             Estimate Std. Error t-value  Pr(>|t|)
(Intercept) 0.0132516  0.0015155  8.7439 < 2.2e-16 ***
EF          0.0412856  0.0029095 14.1898 < 2.2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Total Sum of Squares:    0.5187
Residual Sum of Squares: 0.41583
R-Squared:      0.19831
Adj. R-Squared: 0.19732
F-statistic: 201.351 on 1 and 814 DF, p-value: < 2.22e-16
```

Figure 20 : Pooled OLS regression summary for emerging countries.

The F-stat is lower than for the entire dataset because there are less observations. The p-value is still inferior to 2.22 e-16 which means that the regression is significant to the 0.001 level.

After testing the individual effects models and conducting related tests, the best model ended up to be the “random” model with time effects once more.

```
Oneway (time) effect Random Effect Model
   (Swamy-Arora's transformation)

Call:
plm(formula = CRP ~ EF, data = R, effect = "time", model = "random")

Balanced Panel: n = 48, T = 17, N = 816

Effects:
                    var   std.dev share
idiosyncratic 0.0004824 0.0219635 0.936
time          0.0000328 0.0057269 0.064
theta: 0.5157

Residuals:
      Min.    1st Qu.     Median    3rd Qu.       Max.
-0.0451132 -0.0139589 -0.0081751  0.0088681  0.1406733

Coefficients:
             Estimate Std. Error z-value  Pr(>|z|)
(Intercept) 0.0132690  0.0020246  6.5538 5.609e-11 ***
EF          0.0412463  0.0028309 14.5699 < 2.2e-16 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Total Sum of Squares:    0.49448
Residual Sum of Squares: 0.3922
R-Squared:      0.20685
Adj. R-Squared: 0.20587
Chisq: 212.283 on 1 DF, p-value: < 2.22e-16
```

Figure 21 : "Random" model with time effect for emerging countries.

```
        Lagrange Multiplier Test - (Breusch-Pagan) for balanced panels

data:  CRP ~ EF
chisq = 2088.6, df = 1, p-value < 2.2e-16
alternative hypothesis: significant effects
```

Figure 22 : Breusch-Pagan test for time effects for emerging countries

```
        Hausman Test

data:  CRP ~ EF
chisq = 0.0077306, df = 1, p-value = 0.9299
alternative hypothesis: one model is inconsistent
```

Figure 23 : Hausman test for emerging countries

This set of tests leads to the conclusion that the best model is the "random" model for time effects, although it only explains 20.69% of CRP's variance. The final equation for the model is :

$$\boldsymbol{CRP_{it} = 0.0133 + \frac{0.0412}{EF_{it}} + V_t + \varepsilon_{it}} \ \textbf{(10)}$$

The values of Vt for emerging countries are the following :

t	Vt
2000	-2.00e-03
2001	-1.57e-03
2002	3.82e-03
2003	-2.51e-03
2004	8.74e-03
2005	-4.20e-03
2006	-7.97e-03
2007	-7.32e-03
2008	8.18e-03
2009	6.40e-05
2010	-2.18e-03
2011	-2.88e-03
2012	-2.61e-03
2013	1.21e-03
2014	1.48e-03
2015	4.44e-03
2016	5.31e-03

Table 6 : Random effects per year for emerging countries using 1/EF.

- Developed countries

Just as the other samples, the best model for developed countries was the “random” effect model with time effects, but the big difference is that none of the models showed significance when 1/EF was used, which means that the relation that explains best CRP in function of EF is linear.

```
Oneway (time) effect Random Effect Model
   (Swamy-Arora's transformation)

Call:
plm(formula = CRP ~ EF, data = R, effect = "time", model = "random")

Balanced Panel: n = 43, T = 17, N = 731

Effects:
                    var   std.dev share
idiosyncratic 2.934e-04 1.713e-02 0.997
time          9.520e-07 9.757e-04 0.003
theta: 0.06322

Residuals:
      Min.    1st Qu.     Median    3rd Qu.       Max.
-0.0189802 -0.0105120 -0.0043346  0.0025136  0.0945855

Coefficients:
               Estimate  Std. Error z-value  Pr(>|z|)
(Intercept)  0.04281345  0.00178607  23.971 < 2.2e-16 ***
EF          -0.00517624  0.00029204 -17.725 < 2.2e-16 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Total Sum of Squares:    0.3061
Residual Sum of Squares: 0.21391
R-Squared:      0.30116
Adj. R-Squared: 0.30021
Chisq: 314.163 on 1 DF, p-value: < 2.22e-16
```

Figure 24 : "Random" model with time effect for developed countries.

```
         Lagrange Multiplier Test - (Breusch-Pagan) for balanced panels

data:  CRP ~ EF
chisq = 2145.1, df = 1, p-value < 2.2e-16
alternative hypothesis: significant effects
```

Figure 25 : Breusch-Pagan test for time effect for developed countries.

```
        Hausman Test

data:  CRP ~ EF
chisq = 1.1224, df = 1, p-value = 0.2894
alternative hypothesis: one model is inconsistent
```

Figure 26 : Hausman test for developed countries.

Again, the regression and the presence of random time effects are significant to the 0.001 level. This model explains 30.12% of the variance of CRP, its equation is :

$$\boldsymbol{CRP_{it} = 0.0428 - 0.0052EF_{it} + V_t + \varepsilon_{it}} \text{ (11)}$$

The values of Vt for developed countries are the following :

t	Vt
2000	3.64e-04
2001	1.39e-04
2002	3.39e-04
2003	-2.87e-04
2004	4.04e-04
2005	-3.56e-04
2006	-5.05e-04
2007	-4.96e-04

2008	4.02e-04
2009	-4.71e-04
2010	-3.45e-04
2011	2.49e-05
2012	-1.85e-05
2013	8.89e-05
2014	3.76e-05
2015	3.47e-04
2016	3.27e-04

Table 7 : Random effects per year for developed countries.

It is now possible to compare emerging countries and developed countries graphically by showing the observations and final models for each.

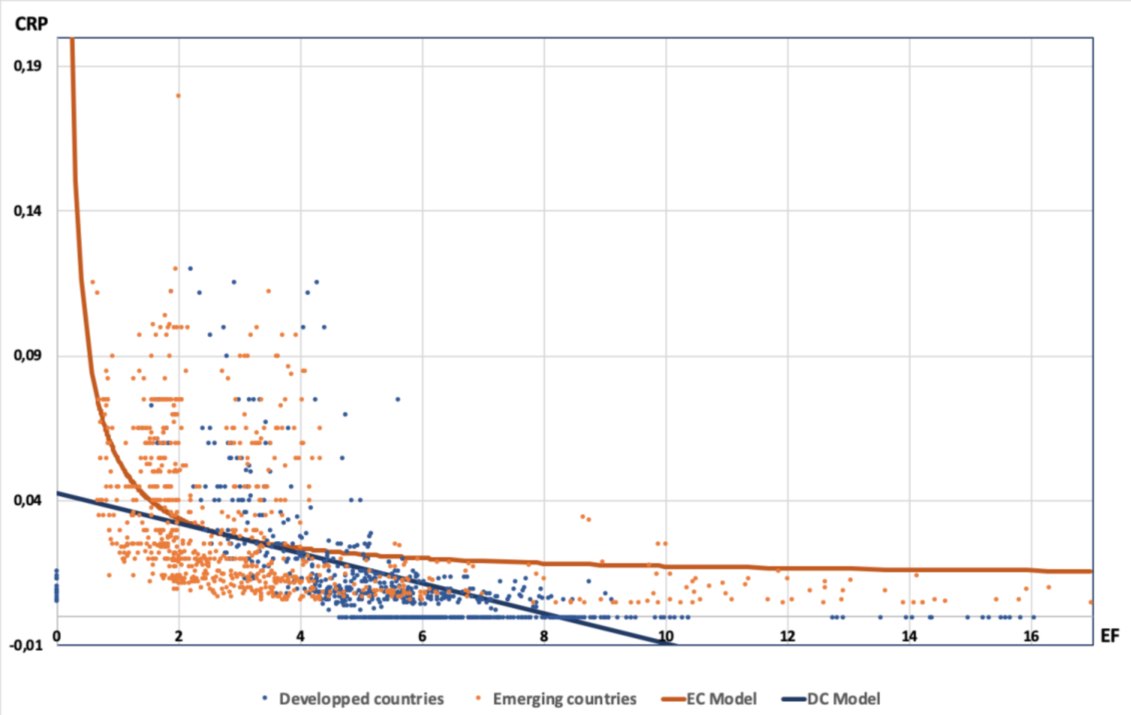

Figure 27 : Observations of EF and CRP per country development and corresponding models.

6.1.4 Verification of the hypotheses

The first hypothesis was that there was a significant correlation between ecological footprint and country risk premium. The multiple Kendall correlation tests and the different model regressions emphasized the significant relation between the two variables. All the significant tests and models indicate a negative (or inverse) relation, meaning that CRP decreases or gets closer to 0% as EF increases.

The second and the third hypotheses suggested an effect of time (H2) or country (H3) either fixed or random in the models. After conducting the set of regressions and tests for each samples, the selected model in the end is always the "random" model with time effects, which validates hypothesis H2. The third hypothesis however is rejected as all the tests for country effects, fixed as well as random, were inconclusive.

The last hypothesis implicated a difference in the structure or intensity of the relation depending on the country's development. The last part of the analysis showed that the R-squared of the final model was a bit weaker for emerging countries than for developing countries, but the main observed difference is in the type of relation. The risk premium for developed countries is best explained by a linear function where it is best explained by an inverse function for emerging countries. As this finding validate hypothesis H4, its first interpretation is that countries with a very low ecological footprint per capita tend to have the highest risk premia and are always emerging countries.

6.2 Interpretation of the results

The analysis of the empirical data indicate a significant negative relation of medium strength between ecological footprint per capita and country risk premium. This result has to be carefully interpreted, as the goal of the dissertation was to emphasize a relation and try to provide evidence for it. After this analysis, it is not possible and would be incorrect to say that increasing the ecological footprint decreases the risk premium of a country. A given country that would purposelessly increase its greenhouse gas emissions as much as possible would increase its ecological footprint per capita in doing so, but cannot possibly expect to lower its risk premium as a consequence. A seemingly more correct way to interpret the highlighted relation is to think of ecological footprint and country risk premium as linked together, as countries with low EF tend to have higher CRP but one is not necessarily the cause of the other.

Another important result is the significant presence of random time effects. As mentioned earlier, the goal of the analysis was not to provide a full explanatory model for country risk premium. There are other variables, probably mostly economic and financial variables that can be used to explain the variance of CRP. This is exactly how the random time effects should be interpreted. CRP and EF share some explained variance, and a part of the variance that is unexplained has similarities in most of the countries during a given year. This effects are not related in any way to ecological footprint, which is why they are called random effects. Economic and financial events create trends across years, which modify CRP independently from EF, such as the 2008 economic crisis during which most of the developed countries' CRP rose, creating a random time effect proper to this year.

What this relation means, especially for developed country with a linear relation, is that the process and the drivers that lead to decreasing the country risk premium also leads to increasing the ecological footprint. One can think of it as a cycle. First we know from Borucke *et al.* (2013) that the ecological footprint of consumption (EFc) is composed of EF for production and trade (EFp and EFt). This means that increases in consumption in general, or production and trade specifically increase the EF. Production, consumption and international trade are factors of economic growth (Ciarli *et al.*, 2010; Makhmutova and Mustafin, 2017) which leads to development and (as the statistic comparison between emerging and developed countries showed) also leads to low risk premia. Hayakawa *et al.* (2011) indicate that a low CRP is attractive and leads to higher foreign direct investment, in debt or equity for the country. The country's economy becomes richer as investments increase and its potential for production, consumption and trade is increased which generates a higher ecological footprint. This way the cycle of economic growth which leads to lowering the country risk premium also leads to increasing the ecological footprint. This is the way the relation that is put forward in this dissertation should be interpreted. Although Balmford *et al.* (2002); Braat *et al.* (2008); Aronson *et al.* (2010); Blignaut *et al.* (2014); Sumaila *et al.* (2017) indicate the long term economic profitability of natural capital conservation and restoration, this dissertation argues that short term economic growth leads doesn't go without increasing the ecological footprint.

The fact that the data analysis of all the countries and particularly of the emerging countries lead to an inverse relation between EF and CRP directs the attention towards emerging countries and their particular case. The inverse function implies that individuals with the lower values of x (here EF) tend to have unusually higher values for y (CRP) than they should have proportionally (in a linear model for example). It means that countries with very low ecological footprints tend to have extremely high risk premia in comparison to the other countries. As research showed that low risk premia tend to decrease foreign direct investment inflows, and this almost twice more importantly for emerging countries (Busse and Hefeker, 2005; Hayakawa *et al.*, 2011), the results of this dissertation indicate that investors are attracted to countries with high ecological footprints. It is possible to conclude that these countries are disproportionally less attractive for investors, which with regards to the cycle of economic growth mentioned right before, might actually be preserving their natural capital until solutions for sustainable growth are implemented. This kind of solutions appear in growing numbers, most of them are reported in Parker *et al.* (2012), but they still need to be applied globally.

7 Conclusion

This dissertation provides empirical evidence that ecological footprint and country risk premium share a negative relationship. It indicates that countries with low risk premia tend to be the ones with the highest ecological footprints. It also provides evidence for a time effect on country risk premium, most probably due to the economic and financial situation. The result seem to suggest that the necessary means to decrease a country's risk premium lead to an increase of the ecological footprint, even more for developed countries.

The interrogation now is for the choice to be made by emerging countries and least developed countries, for most of which the ecological footprint is very low and the risk premium is sometimes extremely high. The path to short term development through attracting foreign investors seems to lead to the degradation of natural capital and therefore, as mentioned right before, a sacrifice of long term economic profitability. In the same time, there is evidence that economic development leads to lower climate risk by means such as climate risk resilience. Emerging country seem confronted to a dilemma in which sparing their natural resources would lead to a higher exposure to natural risks.

The solution could come from the long term perspective exposed before, as with new governmental policies, initiatives and standards from financial institutions, all of which is part of a global growing concern for nature preservation, a trend could be created towards a future sustainable economy and invert the relation emphasized here. A way to prove this suggestion would be researching further in the continuation of this thesis, with a panel going further in the pas (ideally representing industrialisation) to look for a bigger time effect that could be explained this time, the main hypothesis being that the negative relation between ecological footprint and country risk premium would progressively be decreasing with time, and predicted to become a positive relation in the coming years.

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9 Appendices

9.1 Appendix 1 : List of countries of the data set

Argentina	1
Australia	2
Austria	3
Bahamas	4
Bahrain	5
Barbados	6
Belgium	7
Bermuda	8
Bolivia	9
Botswana	10
Brazil	11
Bulgaria	12
Canada	13
Cayman islands	14
Chile	15
China	16
Colombia	17
Costa rica	18
Croatia	19
Cuba	20
Cyprus	21
Czech Republic	22
Denmark	23
Dominican Republic	24
Ecuador	25
Egypt	26
El Salvador	27
Estonia	28
Fiji Islands	29
Finland	30
France	31
Germany	32
Greece	33
Guatemala	34
Honduras	35
Hungary	36
India	37
Indonesia	38
Ireland	39
Israel	40
Italy	41
Jamaica	42
Japan	43
Jordan	44
Kazakhstan	45

Korea	46
Kuwait	47
Latvia	48
Lebanon	49
Lithuania	50
Luxembourg	51
Malaysia	52
Malta	53
Mauritius	54
Mexico	55
Moldova	56
Morocco	57
Netherlands	58
New Zealand	59
Nicaragua	60
Norway	61
Oman	62
Pakistan	63
Panama	64
Papua New Guinea	65
Paraguay	66
Peru	67
Philippines	68
Poland	69
Portugal	70
Qatar	71
Romania	72
Russia	73
Saudi Arabia	74
Singapore	75
Slovakia	76
Slovenia	77
South Africa	78
Spain	79
Sweden	80
Switzerland	81
Thailand	82
Tunisia	83
Turkey	84
Ukraine	85
United Arab Emirates	86
United Kingdom	87
United States of America	88
Uruguay	89
Venezuela	90
Vietnam	91

9.2 Appendix 2 : Descriptive statistics for all countries

Variables	n	Mean	sd	Median	Min	Max	Range	Skew	Kurtosis
CRP	1547	0.02	0.02	0.01	0.00	0.18	0.18	1.59	2.53
EF	1547	4.46	2.72	4.03	0.58	17.72	17.14	1.42	3.08

9.3 Appendix 3 : Descriptive statistics for emerging countries

Variables	n	Mean	sd	Median	Min	Max	Range	Skew	Kurtosis
CRP	816	0.03	0.03	0.02	0.00	0.18	0.18	1.31	1.67
EF	816	0.44	0.27	0.39	0.06	1.72	1.66	1.45	2.74

9.4 Appendix 4 : Descriptive statistics for developed countries

Variables	n	Mean	sd	Median	Min	Max	Range	Skew	Kurtosis
CRP	731	0.01	0.02	0.01	0.0	0.12	0.12	2.49	6.90
EF	731	5.66	2.17	5.47	1.4	17.72	16.32	1.70	5.97

9.5 Appendix 5 : Data used for the research

Country	Year	CRP	EF
Argentina	2000	0,055	3,1337
Argentina	2001	0,09	3,075
Argentina	2002	0,09	3,0078
Argentina	2003	0,065	3,109
Argentina	2004	0,0975	3,1905
Argentina	2005	0,06	2,9954
Argentina	2006	0,045	3,1452
Argentina	2007	0,045	3,2895
Argentina	2008	0,09	3,6064
Argentina	2009	0,065	2,8844
Argentina	2010	0,06	3,2512
Argentina	2011	0,06	3,3336
Argentina	2012	0,06	3,2874
Argentina	2013	0,065	3,6068
Argentina	2014	0,075	3,7525
Argentina	2015	0,0729	3,6763
Argentina	2016	0,0751	3,365
Australia	2000	0,0065	8,056
Australia	2001	0,0065	7,9652
Australia	2002	0	8,4665
Australia	2003	0	8,3359
Australia	2004	0	9,0158

Australia	2005	0	9,0426
Australia	2006	0	9,1909
Australia	2007	0	8,6512
Australia	2008	0	8,9705
Australia	2009	0	8,4431
Australia	2010	0	8,3177
Australia	2011	0	8,8025
Australia	2012	0	8,0105
Australia	2013	0	7,3949
Australia	2014	0	6,7505
Australia	2015	0	6,3996
Australia	2016	0	6,6403
Austria	2000	0	5,6827
Austria	2001	0	5,8978
Austria	2002	0	5,7199
Austria	2003	0	6,0434
Austria	2004	0	6,2503
Austria	2005	0	6,3245
Austria	2006	0	6,598
Austria	2007	0	6,5463
Austria	2008	0	6,5799
Austria	2009	0	5,9496
Austria	2010	0	6,3012
Austria	2011	0	6,5473
Austria	2012	0	6,0622
Austria	2013	0	6,1346
Austria	2014	0	6,0221
Austria	2015	0,0045	5,9675
Austria	2016	0,0046	6,0308
Bahamas	2000	0,0095	6,1071
Bahamas	2001	0,0095	4,2082
Bahamas	2002	0,01	4,1799
Bahamas	2003	0,008	3,8095
Bahamas	2004	0,012	3,7901
Bahamas	2005	0,006	4,3205
Bahamas	2006	0,007	4,4743
Bahamas	2007	0,007	4,0543
Bahamas	2008	0,014	3,3917
Bahamas	2009	0,012	4,0061
Bahamas	2010	0,0115	3,9972
Bahamas	2011	0,0115	3,5951
Bahamas	2012	0,015	4,7453
Bahamas	2013	0,016	5,1241

Bahamas	2014	0,019	4,101
Bahamas	2015	0,0213	4,1145
Bahamas	2016	0,0254	3,7385
Bahrain	2000	0,025	9,9827
Bahrain	2001	0,025	9,872
Bahrain	2002	0,015	10,0774
Bahrain	2003	0,012	10,4287
Bahrain	2004	0,018	9,7235
Bahrain	2005	0,011	11,3096
Bahrain	2006	0,0085	10,4562
Bahrain	2007	0,008	10,9702
Bahrain	2008	0,016	11,8356
Bahrain	2009	0,0105	10,7177
Bahrain	2010	0,0115	10,9205
Bahrain	2011	0,015	9,8314
Bahrain	2012	0,015	7,8797
Bahrain	2013	0,019	6,2458
Bahrain	2014	0,019	8,9608
Bahrain	2015	0,0337	8,7339
Bahrain	2016	0,0347	8,6336
Barbados	2000	0,013	4,4902
Barbados	2001	0,013	4,1098
Barbados	2002	0,0135	3,7897
Barbados	2003	0,0095	4,5975
Barbados	2004	0,0143	4,1669
Barbados	2005	0,009	5,2052
Barbados	2006	0,0085	4,7051
Barbados	2007	0,0085	4,3769
Barbados	2008	0,0175	4,4561
Barbados	2009	0,018	4,4467
Barbados	2010	0,0175	4,7662
Barbados	2011	0,02	4,182
Barbados	2012	0,02	3,7275
Barbados	2013	0,025	3,4793
Barbados	2014	0,065	3,6315
Barbados	2015	0,0841	3,8567
Barbados	2016	0,0866	3,8043
Belgium	2000	0	7,6902
Belgium	2001	0	7,7727
Belgium	2002	0,0075	7,6087
Belgium	2003	0,006	7,7723
Belgium	2004	0,009	7,643
Belgium	2005	0,005	7,8668

Belgium	2006	0,0035	7,8682
Belgium	2007	0,0035	7,8172
Belgium	2008	0,007	7,6316
Belgium	2009	0,003	7,139
Belgium	2010	0,0025	7,2076
Belgium	2011	0,007	6,9508
Belgium	2012	0,007	7,2304
Belgium	2013	0,006	7,1277
Belgium	2014	0,006	6,9171
Belgium	2015	0,0068	6,3921
Belgium	2016	0,007	6,2515
Bermuda	2000	0,006	6,9699
Bermuda	2001	0,006	7,1034
Bermuda	2002	0	7,0446
Bermuda	2003	0	6,8465
Bermuda	2004	0	6,8254
Bermuda	2005	0	7,0211
Bermuda	2006	0	7,6865
Bermuda	2007	0	8,02
Bermuda	2008	0	7,4527
Bermuda	2009	0,006	6,3067
Bermuda	2010	0,005	6,9325
Bermuda	2011	0,005	6,596
Bermuda	2012	0,005	7,0613
Bermuda	2013	0,006	6,6182
Bermuda	2014	0,007	7,4256
Bermuda	2015	0,0095	7,9344
Bermuda	2016	0,0098	7,5107
Bolivia	2000	0,045	2,7543
Bolivia	2001	0,045	2,4494
Bolivia	2002	0,06	2,4878
Bolivia	2003	0,065	2,5258
Bolivia	2004	0,0975	2,5095
Bolivia	2005	0,06	2,5859
Bolivia	2006	0,045	2,6359
Bolivia	2007	0,045	2,695
Bolivia	2008	0,09	2,7749
Bolivia	2009	0,055	2,8668
Bolivia	2010	0,04	2,8792
Bolivia	2011	0,04	3,0434
Bolivia	2012	0,0325	3,1333
Bolivia	2013	0,036	3,0845
Bolivia	2014	0,036	3,1166

Bolivia	2015	0,0404	3,152
Bolivia	2016	0,0416	3,1844
Botswana	2000	0,009	3,5171
Botswana	2001	0,009	3,0801
Botswana	2002	0,01	3,5616
Botswana	2003	0,008	3,2597
Botswana	2004	0,012	3,1194
Botswana	2005	0,006	3,3589
Botswana	2006	0,007	3,3527
Botswana	2007	0,007	2,6259
Botswana	2008	0,014	3,1425
Botswana	2009	0,0105	2,9138
Botswana	2010	0,01	2,7916
Botswana	2011	0,01	3,493
Botswana	2012	0,01	3,1723
Botswana	2013	0,0085	2,8457
Botswana	2014	0,0085	2,575
Botswana	2015	0,0095	2,5193
Botswana	2016	0,0098	2,7206
Brazil	2000	0,045	3,0785
Brazil	2001	0,045	2,9253
Brazil	2002	0,075	2,9358
Brazil	2003	0,055	2,9999
Brazil	2004	0,06	2,8444
Brazil	2005	0,036	2,7068
Brazil	2006	0,025	2,691
Brazil	2007	0,02	2,7759
Brazil	2008	0,03	2,9215
Brazil	2009	0,02	2,7828
Brazil	2010	0,02	2,9959
Brazil	2011	0,0175	3,135
Brazil	2012	0,0175	3,0889
Brazil	2013	0,019	3,1047
Brazil	2014	0,019	3,1014
Brazil	2015	0,0337	2,9122
Brazil	2016	0,0347	2,8114
Bulgaria	2000	0,055	3,0393
Bulgaria	2001	0,045	3,408
Bulgaria	2002	0,06	3,4232
Bulgaria	2003	0,03	3,5103
Bulgaria	2004	0,0375	4,1553
Bulgaria	2005	0,0225	3,7237
Bulgaria	2006	0,0135	4,1569

Bulgaria	2007	0,0135	4,0299
Bulgaria	2008	0,026	4,4538
Bulgaria	2009	0,02	3,5596
Bulgaria	2010	0,02	3,5423
Bulgaria	2011	0,0175	3,4764
Bulgaria	2012	0,0175	3,4049
Bulgaria	2013	0,019	3,2103
Bulgaria	2014	0,019	3,3088
Bulgaria	2015	0,0213	3,4391
Bulgaria	2016	0,022	3,4456
Canada	2000	0,006	9,1028
Canada	2001	0,006	8,4596
Canada	2002	0	8,3848
Canada	2003	0	9,0444
Canada	2004	0	9,3384
Canada	2005	0	9,4965
Canada	2006	0	8,7967
Canada	2007	0	8,6594
Canada	2008	0	8,5512
Canada	2009	0	7,9751
Canada	2010	0	8,3357
Canada	2011	0	8,3912
Canada	2012	0	8,2716
Canada	2013	0	8,7481
Canada	2014	0	7,7656
Canada	2015	0	7,758
Canada	2016	0	7,7399
Cayman islands	2000	0,007	5,5789
Cayman islands	2001	0,007	4,6277
Cayman islands	2002	0,009	4,7605
Cayman islands	2003	0,007	4,7419
Cayman islands	2004	0,0105	4,3104
Cayman islands	2005	0,006	4,6981
Cayman islands	2006	0,006	4,4101
Cayman islands	2007	0,0035	5,3247
Cayman islands	2008	0,012	5,0824
Cayman islands	2009	0,0075	5,4401
Cayman islands	2010	0,007	7,2042
Cayman islands	2011	0,007	6,5208
Cayman islands	2012	0,007	5,4168
Cayman islands	2013	0,006	5,5675
Cayman islands	2014	0,006	5,8382
Cayman islands	2015	0,0068	5,7455

Cayman islands	2016	0,007	5,8017
Chile	2000	0,012	3,6058
Chile	2001	0,012	3,3329
Chile	2002	0,01	3,4295
Chile	2003	0,008	3,4788
Chile	2004	0,012	3,7543
Chile	2005	0,006	3,7819
Chile	2006	0,007	3,7496
Chile	2007	0,007	3,8083
Chile	2008	0,014	3,8628
Chile	2009	0,009	3,3364
Chile	2010	0,007	4,015
Chile	2011	0,007	4,2194
Chile	2012	0,007	4,196
Chile	2013	0,006	4,2464
Chile	2014	0,006	3,9968
Chile	2015	0,0068	4,2848
Chile	2016	0,007	4,3098
China	2000	0,0095	1,9201
China	2001	0,0095	1,9726
China	2002	0,0135	2,0518
China	2003	0,009	2,2017
China	2004	0,0135	2,4449
China	2005	0,008	2,5945
China	2006	0,008	2,736
China	2007	0,007	2,8589
China	2008	0,014	2,9578
China	2009	0,009	3,1995
China	2010	0,007	3,3593
China	2011	0,007	3,5516
China	2012	0,007	3,6236
China	2013	0,006	3,7203
China	2014	0,006	3,6873
China	2015	0,0068	3,6605
China	2016	0,007	3,6209
Colombia	2000	0,03	1,9721
Colombia	2001	0,03	1,9505
Colombia	2002	0,0175	1,9438
Colombia	2003	0,013	1,941
Colombia	2004	0,0195	1,8893
Colombia	2005	0,012	1,9257
Colombia	2006	0,0135	1,9431
Colombia	2007	0,0135	1,9392

Colombia	2008	0,026	1,9131
Colombia	2009	0,02	1,9261
Colombia	2010	0,02	2,0329
Colombia	2011	0,02	1,9938
Colombia	2012	0,02	1,9096
Colombia	2013	0,022	1,9357
Colombia	2014	0,019	1,997
Colombia	2015	0,0213	2,0035
Colombia	2016	0,022	2,0499
Costa rica	2000	0,025	2,4147
Costa rica	2001	0,025	2,4272
Costa rica	2002	0,0325	2,3845
Costa rica	2003	0,025	2,4136
Costa rica	2004	0,0375	2,3821
Costa rica	2005	0,0225	2,2722
Costa rica	2006	0,02	2,5981
Costa rica	2007	0,02	2,7801
Costa rica	2008	0,03	2,7077
Costa rica	2009	0,025	2,1726
Costa rica	2010	0,02	2,4299
Costa rica	2011	0,02	2,4507
Costa rica	2012	0,02	2,5184
Costa rica	2013	0,022	2,5178
Costa rica	2014	0,025	2,5156
Costa rica	2015	0,028	2,53
Costa rica	2016	0,0289	2,6821
Croatia	2000	0,0145	3,2026
Croatia	2001	0,0145	3,4643
Croatia	2002	0,015	3,8144
Croatia	2003	0,012	3,8959
Croatia	2004	0,018	4,192
Croatia	2005	0,011	4,2397
Croatia	2006	0,01	4,4928
Croatia	2007	0,01	4,5776
Croatia	2008	0,0225	4,7573
Croatia	2009	0,02	4,141
Croatia	2010	0,02	3,9085
Croatia	2011	0,02	4,0434
Croatia	2012	0,02	3,9491
Croatia	2013	0,025	3,8742
Croatia	2014	0,025	3,6187
Croatia	2015	0,0337	3,7898
Croatia	2016	0,0347	3,9365

Cuba	2000	0,075	1,7967
Cuba	2001	0,075	1,817
Cuba	2002	0,075	1,7491
Cuba	2003	0,075	1,8033
Cuba	2004	0,1125	1,8701
Cuba	2005	0,07	1,9059
Cuba	2006	0,03	1,8927
Cuba	2007	0,06	1,9469
Cuba	2008	0,12	1,9364
Cuba	2009	0,075	1,8679
Cuba	2010	0,07	1,9732
Cuba	2011	0,07	1,9655
Cuba	2012	0,07	1,932
Cuba	2013	0,075	1,865
Cuba	2014	0,09	1,855
Cuba	2015	0,101	1,8571
Cuba	2016	0,104	1,7772
Cyprus	2000	0,009	5,3271
Cyprus	2001	0,009	5,4273
Cyprus	2002	0,0125	5,6688
Cyprus	2003	0,009	5,4714
Cyprus	2004	0,0135	5,5456
Cyprus	2005	0,008	5,5333
Cyprus	2006	0,008	5,4868
Cyprus	2007	0,007	5,599
Cyprus	2008	0,012	5,6671
Cyprus	2009	0,0075	5,2349
Cyprus	2010	0,007	5,1319
Cyprus	2011	0,02	4,6564
Cyprus	2012	0,06	4,0473
Cyprus	2013	0,1	3,2867
Cyprus	2014	0,065	3,4106
Cyprus	2015	0,0505	3,4784
Cyprus	2016	0,052	3,7478
Czech Republic	2000	0,012	5,5812
Czech Republic	2001	0,012	5,947
Czech Republic	2002	0,01	5,8903
Czech Republic	2003	0,008	5,6453
Czech Republic	2004	0,012	7,2764
Czech Republic	2005	0,006	6,1338
Czech Republic	2006	0,007	6,4247
Czech Republic	2007	0,007	6,465
Czech Republic	2008	0,014	6,458

Czech Republic	2009	0,009	5,6651
Czech Republic	2010	0,0085	6,2387
Czech Republic	2011	0,0085	6,0988
Czech Republic	2012	0,0085	5,3726
Czech Republic	2013	0,007	5,5491
Czech Republic	2014	0,007	5,595
Czech Republic	2015	0,0079	5,5558
Czech Republic	2016	0,0081	5,5891
Denmark	2000	0	8,8313
Denmark	2001	0	8,3901
Denmark	2002	0	8,102
Denmark	2003	0	8,4404
Denmark	2004	0	8,4576
Denmark	2005	0	8,4913
Denmark	2006	0	8,2956
Denmark	2007	0	8,2122
Denmark	2008	0	8,1448
Denmark	2009	0	7,2304
Denmark	2010	0	7,2452
Denmark	2011	0	7,0288
Denmark	2012	0	6,8447
Denmark	2013	0	6,957
Denmark	2014	0	7,0578
Denmark	2015	0	7,2235
Denmark	2016	0	6,8046
Dominican Republic	2000	0,045	1,6551
Dominican Republic	2001	0,03	1,6965
Dominican Republic	2002	0,04	1,6286
Dominican Republic	2003	0,055	1,4509
Dominican Republic	2004	0,0975	1,3608
Dominican Republic	2005	0,06	1,4649
Dominican Republic	2006	0,045	1,6143
Dominican Republic	2007	0,04	1,6019
Dominican Republic	2008	0,075	1,5636
Dominican Republic	2009	0,055	1,4483
Dominican Republic	2010	0,04	1,6607
Dominican Republic	2011	0,04	1,6923
Dominican Republic	2012	0,04	1,5669
Dominican Republic	2013	0,045	1,5719
Dominican Republic	2014	0,045	1,6374
Dominican Republic	2015	0,0505	1,6764
Dominican Republic	2016	0,052	1,7195
Ecuador	2000	0,075	1,7593

Ecuador	2001	0,075	2,0499
Ecuador	2002	0,075	2,0281
Ecuador	2003	0,075	1,802
Ecuador	2004	0,0975	1,7944
Ecuador	2005	0,06	1,8769
Ecuador	2006	0,045	1,7981
Ecuador	2007	0,045	1,8359
Ecuador	2008	0,18	2,0076
Ecuador	2009	0,1	2,0506
Ecuador	2010	0,1	2,1408
Ecuador	2011	0,085	2,1209
Ecuador	2012	0,07	1,9685
Ecuador	2013	0,075	1,9662
Ecuador	2014	0,065	2,0529
Ecuador	2015	0,0729	1,9268
Ecuador	2016	0,0751	1,7112
Egypt	2000	0,025	1,6065
Egypt	2001	0,025	1,5919
Egypt	2002	0,015	1,5765
Egypt	2003	0,012	1,5161
Egypt	2004	0,018	1,569
Egypt	2005	0,0135	1,76
Egypt	2006	0,0135	1,8446
Egypt	2007	0,0135	1,9086
Egypt	2008	0,03	1,8868
Egypt	2009	0,025	1,7726
Egypt	2010	0,024	1,9614
Egypt	2011	0,05	1,9249
Egypt	2012	0,05	1,9656
Egypt	2013	0,075	1,9563
Egypt	2014	0,075	1,9616
Egypt	2015	0,0729	1,9143
Egypt	2016	0,0751	1,8111
El Salvador	2000	0,0145	1,7138
El Salvador	2001	0,0145	1,894
El Salvador	2002	0,0175	1,9182
El Salvador	2003	0,013	1,9034
El Salvador	2004	0,0195	1,9467
El Salvador	2005	0,012	1,9686
El Salvador	2006	0,0115	2,0456
El Salvador	2007	0,0115	2,0983
El Salvador	2008	0,0225	2,012
El Salvador	2009	0,1	1,9331

El Salvador	2010	0,1	1,963
El Salvador	2011	0,0275	1,938
El Salvador	2012	0,0325	1,9616
El Salvador	2013	0,036	1,8635
El Salvador	2014	0,036	1,964
El Salvador	2015	0,0404	1,9928
El Salvador	2016	0,0751	2,0566
Estonia	2000	0,012	6,0211
Estonia	2001	0,012	7,535
Estonia	2002	0,01	7,6804
Estonia	2003	0,008	8,9993
Estonia	2004	0,012	8,7208
Estonia	2005	0,006	7,3885
Estonia	2006	0,007	8,1075
Estonia	2007	0,007	7,9302
Estonia	2008	0,014	6,6798
Estonia	2009	0,009	6,1773
Estonia	2010	0,0085	6,1573
Estonia	2011	0,0085	5,8292
Estonia	2012	0,0085	6,9938
Estonia	2013	0,007	6,1377
Estonia	2014	0,007	6,7964
Estonia	2015	0,0079	7,1005
Estonia	2016	0,0081	7,0638
Fiji Islands	2000	0,03	2,4381
Fiji Islands	2001	0,03	2,817
Fiji Islands	2002	0,04	2,6732
Fiji Islands	2003	0,03	2,6364
Fiji Islands	2004	0,045	3,0037
Fiji Islands	2005	0,027	2,8078
Fiji Islands	2006	0,025	2,8715
Fiji Islands	2007	0,025	2,5359
Fiji Islands	2008	0,04	2,3721
Fiji Islands	2009	0,045	2,241
Fiji Islands	2010	0,04	2,59
Fiji Islands	2011	0,04	3,0593
Fiji Islands	2012	0,04	3,3504
Fiji Islands	2013	0,045	3,132
Fiji Islands	2014	0,045	3,8576
Fiji Islands	2015	0,0505	3,0951
Fiji Islands	2016	0,052	3,1454
Finland	2000	0	6,2287
Finland	2001	0	6,7619

Finland	2002	0	6,8485
Finland	2003	0	7,1192
Finland	2004	0	6,857
Finland	2005	0	7,8796
Finland	2006	0	7,2717
Finland	2007	0	7,3343
Finland	2008	0	7,5102
Finland	2009	0	6,2959
Finland	2010	0	6,5332
Finland	2011	0	6,2241
Finland	2012	0	5,8484
Finland	2013	0	6,3339
Finland	2014	0	6,0347
Finland	2015	0,0045	5,8465
Finland	2016	0,0046	6,2567
France	2000	0	5,5374
France	2001	0	5,4291
France	2002	0	5,4722
France	2003	0	5,1724
France	2004	0	5,5757
France	2005	0	5,4643
France	2006	0	5,4771
France	2007	0	5,5771
France	2008	0	5,6541
France	2009	0	5,3021
France	2010	0	5,2481
France	2011	0	5,067
France	2012	0,0025	4,9884
France	2013	0,004	4,8343
France	2014	0,004	4,7492
France	2015	0,0056	4,6984
France	2016	0,0057	4,4472
Germany	2000	0	5,511
Germany	2001	0	5,4434
Germany	2002	0	5,2324
Germany	2003	0	5,2973
Germany	2004	0	5,3793
Germany	2005	0	5,2078
Germany	2006	0	5,4505
Germany	2007	0	5,429
Germany	2008	0	5,3439
Germany	2009	0	5,0424
Germany	2010	0	5,3921

Germany	2011	0	5,3028
Germany	2012	0	5,1216
Germany	2013	0	5,1464
Germany	2014	0	5,0281
Germany	2015	0	4,9402
Germany	2016	0	4,8408
Greece	2000	0,0095	6,4035
Greece	2001	0,006	5,6881
Greece	2002	0,01	5,5436
Greece	2003	0,008	5,8538
Greece	2004	0,012	6,009
Greece	2005	0,006	5,9712
Greece	2006	0,007	6,1007
Greece	2007	0,007	6,3695
Greece	2008	0,014	5,8969
Greece	2009	0,0105	5,6205
Greece	2010	0,024	5,1001
Greece	2011	0,07	4,7425
Greece	2012	0,1	4,3821
Greece	2013	0,1	4,0464
Greece	2014	0,075	4,2472
Greece	2015	0,1121	4,126
Greece	2016	0,1155	4,268
Guatemala	2000	0,03	1,6252
Guatemala	2001	0,03	1,7266
Guatemala	2002	0,0325	1,8136
Guatemala	2003	0,025	1,7551
Guatemala	2004	0,0375	1,7859
Guatemala	2005	0,0225	1,8354
Guatemala	2006	0,02	1,7673
Guatemala	2007	0,02	1,7949
Guatemala	2008	0,03	1,7533
Guatemala	2009	0,025	1,7398
Guatemala	2010	0,024	1,7688
Guatemala	2011	0,024	1,8029
Guatemala	2012	0,024	1,7771
Guatemala	2013	0,025	1,7755
Guatemala	2014	0,025	1,7908
Guatemala	2015	0,028	1,8772
Guatemala	2016	0,0289	1,8789
Honduras	2000	0,055	1,6952
Honduras	2001	0,055	1,7789
Honduras	2002	0,075	1,7365

Honduras	2003	0,055	1,7784
Honduras	2004	0,0825	1,78
Honduras	2005	0,05	1,8498
Honduras	2006	0,04	1,7762
Honduras	2007	0,04	1,8435
Honduras	2008	0,075	1,7445
Honduras	2009	0,055	1,6925
Honduras	2010	0,05	1,6614
Honduras	2011	0,05	1,7096
Honduras	2012	0,05	1,5855
Honduras	2013	0,055	1,5424
Honduras	2014	0,065	1,4511
Honduras	2015	0,0617	1,6088
Honduras	2016	0,0636	1,5516
Hungary	2000	0,0095	3,5216
Hungary	2001	0,0095	4,0687
Hungary	2002	0,01	3,8063
Hungary	2003	0,008	3,7755
Hungary	2004	0,012	4,7362
Hungary	2005	0,006	4,3339
Hungary	2006	0,008	4,1352
Hungary	2007	0,008	3,5909
Hungary	2008	0,0175	4,1927
Hungary	2009	0,016	3,3744
Hungary	2010	0,02	3,1451
Hungary	2011	0,024	3,5162
Hungary	2012	0,024	2,9661
Hungary	2013	0,025	3,2704
Hungary	2014	0,025	3,6101
Hungary	2015	0,028	3,5519
Hungary	2016	0,0254	3,6122
India	2000	0,03	0,858
India	2001	0,03	0,8547
India	2002	0,04	0,82
India	2003	0,0145	0,8586
India	2004	0,045	0,8765
India	2005	0,027	0,8886
India	2006	0,025	0,9203
India	2007	0,025	0,9787
India	2008	0,04	0,986
India	2009	0,03	1,0224
India	2010	0,024	1,0695
India	2011	0,02	1,0917

India	2012	0,02	1,1147
India	2013	0,022	1,118
India	2014	0,022	1,1698
India	2015	0,0247	1,1581
India	2016	0,0254	1,1688
Indonesia	2000	0,065	1,3532
Indonesia	2001	0,065	1,3329
Indonesia	2002	0,085	1,3516
Indonesia	2003	0,055	1,3822
Indonesia	2004	0,0825	1,4269
Indonesia	2005	0,05	1,3785
Indonesia	2006	0,035	1,3626
Indonesia	2007	0,03	1,4325
Indonesia	2008	0,0525	1,4758
Indonesia	2009	0,03	1,4712
Indonesia	2010	0,0275	1,5085
Indonesia	2011	0,024	1,5327
Indonesia	2012	0,02	1,5643
Indonesia	2013	0,022	1,5605
Indonesia	2014	0,022	1,6818
Indonesia	2015	0,0247	1,6395
Indonesia	2016	0,0254	1,69
Ireland	2000	0,0065	6,3553
Ireland	2001	0	6,6233
Ireland	2002	0	6,3412
Ireland	2003	0	5,8776
Ireland	2004	0	6,0025
Ireland	2005	0	6,0613
Ireland	2006	0	6,462
Ireland	2007	0	6,1871
Ireland	2008	0	6,0062
Ireland	2009	0,003	5,2019
Ireland	2010	0,015	5,2777
Ireland	2011	0,024	4,8191
Ireland	2012	0,024	4,8727
Ireland	2013	0,025	5,05
Ireland	2014	0,016	5,0073
Ireland	2015	0,0135	5,234
Ireland	2016	0,0139	5,124
Israel	2000	0,009	5,491
Israel	2001	0,009	5,7001
Israel	2002	0,0125	5,7804
Israel	2003	0,009	5,5333

Israel	2004	0,0135	6,1213
Israel	2005	0,008	5,4952
Israel	2006	0,008	5,8075
Israel	2007	0,008	5,6868
Israel	2008	0,014	5,4531
Israel	2009	0,009	5,0407
Israel	2010	0,0085	5,51
Israel	2011	0,0085	5,9682
Israel	2012	0,0085	6,2079
Israel	2013	0,007	5,622
Israel	2014	0,007	4,7036
Israel	2015	0,0079	5,7431
Israel	2016	0,0081	4,8755
Italy	2000	0,075	5,6005
Italy	2001	0	5,4644
Italy	2002	0,0085	5,5095
Italy	2003	0,0065	5,6616
Italy	2004	0,0098	5,83
Italy	2005	0,0055	5,7804
Italy	2006	0,005	5,8328
Italy	2007	0,005	5,7474
Italy	2008	0,01	5,3916
Italy	2009	0,006	5,0123
Italy	2010	0,005	5,2913
Italy	2011	0,01	5,1307
Italy	2012	0,0175	4,6095
Italy	2013	0,019	4,4226
Italy	2014	0,019	4,3947
Italy	2015	0,0213	4,4477
Italy	2016	0,022	4,4363
Jamaica	2000	0,04	1,5737
Jamaica	2001	0,04	1,63
Jamaica	2002	0,02	1,5851
Jamaica	2003	0,03	1,7005
Jamaica	2004	0,045	1,5197
Jamaica	2005	0,027	1,7167
Jamaica	2006	0,025	1,6026
Jamaica	2007	0,025	2,0625
Jamaica	2008	0,04	1,2926
Jamaica	2009	0,075	1,4214
Jamaica	2010	0,06	1,7803
Jamaica	2011	0,06	1,9902
Jamaica	2012	0,06	1,7027

Jamaica	2013	0,1	1,8302
Jamaica	2014	0,1	1,6906
Jamaica	2015	0,101	1,5668
Jamaica	2016	0,0751	1,6123
Japan	2000	0,006	5,2891
Japan	2001	0,006	5,183
Japan	2002	0,0125	5,1539
Japan	2003	0,009	5,1322
Japan	2004	0,0135	5,0479
Japan	2005	0,008	5,0851
Japan	2006	0,008	5,0062
Japan	2007	0,007	5,0064
Japan	2008	0,012	4,8344
Japan	2009	0,006	4,4616
Japan	2010	0,005	4,6921
Japan	2011	0,007	4,7508
Japan	2012	0,007	4,7626
Japan	2013	0,006	4,8062
Japan	2014	0,007	4,7098
Japan	2015	0,0079	4,4694
Japan	2016	0,0081	4,4927
Jordan	2000	0,04	1,8992
Jordan	2001	0,04	1,9478
Jordan	2002	0,0525	1,9563
Jordan	2003	0,0145	2,0216
Jordan	2004	0,0218	2,3148
Jordan	2005	0,0135	2,2837
Jordan	2006	0,0135	2,2234
Jordan	2007	0,0135	2,2781
Jordan	2008	0,026	2,0759
Jordan	2009	0,02	1,9981
Jordan	2010	0,02	1,8288
Jordan	2011	0,0275	1,8258
Jordan	2012	0,0275	1,9775
Jordan	2013	0,045	1,8202
Jordan	2014	0,045	1,8808
Jordan	2015	0,0505	1,9501
Jordan	2016	0,052	2,0797
Kazakhstan	2000	0,045	2,2867
Kazakhstan	2001	0,03	3,2644
Kazakhstan	2002	0,015	3,5078
Kazakhstan	2003	0,012	4,0256
Kazakhstan	2004	0,018	4,0385

Kazakhstan	2005	0,011	4,5617
Kazakhstan	2006	0,01	5,0831
Kazakhstan	2007	0,01	5,6329
Kazakhstan	2008	0,02	5,9234
Kazakhstan	2009	0,018	5,7048
Kazakhstan	2010	0,0175	5,5485
Kazakhstan	2011	0,0175	6,8299
Kazakhstan	2012	0,0175	5,4739
Kazakhstan	2013	0,019	6,4261
Kazakhstan	2014	0,019	5,7218
Kazakhstan	2015	0,0247	5,6307
Kazakhstan	2016	0,0254	5,5461
Kuwait	2000	0,012	3,7897
Kuwait	2001	0,012	5,2387
Kuwait	2002	0,0125	6,1692
Kuwait	2003	0,009	6,7187
Kuwait	2004	0,0135	7,9862
Kuwait	2005	0,008	9,8057
Kuwait	2006	0,006	10,0565
Kuwait	2007	0,005	10,4232
Kuwait	2008	0,01	10,3453
Kuwait	2009	0,006	10,5591
Kuwait	2010	0,005	9,1312
Kuwait	2011	0,005	8,6464
Kuwait	2012	0,005	8,1889
Kuwait	2013	0,005	8,4422
Kuwait	2014	0,005	7,8243
Kuwait	2015	0,0056	8,4283
Kuwait	2016	0,0057	8,5852
Latvia	2000	0,013	4,2688
Latvia	2001	0,013	4,0139
Latvia	2002	0,0125	4,4145
Latvia	2003	0,009	4,4552
Latvia	2004	0,0135	4,8746
Latvia	2005	0,008	5,1981
Latvia	2006	0,008	5,6991
Latvia	2007	0,008	6,3518
Latvia	2008	0,0175	4,7834
Latvia	2009	0,02	4,5268
Latvia	2010	0,02	4,4439
Latvia	2011	0,02	5,062
Latvia	2012	0,02	5,1138
Latvia	2013	0,019	5,4403

Latvia	2014	0,016	5,8394
Latvia	2015	0,0135	6,2647
Latvia	2016	0,0139	6,3569
Lebanon	2000	0,045	4,1307
Lebanon	2001	0,055	4,1819
Lebanon	2002	0,085	4,0522
Lebanon	2003	0,065	3,7031
Lebanon	2004	0,0975	3,7028
Lebanon	2005	0,06	3,5127
Lebanon	2006	0,045	3,4129
Lebanon	2007	0,045	3,295
Lebanon	2008	0,09	3,6291
Lebanon	2009	0,055	4,3256
Lebanon	2010	0,04	4,1534
Lebanon	2011	0,04	3,7579
Lebanon	2012	0,04	3,6041
Lebanon	2013	0,045	3,4505
Lebanon	2014	0,055	3,5677
Lebanon	2015	0,0617	3,3563
Lebanon	2016	0,0636	3,2875
Lithuania	2000	0,025	3,638
Lithuania	2001	0,025	3,7275
Lithuania	2002	0,015	4,2009
Lithuania	2003	0,0095	4,2108
Lithuania	2004	0,0143	4,742
Lithuania	2005	0,009	4,5644
Lithuania	2006	0,008	4,7178
Lithuania	2007	0,008	5,0353
Lithuania	2008	0,016	5,052
Lithuania	2009	0,016	4,4627
Lithuania	2010	0,015	4,8554
Lithuania	2011	0,015	5,0908
Lithuania	2012	0,015	5,2205
Lithuania	2013	0,016	4,9764
Lithuania	2014	0,016	5,5542
Lithuania	2015	0,0135	5,6044
Lithuania	2016	0,0139	5,567
Luxembourg	2000	0	14,941
Luxembourg	2001	0	14,356
Luxembourg	2002	0	15,8079
Luxembourg	2003	0	17,7235
Luxembourg	2004	0	15,6372
Luxembourg	2005	0	16,0418

Luxembourg	2006	0	15,2911
Luxembourg	2007	0	14,3257
Luxembourg	2008	0	15,4819
Luxembourg	2009	0	14,0321
Luxembourg	2010	0	15,5751
Luxembourg	2011	0	15,2061
Luxembourg	2012	0	13,9461
Luxembourg	2013	0	13,5211
Luxembourg	2014	0	12,7271
Luxembourg	2015	0	12,8073
Luxembourg	2016	0	12,9117
Malaysia	2000	0,013	3,6244
Malaysia	2001	0,013	3,7064
Malaysia	2002	0,0135	3,6313
Malaysia	2003	0,0095	3,3618
Malaysia	2004	0,0143	3,7653
Malaysia	2005	0,009	3,8836
Malaysia	2006	0,0085	4,4776
Malaysia	2007	0,0085	4,1025
Malaysia	2008	0,0175	4,2803
Malaysia	2009	0,012	3,585
Malaysia	2010	0,0115	3,8127
Malaysia	2011	0,0115	3,827
Malaysia	2012	0,0115	3,8837
Malaysia	2013	0,012	4,1405
Malaysia	2014	0,012	4,2282
Malaysia	2015	0,0135	3,949
Malaysia	2016	0,0139	3,9183
Malta	2000	0,0095	6,4627
Malta	2001	0,0095	6,79
Malta	2002	0,0135	7,6879
Malta	2003	0,0095	6,8418
Malta	2004	0,0143	5,9113
Malta	2005	0,009	6,2171
Malta	2006	0,0085	6,6494
Malta	2007	0,008	6,3262
Malta	2008	0,014	6,7355
Malta	2009	0,009	5,7585
Malta	2010	0,0085	5,6105
Malta	2011	0,01	5,3346
Malta	2012	0,0115	5,3751
Malta	2013	0,012	5,0037
Malta	2014	0,012	5,2208

Malta	2015	0,0135	5,2059
Malta	2016	0,0139	5,7925
Mauritius	2000	0,013	2,444
Mauritius	2001	0,013	2,4098
Mauritius	2002	0,0125	2,6842
Mauritius	2003	0,009	2,5528
Mauritius	2004	0,0135	2,8745
Mauritius	2005	0,008	3,0557
Mauritius	2006	0,01	3,1403
Mauritius	2007	0,0115	3,0206
Mauritius	2008	0,0225	3,3005
Mauritius	2009	0,018	3,1945
Mauritius	2010	0,0175	3,2052
Mauritius	2011	0,0175	3,2818
Mauritius	2012	0,015	3,2978
Mauritius	2013	0,016	3,3588
Mauritius	2014	0,016	3,5372
Mauritius	2015	0,0179	3,4825
Mauritius	2016	0,0184	3,5224
Mexico	2000	0,0145	2,8529
Mexico	2001	0,0145	3,29
Mexico	2002	0,015	3,0195
Mexico	2003	0,012	2,7244
Mexico	2004	0,018	2,3973
Mexico	2005	0,011	2,8677
Mexico	2006	0,01	3,0086
Mexico	2007	0,01	3,0599
Mexico	2008	0,02	3,1112
Mexico	2009	0,016	2,8635
Mexico	2010	0,015	3,1846
Mexico	2011	0,015	2,7432
Mexico	2012	0,015	2,943
Mexico	2013	0,016	2,6582
Mexico	2014	0,012	2,5761
Mexico	2015	0,0135	2,5653
Mexico	2016	0,0139	2,6027
Moldova	2000	0,065	1,4031
Moldova	2001	0,075	1,6633
Moldova	2002	0,075	1,6465
Moldova	2003	0,075	1,7367
Moldova	2004	0,1125	1,8794
Moldova	2005	0,07	1,9503
Moldova	2006	0,06	1,8555

Moldova	2007	0,06	1,6482
Moldova	2008	0,12	2,1861
Moldova	2009	0,075	1,5944
Moldova	2010	0,06	1,8299
Moldova	2011	0,06	1,7492
Moldova	2012	0,06	1,6706
Moldova	2013	0,065	1,7887
Moldova	2014	0,065	1,7974
Moldova	2015	0,0729	1,5551
Moldova	2016	0,0751	1,7405
Morocco	2000	0,025	1,2466
Morocco	2001	0,025	1,3867
Morocco	2002	0,0325	1,3951
Morocco	2003	0,025	1,4702
Morocco	2004	0,0375	1,5548
Morocco	2005	0,0225	1,4424
Morocco	2006	0,02	1,6258
Morocco	2007	0,02	1,4974
Morocco	2008	0,03	1,6741
Morocco	2009	0,025	1,8296
Morocco	2010	0,024	1,7143
Morocco	2011	0,024	1,8137
Morocco	2012	0,024	1,7036
Morocco	2013	0,025	1,7406
Morocco	2014	0,025	1,8161
Morocco	2015	0,028	1,8223
Morocco	2016	0,0289	1,7003
Netherlands	2000	0	6,2965
Netherlands	2001	0	6,5376
Netherlands	2002	0	6,3911
Netherlands	2003	0	6,5765
Netherlands	2004	0	6,5453
Netherlands	2005	0	6,8318
Netherlands	2006	0	7,0766
Netherlands	2007	0	7,0839
Netherlands	2008	0	7,178
Netherlands	2009	0	5,7564
Netherlands	2010	0	6,6097
Netherlands	2011	0	6,393
Netherlands	2012	0	6,6281
Netherlands	2013	0	6,0591
Netherlands	2014	0	6,1352
Netherlands	2015	0	5,7244

Netherlands	2016	0	4,8326
New Zealand	2000	0,0065	6,0902
New Zealand	2001	0,0065	6,3373
New Zealand	2002	0	6,3407
New Zealand	2003	0	6,5242
New Zealand	2004	0	5,8202
New Zealand	2005	0	6,0908
New Zealand	2006	0	5,7564
New Zealand	2007	0	5,9867
New Zealand	2008	0	5,7872
New Zealand	2009	0	4,8761
New Zealand	2010	0	5,3732
New Zealand	2011	0	6,0338
New Zealand	2012	0	5,2206
New Zealand	2013	0	5,0818
New Zealand	2014	0	5,2629
New Zealand	2015	0	5,2073
New Zealand	2016	0	4,7423
Nicaragua	2000	0,055	1,7444
Nicaragua	2001	0,055	1,6829
Nicaragua	2002	0,075	1,6461
Nicaragua	2003	0,065	1,7434
Nicaragua	2004	0,0975	1,6147
Nicaragua	2005	0,06	1,6907
Nicaragua	2006	0,045	1,7687
Nicaragua	2007	0,045	1,6175
Nicaragua	2008	0,09	1,5594
Nicaragua	2009	0,065	1,5224
Nicaragua	2010	0,06	1,4739
Nicaragua	2011	0,06	1,5739
Nicaragua	2012	0,06	1,4677
Nicaragua	2013	0,065	1,4806
Nicaragua	2014	0,065	1,4083
Nicaragua	2015	0,0617	1,5213
Nicaragua	2016	0,0636	1,7589
Norway	2000	0	6,4652
Norway	2001	0	6,489
Norway	2002	0	5,7355
Norway	2003	0	6,0955
Norway	2004	0	6,5141
Norway	2005	0	5,919
Norway	2006	0	6,4765
Norway	2007	0	7,0021

Norway	2008	0	7,0735
Norway	2009	0	6,2473
Norway	2010	0	6,9897
Norway	2011	0	6,3402
Norway	2012	0	6,0884
Norway	2013	0	6,1928
Norway	2014	0	6,1034
Norway	2015	0	5,8662
Norway	2016	0	5,5103
Oman	2000	0,013	3,2786
Oman	2001	0,013	3,9272
Oman	2002	0,0175	4,3947
Oman	2003	0,013	5,7549
Oman	2004	0,0195	5,08
Oman	2005	0,011	4,8914
Oman	2006	0,0085	6,0542
Oman	2007	0,008	6,9812
Oman	2008	0,016	6,7039
Oman	2009	0,0105	5,7066
Oman	2010	0,0085	5,4246
Oman	2011	0,0085	6,444
Oman	2012	0,0085	6,7706
Oman	2013	0,007	5,9632
Oman	2014	0,007	6,7422
Oman	2015	0,0179	7,7452
Oman	2016	0,0184	6,7635
Pakistan	2000	0,075	0,8421
Pakistan	2001	0,075	0,7883
Pakistan	2002	0,085	0,8033
Pakistan	2003	0,055	0,8052
Pakistan	2004	0,0825	0,8421
Pakistan	2005	0,05	0,8773
Pakistan	2006	0,035	0,8703
Pakistan	2007	0,035	0,9261
Pakistan	2008	0,09	0,8999
Pakistan	2009	0,065	0,9134
Pakistan	2010	0,06	0,85
Pakistan	2011	0,06	0,8251
Pakistan	2012	0,07	0,7875
Pakistan	2013	0,075	0,7973
Pakistan	2014	0,075	0,8273
Pakistan	2015	0,0729	0,8102
Pakistan	2016	0,0751	0,8339

Panama	2000	0,012	2,2471
Panama	2001	0,012	2,2613
Panama	2002	0,0325	2,2702
Panama	2003	0,012	2,3048
Panama	2004	0,0195	2,3198
Panama	2005	0,0225	2,6156
Panama	2006	0,02	2,9243
Panama	2007	0,02	2,868
Panama	2008	0,03	2,882
Panama	2009	0,025	2,838
Panama	2010	0,02	3,0194
Panama	2011	0,02	3,0684
Panama	2012	0,0175	2,4878
Panama	2013	0,019	2,4702
Panama	2014	0,019	2,3542
Panama	2015	0,0213	2,4068
Panama	2016	0,022	2,2524
Papua New Guinea	2000	0,045	1,1861
Papua New Guinea	2001	0,045	1,2404
Papua New Guinea	2002	0,06	1,5242
Papua New Guinea	2003	0,045	1,3495
Papua New Guinea	2004	0,0675	1,9326
Papua New Guinea	2005	0,04	1,9641
Papua New Guinea	2006	0,035	1,8879
Papua New Guinea	2007	0,035	1,9571
Papua New Guinea	2008	0,065	1,7883
Papua New Guinea	2009	0,045	1,8606
Papua New Guinea	2010	0,04	1,8345
Papua New Guinea	2011	0,04	1,5662
Papua New Guinea	2012	0,04	1,6789
Papua New Guinea	2013	0,045	1,6347
Papua New Guinea	2014	0,045	1,8157
Papua New Guinea	2015	0,0617	1,6439
Papua New Guinea	2016	0,0636	1,7466
Paraguay	2000	0,055	3,9691
Paraguay	2001	0,055	3,9098
Paraguay	2002	0,06	4,0191
Paraguay	2003	0,075	4,0286
Paraguay	2004	0,1125	3,4645
Paraguay	2005	0,07	3,0799
Paraguay	2006	0,06	2,9177
Paraguay	2007	0,06	3,2071
Paraguay	2008	0,09	3,1272

Paraguay	2009	0,065	2,8998
Paraguay	2010	0,04	3,3522
Paraguay	2011	0,04	3,6634
Paraguay	2012	0,04	3,3207
Paraguay	2013	0,036	3,5235
Paraguay	2014	0,03	3,2403
Paraguay	2015	0,028	3,0161
Paraguay	2016	0,0289	2,9031
Peru	2000	0,04	1,8456
Peru	2001	0,04	1,8321
Peru	2002	0,02	1,8887
Peru	2003	0,0145	1,7591
Peru	2004	0,0218	1,9302
Peru	2005	0,0135	1,9518
Peru	2006	0,0135	2,0149
Peru	2007	0,0135	2,0782
Peru	2008	0,026	2,1955
Peru	2009	0,02	2,1155
Peru	2010	0,02	2,1665
Peru	2011	0,02	2,2999
Peru	2012	0,0175	2,2152
Peru	2013	0,019	2,3225
Peru	2014	0,012	2,2732
Peru	2015	0,0135	2,3955
Peru	2016	0,0139	2,2382
Philippines	2000	0,025	1,2631
Philippines	2001	0,025	1,2242
Philippines	2002	0,02	1,2779
Philippines	2003	0,0145	1,2532
Philippines	2004	0,045	1,2884
Philippines	2005	0,04	1,2624
Philippines	2006	0,035	1,2381
Philippines	2007	0,035	1,2473
Philippines	2008	0,065	1,2594
Philippines	2009	0,035	1,2282
Philippines	2010	0,0325	1,1607
Philippines	2011	0,0275	1,1537
Philippines	2012	0,024	1,1179
Philippines	2013	0,022	1,0403
Philippines	2014	0,019	1,0977
Philippines	2015	0,0213	1,1505
Philippines	2016	0,022	1,33
Poland	2000	0,012	4,2553

Poland	2001	0,012	4,3306
Poland	2002	0,0125	4,2443
Poland	2003	0,009	4,1813
Poland	2004	0,0135	4,5042
Poland	2005	0,008	4,4129
Poland	2006	0,008	4,47
Poland	2007	0,008	4,9116
Poland	2008	0,016	4,869
Poland	2009	0,0105	4,6297
Poland	2010	0,01	4,8145
Poland	2011	0,01	4,7551
Poland	2012	0,01	4,4742
Poland	2013	0,0085	4,318
Poland	2014	0,0085	4,3833
Poland	2015	0,0095	4,1719
Poland	2016	0,0098	4,4277
Portugal	2000	0,0095	4,8251
Portugal	2001	0,006	4,6874
Portugal	2002	0,0085	4,6947
Portugal	2003	0,0065	4,4122
Portugal	2004	0,0098	4,6584
Portugal	2005	0,0055	4,7396
Portugal	2006	0,005	4,6015
Portugal	2007	0,005	4,5953
Portugal	2008	0,01	4,4734
Portugal	2009	0,006	4,3402
Portugal	2010	0,0085	4,4437
Portugal	2011	0,0275	4,0163
Portugal	2012	0,0325	3,7143
Portugal	2013	0,036	3,6706
Portugal	2014	0,025	3,7198
Portugal	2015	0,028	3,9864
Portugal	2016	0,0289	4,1004
Qatar	2000	0,013	10,4884
Qatar	2001	0,013	11,3471
Qatar	2002	0,0135	12,0021
Qatar	2003	0,0095	15,9256
Qatar	2004	0,0143	14,1195
Qatar	2005	0,006	12,8817
Qatar	2006	0,006	15,7873
Qatar	2007	0,005	16,9649
Qatar	2008	0,01	16,2716
Qatar	2009	0,006	15,4323

Qatar	2010	0,005	14,205
Qatar	2011	0,005	14,0597
Qatar	2012	0,005	13,8923
Qatar	2013	0,005	12,5796
Qatar	2014	0,005	14,2036
Qatar	2015	0,0056	14,5804
Qatar	2016	0,0057	14,4134
Romania	2000	0,065	2,3922
Romania	2001	0,055	2,9555
Romania	2002	0,06	2,7999
Romania	2003	0,04	2,9917
Romania	2004	0,06	3,4915
Romania	2005	0,0225	3,3219
Romania	2006	0,0135	3,2405
Romania	2007	0,0135	3,0921
Romania	2008	0,026	3,4433
Romania	2009	0,02	2,8918
Romania	2010	0,02	2,8849
Romania	2011	0,02	3,133
Romania	2012	0,02	2,8304
Romania	2013	0,022	2,7515
Romania	2014	0,022	2,7828
Romania	2015	0,0247	2,9896
Romania	2016	0,0254	3,0938
Russia	2000	0,055	4,6883
Russia	2001	0,04	4,9873
Russia	2002	0,04	4,8405
Russia	2003	0,0145	4,9428
Russia	2004	0,0218	5,0305
Russia	2005	0,012	5,057
Russia	2006	0,0115	5,3134
Russia	2007	0,0115	5,5017
Russia	2008	0,02	5,6756
Russia	2009	0,016	5,1731
Russia	2010	0,015	5,3508
Russia	2011	0,015	5,8985
Russia	2012	0,015	5,5
Russia	2013	0,016	5,5957
Russia	2014	0,019	5,4474
Russia	2015	0,028	5,1194
Russia	2016	0,0289	5,1599
Saudi Arabia	2000	0,0145	3,7718
Saudi Arabia	2001	0,0145	3,4651

Saudi Arabia	2002	0,0325	3,9878
Saudi Arabia	2003	0,012	3,9112
Saudi Arabia	2004	0,0195	4,0372
Saudi Arabia	2005	0,009	4,1739
Saudi Arabia	2006	0,008	4,6414
Saudi Arabia	2007	0,007	5,0143
Saudi Arabia	2008	0,014	5,3041
Saudi Arabia	2009	0,009	5,2491
Saudi Arabia	2010	0,007	5,6602
Saudi Arabia	2011	0,007	5,5063
Saudi Arabia	2012	0,007	5,9688
Saudi Arabia	2013	0,006	5,8073
Saudi Arabia	2014	0,006	6,0049
Saudi Arabia	2015	0,0079	6,0362
Saudi Arabia	2016	0,0081	6,2338
Singapore	2000	0,006	8,3107
Singapore	2001	0,006	7,411
Singapore	2002	0	6,6042
Singapore	2003	0	5,8692
Singapore	2004	0	7,0935
Singapore	2005	0	6,6654
Singapore	2006	0	7,2154
Singapore	2007	0	6,9001
Singapore	2008	0	7,6226
Singapore	2009	0	7,0002
Singapore	2010	0	6,7477
Singapore	2011	0	7,6555
Singapore	2012	0	7,5849
Singapore	2013	0	6,6378
Singapore	2014	0	5,9612
Singapore	2015	0	6,1398
Singapore	2016	0	5,8795
Slovakia	2000	0,025	3,7342
Slovakia	2001	0,0145	4,2636
Slovakia	2002	0,0135	3,9148
Slovakia	2003	0,0095	3,9358
Slovakia	2004	0,0143	4,55
Slovakia	2005	0,008	4,7166
Slovakia	2006	0,007	4,5629
Slovakia	2007	0,007	5,1791
Slovakia	2008	0,014	5,5104
Slovakia	2009	0,009	4,5593
Slovakia	2010	0,0085	4,5552

Slovakia	2011	0,0085	5,1737
Slovakia	2012	0,01	4,198
Slovakia	2013	0,0085	4,4336
Slovakia	2014	0,0085	4,2869
Slovakia	2015	0,0095	4,2356
Slovakia	2016	0,0098	4,2069
Slovenia	2000	0,009	4,7974
Slovenia	2001	0,009	4,6432
Slovenia	2002	0,009	4,9633
Slovenia	2003	0,007	4,9843
Slovenia	2004	0,0105	5,5096
Slovenia	2005	0,006	5,4296
Slovenia	2006	0,005	5,6899
Slovenia	2007	0,005	5,8663
Slovenia	2008	0,01	5,7713
Slovenia	2009	0,006	4,9495
Slovenia	2010	0,005	5,1229
Slovenia	2011	0,0085	5,131
Slovenia	2012	0,0175	4,7319
Slovenia	2013	0,025	4,6214
Slovenia	2014	0,025	4,65
Slovenia	2015	0,0247	4,9274
Slovenia	2016	0,0254	5,1254
South Africa	2000	0,0145	3,0517
South Africa	2001	0,013	3,159
South Africa	2002	0,0125	3,1777
South Africa	2003	0,009	3,2732
South Africa	2004	0,0135	3,5819
South Africa	2005	0,008	3,3458
South Africa	2006	0,008	3,5464
South Africa	2007	0,008	3,682
South Africa	2008	0,016	3,8647
South Africa	2009	0,012	3,6686
South Africa	2010	0,0115	3,6011
South Africa	2011	0,0115	3,4253
South Africa	2012	0,015	3,5782
South Africa	2013	0,016	3,3841
South Africa	2014	0,019	3,5292
South Africa	2015	0,0213	3,2132
South Africa	2016	0,022	3,1521
South Korea	2000	0,02	5,0615696
South Korea	2001	0,055	5,25616795
South Korea	2002	0,0975	5,4590744

South Korea	2003	0,012	5,36820598
South Korea	2004	0,0135	5,47428101
South Korea	2005	0,01386126	5,48633555
South Korea	2006	0,013	5,63793172
South Korea	2007	0,0095	5,75488092
South Korea	2008	0,03470526	5,75677645
South Korea	2009	0,0135	5,47273234
South Korea	2010	0,02	5,88383892
South Korea	2011	0,055	5,95110307
South Korea	2012	0,022	5,84611649
South Korea	2013	0,0213	5,82155028
South Korea	2014	0,028	5,73912925
South Korea	2015	0,0325	5,85943308
South Korea	2016	0,006	6,00048557
Spain	2000	0,006	5,5576
Spain	2001	0,006	5,3861
Spain	2002	0	5,6056
Spain	2003	0	5,7554
Spain	2004	0	5,7984
Spain	2005	0	5,7072
Spain	2006	0	5,8543
Spain	2007	0	5,9213
Spain	2008	0	5,5706
Spain	2009	0	4,6924
Spain	2010	0,0025	4,4662
Spain	2011	0,0085	4,2323
Spain	2012	0,02	3,794
Spain	2013	0,022	3,9812
Spain	2014	0,019	3,7669
Spain	2015	0,0213	3,9844
Spain	2016	0,022	4,0407
Sweden	2000	0,006	6,4271
Sweden	2001	0,006	6,2442
Sweden	2002	0	6,7801
Sweden	2003	0	6,8414
Sweden	2004	0	6,271
Sweden	2005	0	8,4186
Sweden	2006	0	5,4469
Sweden	2007	0	6,9037
Sweden	2008	0	6,2015
Sweden	2009	0	5,3513
Sweden	2010	0	6,6587
Sweden	2011	0	6,6036

Sweden	2012	0	6,2482
Sweden	2013	0	6,1173
Sweden	2014	0	6,5021
Sweden	2015	0	6,1561
Sweden	2016	0	6,4571
Switzerland	2000	0	5,5938
Switzerland	2001	0	5,3684
Switzerland	2002	0	5,4109
Switzerland	2003	0	5,3766
Switzerland	2004	0	5,3996
Switzerland	2005	0	5,6672
Switzerland	2006	0	5,6671
Switzerland	2007	0	5,8861
Switzerland	2008	0	5,8446
Switzerland	2009	0	5,4668
Switzerland	2010	0	5,4843
Switzerland	2011	0	5,4155
Switzerland	2012	0	5,1204
Switzerland	2013	0	5,1586
Switzerland	2014	0	4,8706
Switzerland	2015	0	4,7473
Switzerland	2016	0	4,637
Thailand	2000	0,0145	1,9602
Thailand	2001	0,0145	2,0003
Thailand	2002	0,015	2,1248
Thailand	2003	0,012	2,23
Thailand	2004	0,018	2,2945
Thailand	2005	0,011	2,4786
Thailand	2006	0,01	2,3591
Thailand	2007	0,01	2,3592
Thailand	2008	0,02	2,3773
Thailand	2009	0,016	2,2598
Thailand	2010	0,015	2,4255
Thailand	2011	0,015	2,4711
Thailand	2012	0,015	2,7166
Thailand	2013	0,016	2,6384
Thailand	2014	0,016	2,4321
Thailand	2015	0,0179	2,4625
Thailand	2016	0,0184	2,4876
Tunisia	2000	0,0145	1,7555
Tunisia	2001	0,0145	1,7844
Tunisia	2002	0,0175	1,8449
Tunisia	2003	0,013	2,1039

Tunisia	2004	0,0195	1,925
Tunisia	2005	0,012	2,0803
Tunisia	2006	0,0115	1,9959
Tunisia	2007	0,0115	2,1675
Tunisia	2008	0,0225	2,0955
Tunisia	2009	0,018	2,0355
Tunisia	2010	0,0175	2,17
Tunisia	2011	0,02	2,1043
Tunisia	2012	0,02	2,2585
Tunisia	2013	0,036	2,1608
Tunisia	2014	0,036	2,1875
Tunisia	2015	0,0404	2,1922
Tunisia	2016	0,0416	2,1949
Turkey	2000	0,045	2,9157
Turkey	2001	0,045	2,3314
Turkey	2002	0,085	2,7231
Turkey	2003	0,065	2,7872
Turkey	2004	0,0825	2,8053
Turkey	2005	0,036	2,9724
Turkey	2006	0,03	3,1153
Turkey	2007	0,03	3,2672
Turkey	2008	0,0525	3,1201
Turkey	2009	0,035	3,0249
Turkey	2010	0,0275	3,2145
Turkey	2011	0,0275	3,3927
Turkey	2012	0,024	3,3692
Turkey	2013	0,022	3,2738
Turkey	2014	0,022	3,259
Turkey	2015	0,0247	3,3442
Turkey	2016	0,0289	3,3575
Ukraine	2000	0,075	2,9742
Ukraine	2001	0,075	3,3161
Ukraine	2002	0,075	3,1613
Ukraine	2003	0,045	3,4275
Ukraine	2004	0,0675	3,4262
Ukraine	2005	0,04	3,3966
Ukraine	2006	0,035	3,3353
Ukraine	2007	0,035	3,3674
Ukraine	2008	0,065	3,7916
Ukraine	2009	0,055	2,8412
Ukraine	2010	0,05	3,1867
Ukraine	2011	0,05	3,5126
Ukraine	2012	0,06	2,8679

Ukraine	2013	0,075	3,2266
Ukraine	2014	0,1	2,7463
Ukraine	2015	0,1121	2,331
Ukraine	2016	0,1155	2,9085
United Arab Emirates	2000	0,009	12,3533
United Arab Emirates	2001	0,009	13,6047
United Arab Emirates	2002	0,125	13,0274
United Arab Emirates	2003	0,009	12,914
United Arab Emirates	2004	0,012	12,5965
United Arab Emirates	2005	0,006	11,6791
United Arab Emirates	2006	0,006	12,0746
United Arab Emirates	2007	0,005	11,9116
United Arab Emirates	2008	0,01	12,6087
United Arab Emirates	2009	0,006	11,0653
United Arab Emirates	2010	0,005	9,8767
United Arab Emirates	2011	0,005	9,4356
United Arab Emirates	2012	0,005	9,1781
United Arab Emirates	2013	0,005	9,5385
United Arab Emirates	2014	0,005	10,2337
United Arab Emirates	2015	0,0056	9,7029
United Arab Emirates	2016	0,0057	8,919
United Kingdom	2000	0	5,7295
United Kingdom	2001	0	6,1713
United Kingdom	2002	0	5,9586
United Kingdom	2003	0	5,9173
United Kingdom	2004	0	6,0995
United Kingdom	2005	0	6,1272
United Kingdom	2006	0	6,18
United Kingdom	2007	0	6,1888
United Kingdom	2008	0	5,9158
United Kingdom	2009	0	5,8513
United Kingdom	2010	0	5,3096
United Kingdom	2011	0	4,978
United Kingdom	2012	0	4,8463
United Kingdom	2013	0,004	4,8765
United Kingdom	2014	0,004	4,7107
United Kingdom	2015	0,0045	4,5947
United Kingdom	2016	0,0046	4,368
United States of America	2000	0	10,2543
United States of America	2001	0	10,0592
United States of America	2002	0	9,8159
United States of America	2003	0	9,9245
United States of America	2004	0	10,3504

United States of America	2005	0	10,3589
United States of America	2006	0	10,1444
United States of America	2007	0	9,9557
United States of America	2008	0	9,4164
United States of America	2009	0	8,6071
United States of America	2010	0	8,9387
United States of America	2011	0	8,5061
United States of America	2012	0	8,1529
United States of America	2013	0	8,3826
United States of America	2014	0	8,3252
United States of America	2015	0	8,1716
United States of America	2016	0	8,1043
Uruguay	2000	0,0145	3,755
Uruguay	2001	0,0145	4,3233
Uruguay	2002	0,085	4,0629
Uruguay	2003	0,065	3,9036
Uruguay	2004	0,0975	3,9104
Uruguay	2005	0,06	3,2972
Uruguay	2006	0,035	3,2656
Uruguay	2007	0,035	3,7052
Uruguay	2008	0,065	4,3042
Uruguay	2009	0,035	3,4207
Uruguay	2010	0,024	3,3274
Uruguay	2011	0,024	4,0055
Uruguay	2012	0,02	2,6789
Uruguay	2013	0,022	3,2799
Uruguay	2014	0,019	2,6616
Uruguay	2015	0,0213	2,7425
Uruguay	2016	0,022	1,9202
Venezuela	2000	0,055	0,7146
Venezuela	2001	0,055	0,7082
Venezuela	2002	0,075	0,6978
Venezuela	2003	0,075	0,6834
Venezuela	2004	0,0675	0,7244
Venezuela	2005	0,04	0,6743
Venezuela	2006	0,035	0,684
Venezuela	2007	0,035	0,7571
Venezuela	2008	0,065	0,8465
Venezuela	2009	0,045	0,8148
Venezuela	2010	0,04	0,7417
Venezuela	2011	0,04	0,7026
Venezuela	2012	0,04	0,7424
Venezuela	2013	0,075	0,7741

Venezuela	2014	0,075	0,7597
Venezuela	2015	0,1121	0,6685
Venezuela	2016	0,1155	0,5823
Vietnam	2000	0,045	0,9864
Vietnam	2001	0,045	0,9993
Vietnam	2002	0,06	1,1208
Vietnam	2003	0,045	1,1285
Vietnam	2004	0,0825	1,2464
Vietnam	2005	0,036	1,2568
Vietnam	2006	0,025	1,3338
Vietnam	2007	0,03	1,4469
Vietnam	2008	0,0525	1,5207
Vietnam	2009	0,035	1,5624
Vietnam	2010	0,04	1,679
Vietnam	2011	0,04	1,6555
Vietnam	2012	0,05	1,6037
Vietnam	2013	0,055	1,6994
Vietnam	2014	0,045	1,7867
Vietnam	2015	0,0505	2,017
Vietnam	2016	0,052	2,1224