A Work Project, presented as part of the requirements for the Award of a Masters Degree in Finance from the Faculdade de Economia da Universidade Nova de Lisboa.

# Searching for real estate investment opportunities: Case of BlueRock Group

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**Abstract**

This paper investigates real estate investment opportunities for BlueRock Group. It addresses a corporate strategic approach resulting in the suggestion of an expansion strategy. This requires the analysis of macroeconomic factors of all EU members, determining the Netherlands as most stable economy. Under the assumption that increasing rents and real residential property prices lead to investment opportunities, a regression analysis determines key influencers. While only the model for real residential property prices could be significantly described, a forecast calculation revealed that prices are going to decline in 2019, rejecting potential investment opportunities for BlueRock Group.

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**Keywords**

Real Estate, Investment Opportunities, Housing Prices, Expansion Strategy

## 1. Introduction

BlueRock Group is a real estate fund which has specialized on western Europe's market with a strong focus on Switzerland, Germany and Denmark. It was founded through the demand of alternative investments for international clients in 2010 and has since conducted real estate transactions of over €1 billion. Its business started in Switzerland, where the BlueRock Group focused on acquiring commercial properties and renting it to institutional tenants. With an increase in demand and declining investment opportunities in Switzerland, BlueRock expanded its business to Germany and later Denmark. While the real estate market is booming, new investment opportunities are hard to come by. Due to the sharp increase in prices, which leads to an increase required capital, new investments often deliver lower returns on investments (ROIs). In the current market conditions BlueRock Group struggles to find suitable investments in the countries it is currently operating in. Therefore, the research question that arises is:

- **How can BlueRock Group find new real estate investment opportunities?**

This paper will first discuss BlueRock Group's business to understand their capabilities and wants. Subsequent, strategic options on a corporate level will be analysed in the course of the literature review. During the methodology several methods such as the scorecard, regression and forecasting will provide results needed in answering the research question.

## 2. Background of BlueRock Group

Before starting with the search for investment opportunities, one must take a closer look at the company itself. It is essential to find out what the company wants to achieve and how they achieve it. For that, an entire review of BlueRock Group is necessary.

The BlueRock Group is a boutique investment house with selected real estate opportunities in western Europe. It is currently operating in Switzerland, Germany and Denmark reaching real estate transactions of over €1 billion. Its goal is to offer solid investments that generate regular

income on a quarterly/bi-annual basis. They focus on providing their clients with exclusive and off-market property deals.

### 2.1. Who are the clients?

According to Ronny Pifko, the founder of BlueRock Group, the largest contribution of capital comes from a closely connected relationship with a wealth management firm, who introduces major HNWIs (High Net Worth Individuals) and UHNWIs (Ultra High Net Worth Individuals), stating also that there isn't a specific target group (Personal communication, September 16, 2018). Kaarlep & Alavi (2017) define HNWIs as individuals with a net worth of at least $1 million and UHNWIs as individuals with a net worth of at least $30 million. BlueRock Group has also provided its services to institutional clients as well as smaller private clients. With its development over time, BlueRock Group extended its services to attract new clients.

### 2.2. Investment opportunities for clients

Nowadays BlueRock Group offers three different possibilities to invest: BlueRock Fund, BlueRock Partners and BR-NAS. They originally started by offering solely the BlueRock Fund, which offered real estate opportunities on a deal by deal basis. This means, clients could choose the property they desired/saw fit for their portfolio and invest in said property via an ISIN (International Securities Identification Number) with a minimum subscription amount of €250k. Since Toledo Capital AG, a multi-family office, provided HNWIs and UHNWIs as clients, there was soon a demand for a more personal structure. Some clients didn't want to invest in a fund but sought full exposure to a property, that would diversify their portfolio. These clients were usually UHNWIs who could afford to acquire a property together with BlueRock Partners. This individuality allowed BlueRock Partners to provide the client with a tailormade set-up and tax-structure, yet required a higher subscription fee of at least €500k.

With the company growing BlueRock Group adjusted its strategy over time to serve and address more clients. Pifko stated that: “First a track record was needed, which was established by investing in single properties, before a more open structure can be applied”. He further argued: “a single property offers the client more transparency, everything can be 1:1 presented and explained” (Personal communication, September 16, 2018). The idea behind this strategy was, to gain clients’ trust while simultaneously raising awareness in the market. With the trust of the clients and recognition in the industry, BlueRock Group’s next step was to increase its offerings, which was supposed to result, and did result, in a larger client base. BlueRock Group launched a new investment fund, called BR-NAS, that offered subscriptions to a diversified property portfolio targeting the “German Mittelstand”. To quote Pifko: “A fund with a portfolio selected by the fund managers can only be successfully launched if investors trust the managers ability to select ‘good’ properties that add value to the fund” (Personal communication, September 16, 2018). Funds with a lodged portfolio offer more opportunities for institutional investors due to diversification within the fund itself, institutional investors would never invest a large amount in a single object, this would bear a too large risk, so Pifko (Personal communication, September 16, 2018). BlueRock Group analyses the market and their clients demand closely in order to be able to adjust strategy and offerings accordingly.

### 2.3. Selection of property category

There are many kinds of properties real estate manager can invest in. Eichholtz, Hoesli, MacGregor, & Nanthakumaran (1995) divided real estate in three different categories: commercial properties, residential properties and industrial properties, whereas Sun, Titman, & Twite (2014) categorized real estate into seven types: Health Care, Hotel, Residential, Office and Industrial, Retail, Specialty and Diversified. There are funds or trusts who specialise on one of these categories, BlueRock Group however is willing to invest in every single category with the only limitation being that the property isn’t located in emerging countries or countries

that are too far away from their current market. The reason for this flexibility is their own high standards, Pifko further concretized that, “nowadays investment opportunities are scarce, we need to take what we can find” (Personal communication, September 16, 2018). Due to their standards towards the property plus competition from other investors it causes the market to shrink and forces BlueRock Group to search in each category. Pifko adds: “In the beginning of BlueRock Group the market was much calmer allowing investments in solely office buildings and single tenants. Yet after a while, we had to extend our market to multi-tenants and later residential properties.” (Personal communication, September 16, 2018).

### 2.4. Property selection

Since BlueRock Group is not limited to a property category the question arises how they select a deal. Are there certain attributes or characteristics that impact their choice? Pifko (personal communication, September 16, 2018) stated: “In the hot market environment over the last years we need to constantly look out for opportunities. We see about 300-500 deals per year from which roughly 90% is discarded due to volume, location, industry, etc.”. The remaining 10% are selecting according to BlueRock Group’s success factors, which they identified as location, price, tenancy situation, environment, to name a few. By analysing each factor carefully BlueRock Group has an indication of the risk/return situation. Currently BlueRock Group doesn’t use any sort of valuation system for these factors, they consider each factor as equally important.

### 2.5. Property strategy and holding period

After the acquisition of the properties BlueRock Group follows a number of different strategies depending on the object. Usually, before renting out the property they optimise the revenue streams and costs. This can be done by applying a new structure that saves taxes or insuring a high tenant occupancy. Especially for residential properties BlueRock Group follows a

modernisation strategy, first they increase the value by doing a rough modernisation to the extend where value is maximized with the lowest investment. Using this method rent can be increased generating more return plus when the property is resold an additional premium can be collected.

The holding time of all BlueRock Groups' properties is determined by numerous factors. Pifko (personal communication, September 16, 2018) mentioned that the WALT (Weighted Average Lease Term) plays an important role; the WALT measures the overall tenancy risks of a single property with multiple tenants. It can be best explained with an example: Assuming there are three tenants, Tenant 1 who occupies 20% of rentable area for 5 years, Tenant 2 who takes up 50% for 3 years while Tenant 3 who occupies 30% of rentable space for 6 years. With the given information we can apply the formula: (0.2 x 5) + (0.5 x 3) + (0.3 x 6) = 4.3 years. Pifko (personal communication, September 16, 2018) explained that a lower WALT of 1 to 5 years suggests, that there may be an increased risk of a multiple vacancies in the short to medium term. Next to the WALT, the interest rate provided by the bank plays an important role, especially when BlueRock Group's expectation contradicts with the one of the bank. Furthermore, the general lease (lease period, price, etc.) will also impact the holding period of the property. Since BlueRock Group sells its properties after a certain period of time it is for them also essential that the building, age or technical condition, are in a state where the property can be resold at the end of the holding period.

### 2.6. Due Diligence

Due diligence in the field of real estate is defined by Roulac (2000) as "an evaluation of the policies, procedures and results of an organization's structure and staffing, portfolio construction, and monitoring and selection of specific real estate investments. The due diligence imperative seeks to replicate that process that a prudent person would employ prior to a major

financial commitment". One needs to keep in mind that property-specific due diligence is not equivalent to traditional mortgage underwriting, a thorough assessment of the site and building, or a competent appraisal (Roulac, 2000). While each task is expected to be part of the due diligence, alone they do not produce sufficient knowledge for a proper valuation. For BlueRock Group the due diligence is particularly important because the success of the investment largely dependents on financing, market behaviour and occupation. While on the latter two BlueRock Group has none to little influence.

In the case of BlueRock Group the due diligence process is divided into an internal and external process. The internal process incorporates first the selection of offerings, looking at rental agreements, visiting the object as well as consulting financing possibilities with numerous banks (Pifko, personal communication, September 16, 2018). The external (outsourced) process concerns itself with the technical status of property, along with the development of an LOI (Letter Of Intent) to evaluate findings. During the exclusivity phase (the phase where the property is promised to BlueRock Group) the technical due diligence, tax diligence and legal diligence is required. According to Pifko (personal communication, September 16, 2018) there are two options how these tasks can be performed: step by step or simultaneously. The choice depends on resources, time and availability.

Parts of the due diligence is outsourced due to regulatory reasons, especially since investors want an independent analysis that cannot be biased. In addition, there are currently no internal qualifications present that could execute the entire process.

### 2.7. Financing

When it comes to real estate investing, financing plays an essential part for success. When BlueRock Group has found a property it wishes to acquire, they first have to determine all costs. As seen in an example provided by BlueRock Group (figure 1), this includes the purchase price

of the property, in this case €60 million, as well as a real estate transfer tax due, which is 6,50% of the purchase price (€3,9 million) and notary & register fee of 0,275% of the purchase price (€0,165 million). As explained before, BlueRock Group outsources its due diligence to an external company which total charges of €0,097 million. Lastly, there are bank service charges and broker charges which sum up to 0,5% and 2,90% respectively of the purchase price resulting in a total deal cost of €66,067 million. Now the question arises, how the deal cost can be covered, ideally a bank provides a loan with an acceptable interest rate and length. Pifko (personal communication, September 16, 2018) stated, that the LTV (loan-to-value) ratio is usually used as an indicator of the borrowing cost. On average lenders offer loans with lowest possible interest rate, when the LTV ratio is at or below 80%. For that reason, BlueRock Group aims for an LTV ratio, that enables the lowest interest rate. In the beforehand mentioned example, the bank provided a loan of €45 million, which equals an LTV ratio of 75%. Thus, the interest rate for a ten-year period is fixed at 2,42% with a principal payment of 1,8%. While the LTV ratio is a reliable indicator to achieve a low interest rate on the loan, the bank itself also plays an important factor. Banks in Germany and Switzerland finance their contribution to the deal by accessing the secondary mortgage market, while banks in Denmark can issue their own bonds. Being able to issue bonds generally reduces the interest rate for the borrower making the market more lucrative (Pifko, personal communication, September 16, 2018). Unfortunately, BlueRock Group can take no influence in the country's form of procedure.

### 2.8. Regulation

BlueRock Group's first investment fund (BlueRock Fund) was registered in Gibraltar, Pifko (personal communication, September 16, 2018) stated it was at the time advantageous due to looser regulations. That allowed BlueRock to select properties more freely and acquire them quickly which made them more competitive in the industry. However, with the fund growing in size it became obligatory to be AIFMD (Alternative Investment Fund Mangers Directive)

compliant. The directive imposes extensive reporting obligations on investment funds, which regardless of their domicile have to follow those if they have any kind of operations within the EU. Reporting obligations include e.g. information about the overall leverage, a full report of the leverage arising from borrowing of cash and leverage through financial derivatives has to be filed (Kamal, 2012). The goal for having full disclosure is to create an accurate risk assessment of the fund. Therefore, BlueRock Group appointed Maintland Management Services S.A. as AFIM, which again were supervised by the CSSF (Commission de Surveillance du Secteur Financier) in Luxembourg. Since BlueRock Group ended up working with Luxembourg regulators for their BlueRock Fund, they decided to directly register their new fund BR-NAS in Luxembourg to ease processes and achieve higher efficiency. In addition, in the financial industry a Luxembourg registered fund is seen as prestigious and trusted (Pifko, personal communication, September 16, 2018).

### 2.9. Strategy of BlueRock Group

Since BlueRock Group is with 8 years a relatively young company, it still follows a growth strategy. This growth strategy functions two-sided, on the one hand new clients are needed to increase the capital, yet on the other hand new deals are required to serve the capital. To acquire more deals BlueRock Group, as mentioned in the beginning, increased its products to three different options (BlueRock Fund, BlueRock Partners and BR-NAS). Nevertheless, with changes in the market environment BlueRock Group struggled to find suitable properties. Therefore, BlueRock Group expanded its operations in 2013 from Switzerland to Germany and later in 2016 to Denmark, successfully seizing new opportunities and utilising favourable market conditions. According to Pifko (personal communication, September 16, 2018) it was necessary to present a strong track record before attempting an expansion. In addition, factors like: “size, experience, reporting, transparency, relationship to clients and constantly working on both ends of the business (capital and deals)” were ultimately key.

## 3. Literature Review

### 3.1. The real estate market in the European Union

With recent development and since Global Financial Crisis (GFC), the real estate market has acquired a macroeconomic profile, essentially, reinvestigations about the basic principles such as housing prices and financial influences were opened (Paloma Taltavull de La Paz, 2016). Although researchers were analysing every aspect of the GFC, its aftermath is yet not fully understood. The main reason for that is, due to differences in housing market reactions of developed economies, such as Germany and Spain, which were exposed to similar external factors. While in some countries, e.g. Germany, house prices recovered, others, e.g. Italy, experienced below average transaction activities (Paloma Taltavull de La Paz, 2016; Conefrey & Fitz Gerald, 2010). Since the residential real estate market is a key sector in most countries and represents a major asset class for households and the economy (Klotz, Lin & Hsu, 2016), one strand of literature emphasizes on the occurrence of real estate bubbles, which is currently widely discussed, as some economists and investors believe certain European countries are experiencing one at the moment. But how is a "real estate bubble" defined? According to Stiglitz (1990) the phenomena incorporates an asset price deviation from its fundamental value. It is a situation where only investor's expectations of higher selling prices instead of the fundamental factors determine high prices, under the assumption that other investors will push the prices even further, they neglect all fundamentals and increase prices. Investors start to enter in speculations by abandoning future income streams and relying on bullish behaviour of other investors, creating the so called 'bubble'. Klotz, Lin & Hsu (2016) point out that persistent expectations of a continuous and quick upsurge make house prices fundamentally unstable. As prices cannot increase forever, due to unwillingness and incapability of investors and private people to present the

required capital, the demand eventually diminishes causing the bubble to burst (Case and Shiller, 2003).

Although there are still discussions whether the real estate market is a bubble or sustainably strong, a worrying development is pointed out by Janin Rivolin, (2017). Namely the discrepancy in growth between real estate properties and the general economy (more precisely, about 4,5% real estate growth (Eurostat, 2018) vs. 2–2.5% GDP growth per year (Eurostat, 2018)). In addition, Conefrey & Fitz Gerald (2010), identified that a strong reliance on the construction sector within one economy, can pose significant spill-over effect on the economy as a whole. These implications need to be considered when searching for real estate investment opportunities.

### 3.2. Corporate level strategy: Possibilities of generating investment opportunities

Since BlueRock Group is struggling to find investment opportunities they are searching for strategies that can provide a sustainable investment opportunity. There are generally five strategies: Concentration, Diversification, Integration, Cooperation and Internationalisation, as seen in figure 2. Figure 2 shows all strategies, gives a definition of each and states specific implementation options. According to Ruzo, Losada, Navarro & Díez (2011) the concentration strategy focuses on the improvement of the product line. It is divided into three options: market penetration strategy, market development type of concentration and product development type of concentration. Unfortunately for BlueRock Group, none of them are offering any solution since the market penetration strategy suggests focusing on the existing market, yet the market is depleted of opportunities (Ruzo, Losada, Navarro & Díez, 2011). The same applies to the market development type of concentration. The last theory (product development type of concentration) suggest introducing a new product to the existing markets. While BlueRock Group is covering a wide range of different products, BlueRock Fund, BlueRock Partners and

BR-NAS, adding more products would overwhelm their capacities. Assuming BlueRock Group would start a product investing in pure property land they would need new highly trained consultants. For that matter BlueRock Group wants to find opportunities within their current capabilities. Zekiri & Nedelea (2012) discussed the strategy of diversification, namely the expansion of operations by developing new products or services. On the one hand stands concentric diversification, introducing new products/services which are closely related to the existing range of products, and on the other hand conglomerate diversification, introducing products/services which are not related to current ones. The latter requires additional expertise which BlueRock Group cannot provide, while the first would overstrain their capacities. Integration cannot only strengthen a company, but also open new markets and reduce costs. As explained by Van de Voorde & Vanelslander (2008) there are two ways to integrate: vertically and horizontally. Vertical integration means to take control of a, in the supply chain situated, operation. This operation exercised by a different company can either be located closer to the final customer (called forward integration) or away from the final customer (backward integration). While BlueRock Group could theoretically acquire a firm conducting due diligence it would conflict with financial regulations and would require a large capital for the integration. Horizontal integration, the integration of a business that provides a similar product, would allow an easier expansion into a new market, yet would also need sufficient capital to proceed. Another strategy examined by Hitt, Ireland & Hoskisson (2012) is cooperation, which describes entering an agreement with a competitor to adopt and carry out operations. This can be done in forms of: a merger, takeover or strategic alliance. Mergers and takeovers are somewhat similar in the sense that they are completely binding and demand a fluent transfer of operations. Strategic alliances on the other hand, especially in form of a joint venture, bypass the high costs of a takeover and also have the flexibility to address only certain operation aspects. For example, one partner provides expertise concerning the market behaviour, while

the other sets up the optimal financing structure, resulting in a perfect capitalisation of core competencies of both parties. The last strategy stated is internationalisation, once all potentials of the domestic market are exploited the company is left with no other choice but to look beyond its national borders. Hitt, Ireland & Hoskisson (2012) mentioned four common strategies: international strategy, multi-domestic strategy, global strategy and transnational strategy. Before going in to detail, one needs to keep in mind that all products of BlueRock Group are accessible to everyone. What BlueRock lacks can be considered as the raw material, the properties to their real estate investment funds. Therefore, a few of the theories mentioned by Hitt, Ireland & Hoskisson (2012) are not applicable, but their message can still be of value e.g. if products are in this case considered raw materials (properties). In case of the international strategy this would mean to search for suitable investment opportunities abroad. Going further by investigating the global strategy, which uses a low-cost structure through standardisation, it can be argued that focusing on properties with similar characteristics will reduce costs and increase the speed of operations since the processes are similar/repetitive (Hitt, Ireland & Hoskisson, 2012).

Concluding one can say, that BlueRock Group has limited options, nonetheless when forming a strategic alliance in form of a joint venture to enter a new market gaining from the partners expertise, while trying to standardise processes by selecting properties with similar characteristics, can provide additional investment opportunities. Depending on the market it might even be possible to enter it without forming a strategic alliance, this would however require the market to be somewhat similar to the markets BlueRock Group is currently exploiting.

### 3.3. Characteristics of the new market

While we concluded in the section before, that BlueRock Group should search for investment opportunities abroad, the next question that arises is: what kind of market should it be looking for? BlueRock Group mentioned in the beginning, that they only invest into markets with a stable and developed economy. Unfortunately, there is still no widely accepted definition of 'economic stability', hence there is no consensus on what policies should be pursued in its interest. Therefore, the next step is to identify characteristics of a stable and developed economy that forms a market preferred by BlueRock Group. To understand what BlueRock Group is looking for we can analyse their expansion to Germany and later Denmark.

In BlueRock Group's corporate presentation is a list with eight factors that were decisive in expanding to Germany as visualized below:

| Factor | Explanation |
|---|---|
| Largest GDP & Population | Germany has the largest GDP and population in Europe with four cities having a population of greater than 1 million. |
| Premium infrastructure | Germany is Europe's number one logistic market. An excellent transportation and communications network assures just-in-time delivery. |
| International airports | Germany has nine major international airports in Frankfurt, Munich, Düsseldorf, Berlin, Hamburg, Cologne, Leipzig, Hannover and Stuttgart. |
| Strong legislation | Germany has highly developed economic and political legislation, providing the necessary legal framework for the protection of investments. |
| Popularity | Germany, based on a 2014 survey of more than 20,000 people in 20 countries, is the world's most popular country. |
| Exporter No. 3 | Germany is the third largest exporter in the world. This supply-side strength is one of the main driving aspects in making Germany one of the top targets for international investors. |
| Low unemployment rate | Germany has one of the lowest unemployment rates in Europe and worldwide. |
| Diversification | Due to Germany's federal nature, it has many strong cities; this variety brings with it opportunities for diversification (70 cities with more than 100,000 inhabitants). |

Similar factors applied to Denmark, with the addition of the banking system. As mentioned in the beginning, Denmark's banks can issue bonds themselves making borrowing cheaper in comparison to banks who need to access the secondary mortgage market. Other factors significant to the economy include according to Grum & Govekar (2016) income, inflation and current accounts of a country. Along with, emigration/immigration as mentioned by Antoniucci & Marella (2017) which serves as a catalyser for real estate opportunities. Last Allen & Wood (2006) stated, that volatility works against stability, leading to the conclusion that a low volatility in GDP and GDP growth are a favourable state.

While having identified several factors, the next step is to select a set of factors and compare countries within the EU, since all countries are fairly close to BlueRock Group's current operations, to ultimately identify a stable economy with prospect.

## 4. Methodology

### 4.1. Characteristics of a stable economy

In the previous sections, the paper discussed factors that are relevant to BlueRock Group as well as factors presented by multiple researcher that contribute to a stable economy. When analysing these factors, one can see that most of them can be described as macroeconomic factors. According to Aver (2008) macroeconomic factors include inflation rate, employment rate, growth in gross domestic product, political stability and a few others. With this definition the factors that were considered contributors to a stable economy on a macroeconomic basis (macroeconomic factors) are the following: Gross GDP; Volatility of Gross GDP; Real GDP growth; Volatility of Real GDP growth; Gross GDP per capita; Export; Exports in percentage of GDP; Population; Population growth; Unemployment rate; Immigration; Immigration in percentage of total population; Wage (100% AW (average wage)); Wage Growth; Sovereignty rating; Debt as percentage of GDP; Total Debt; CPI (Inflation); CPI (Inflation) growth rate;

Interest rate; Interest rate volatility; Legislation (according to level of corruption). The data for most factors was retrieved from Eurostat, which is the statistical office of the European Union as well as Standard & Poor's (S&P), Moody's and Fitch for credit ratings.

Some of these factors need additional explaining, since GDP is an essential part of stability the paper intended to capture all aspects of it. For once by using nominal and real values, where nominal GDP is valuated at current market prices. This value however can be inaccurate due to changes in quantities of goods and services along with deviations in general price levels. Taking changes in price levels into account (by using inflation) is necessary to determine the GDPs development in an adjusted comparison (real GDP). Furthermore, wage per country was based on a single person without children, using 100% of AW (average wage). The sovereignty rating was calculated by first assigning values from 0 to 100 to each possible credit rating given by S&P, Moody's and Fitch to each country. Afterwards the average of the rating would provide the overall credit rating of a country. In order to measure the inflation, a harmonized consumer price index (HICP) was used, starting with a value of 100 in 2015 and unadjusted data (i.e. neither seasonally adjusted nor calendar adjusted data). The value of 100 in 2015 serves as benchmark, hence an index for example of 105 means, that there has been a 5% increase in price since the reference period. In opposite terms, an index of 95 means there has been a 5% decrease. While the index provides a confident level of the inflation/deflation, it is yet very difficult to evaluate it. In general, there is no optimal inflation level, although Billi & Kahn (2008) estimated a range from 0,7% to 1,4% per year as ideal. Nonetheless, country's inflation objectives can vary from 0% up to 4%, depending on its economy and macroeconomic factors. For that reason, this paper ignores the inflation as a meaningful factor, as long as it moves within a reasonable range. Concerning the interest rate, the yield of a 10 years government bond was used, the yields are calculated form not seasonally adjusted data. The bond or the bonds of the basket are replaced regularly to avoid any maturity drift and provide the most accurate rate

(Eurostat, 2018). Last, the measurement of legislations. The Transparency International e.V. is an international non-profit non-governmental organization whose purpose is, to tackle global corruption with civil societal anti-corruption measures. Therefore, it publishes the widely recognized Corruption Perceptions Index (CPI). This index describes, in a scale of 1-100 (1 highest level of corruption - 100 lowest level of corruption), the country's level of corruption, which can be reversely interpreted as an indicator of legislation.

The output of the stated factors, provided by Eurostat, can be seen in figure 3: Macroeconomic factors of EU, it contains the latest available numbers.

### 4.2. Selection of stable economy within the EU

To determine which country in the EU offers the most favourable economy condition a scorecard system is used. Scorecards have the ability to compare several factors at the same time by transforming values into a point-based ranking. As to BlueRock Group all factors are equally important, the paper follows that premise and weighs each factor the same. Furthermore, it is assumed that lower volatility favours a stable economy. Points from 1-28 (there are 28 countries in the EU) are assigned, by ranking each country by factor from best (28 points) to worst (1 point) (see figure 4). As mentioned previously CPI (Inflation) and CPI growth rate are not included, therefore the columns are empty.

To derive the final ranking, first the total of each rank within a factor is computed and then divided by the total number of factors to calculate the average score (out of 28). This calculation is done for each country, resulting in a final average score that can be ranked from highest (best value) to lowest (worst value), see figure 5. Thus, the top 3 economies consist of the Netherlands (19,75 average), Denmark (18,7 average) and Germany (18,6 average) respectively. Since BlueRock Group is already present in Denmark and Germany, this paper will deepen its search for investment opportunity within the Netherlands. In addition, the

Netherlands are ranked high in almost all analysed categories such as: GDP per capita (24 points), export (25 points), sovereignty rating (24 points) and legislation rating (23 points). This consistency is another reason why this paper focuses on the Netherlands.

### 4.3. Investment opportunities in the Netherlands

The first step in identifying investment opportunities in the Netherlands is to analyse the housing market. To be more precise, which factors are correlating with the housing prices. The variables net national income, interest rate and stock prices were, according to Sutton (2002), drivers for fluctuations in housing prices. The aim is to identify factors with an exactable correlation, in order to construct a model that represents housing prices, the input for the analysis can be seen in figure 6.

Due to limited access to data, only rent, real-, nominal residential property prices will be investigated in order to describe the Dutch real estate market.

The following hypotheses will be examined:

$H_1$: Rent, real-, nominal residential property prices are correlated with the interest rate (interest_rate).

$H_2$: Rent, real-, nominal residential property prices are correlated with stock price performance (stock_perf).

$H_3$: Rent, real-, nominal residential property prices are correlated with net national income growth (net_nat_inc).

$H_4$: Rent, real-, nominal residential property prices are correlated with GDP growth (GDP_growth).

$H_5$: Rent, real-, nominal residential property prices are correlated with export growth (export_growth).

$H_6$: Rent, real-, nominal residential property prices are correlated with the derived inflation rate in form of the CPI (CPI_derived).

$H_7$: Rent, real-, nominal residential property prices are correlated with the inflation rate in form of the HCPI (HCPI).

$H_8$: Rent, real-, nominal residential property prices are correlated with the unemployment rate (unemployment_rate).

$H_9$: Rent, real-, nominal residential property prices are correlated with the crime rate (crime_rate).

$H_{10}$: Rent, real-, nominal residential property prices are correlated with the wage growth (wage_growth).

$H_{11}$: Rent, real-, nominal residential property prices are correlated with population growth (population_growth).

Before starting the analysis, a short explanation of the predictors is necessary. The interest rate for once is based on the 10y government bond of the Netherlands. The stock market performance uses the S&P 500 as indicator. The derived annual rate of change of CPI is the same as the normal annual rate with the exception that it excludes the effects of changes in the rates of product-related taxes (e.g. VAT and excise on alcohol and tobacco) and subsidies (Eurostat, 2018). Basically, the derived CPI answers the question of how prices would have changed if the tax rates had remained the same as in the base year. The HCPI is a price index calculated according to standardised EU guidelines. Thus, it can be used to compare developments between different countries within the EU. Furthermore, the HCPI is based on all expenditure on Dutch territory and therefore includes expenditures by foreign visitors. Most importantly however, the HCPI does not include expenditures on own homes.

Concerning the dependent variables (rent, nominal residential property prices, real residential property prices): rent_growth, RPP_N and RPP_R some details need mentioning. The rent was calculated by using the average rent increase for dwellings in the Netherlands (including harmonisation of rent). The only difference between nominal residential property prices and real residential property prices is, that the latter is adjusted for inflation.

With the dependent and independent variables explained, the first step of the analysis is to check for correlations. The data set includes values from 1997-2016 resulting in a sample size of 20 for each variable. Correlations were identified with the Pearson Correlation method.

Figure 7 displays all correlations towards rent_growth as well as the correlations among the predictors. As the output shows, the only significant independent variable for rent_growth is stock_perf with an $\alpha$ of <0,05 and a correlation value of 0,491. While unemployment_rate presents a Pearson Correlation of 0,397, its $\alpha$ is >0,05 consequential an insignificant result which needs to be discarded.

The correlations between RPP_N and the independent variables are shown in figure 8, unlike in the previous analysis several statistically significant correlations can be identified including: interest_rate, net_nat_inc, GDP_growth, wage_growth and population_growth. The highest correlation is present between GDP_growth and RPP_N with 0,777.

The last correlation figure (figure 9) shows the relationships between RPP_R and the intendent variables. Unsurprisingly the same independent variables as in the analysis of RPP_N present a correlation. This is mainly due to the almost identical values between RPP_N and RPP_R. When comparing the correlation of GDP_growth we can see there is still a slight deviation of 0,795 to RPP_R and 0,777 to RPP_N.

The three correlation figures also show significant intercorrelations amongst the predictors, e.g. between unemployment_rate and interest_rate, with 0,757 and a $\alpha$ is <0,05. By using multiple

linear regression, the unique contributions of each variable as a predictor to Rent_growth, RPP_N and RPP_R. can be decomposed. This enables a clear view on factors influencing the housing market.

In conclusion the statistical outputs reveal several correlations, answering the before stated hypotheses. Concerning the dependent variable rent_growth, the only hypothesis validated, thus conforming a correlation, is $H_2$. All other hypotheses are hence rejected. With RPP_N being the independent variable, the output identified correlations with Interest_rate, Net_nat_inc, GDP_growth, Wage_growth, Population_growth, proving the hypotheses $H_1$, $H_3$, $H_4$, $H_{10}$, and $H_{11}$. The same hypotheses were true for the dependent variable of RPP_R. Consequently, the hypotheses $H_2$, $H_5$, $H_6$, $H_7$, $H_8$, and $H_9$ are rejected when RPP_N and RPP_R is the dependent variable.

Before continuing with the execution of a multiple linear regression, the dependent variable RPP_N will be ignored from this point on, due to its high level of similarity to RPP_R. Furthermore, RPP_R is adjusted for inflation making its results more meaningful.

To achieve the best model for explaining rent_growth and RPP_R all independent variables will be considered. The method Stepwise was used to determine statistically significant predictors. Stepwise uses the correlation matrix and chooses the independent variable with the largest Pearson Correlation to the dependent variable and puts it into the regression analysis. Stepwise then chooses, from the correlation matrix, the next highest predictor of the dependent variable. It stops the process once there are only non-significant predictors left. The significance level is tested via F-tests, adjusted R squared, etc. Essentially, the goal is to identify a set of predictors which significantly describe the dependent variable.

The multiple linear regression using stepwise for rent_growth first provides a figure showing the variables which were entered or removed in order to form a model (figure 10). As one can

see only one variable was entered to the model, stock_perf. Knowing from the correlation matrix, that stock_perf was the only significant predictor with a correlation it is no surprise, that only this variable was added to the model. Figure 11 shows the final regression model, consisting of a constant and the predictor stock_perf. The R-square of 0,241 indicates, that the model is explaining 24,1% of the dependent variable (rent_growth), yet due to the small sample size the adjusted R-square is only 0,199 explaining 19,9%. Further, it shows the Durbin-Watson value which is 1,218, implying a high chance of autocorrelation which would require additional testing. The ANOVA output (figure 12) confirms that the current model is, under the premise that all multiple linear regression assumptions are fulfilled, significant with an α of <0,05. However, since the model explains only 24,1% of rent_growth it is not sufficiently predictable and will thus be neglected.

The second multiple linear regression attempts to describe RPP_R, the same procedure as for rent_growth will be used to create a model. Figure 13 shows the variables which were entered or removed to create the model. According with the correlation matrix, which identified several independent variables correlated to RPP_R, three predictors were selected in the following order to develop the model: GDP_growth, population_growth and stock_perf. As the model summary (figure 14) shows, by increasing the number of independent variables the R-square increases, meaning the model with the full three predictors is explaining 0,836 (83,6%) of the dependent variable RPP_R. The adjusted R-square is slightly lower with 0,805 (80,5%) as it considers the sample size. Moreover, the Durbin-Watson statistic is presented, which is a measure to test autocorrelation in the residuals from a statistical regression analysis. The Durbin-Watson statistic is always between 0 and 4. A value of 2 suggests that there is no autocorrelation in the sample, with the value presented being 1,933, autocorrelation doesn't seem to be an issue. In addition, the ANOVA output (figure 15) confirms with an α of <0,001

for the last sequence (3), which includes the constant, GDP_growth, Population_growth and Stock_perf, a highly significant model.

Analysing the coefficients of the dependent variable RPP_R (figure 16) one can analyse the unique contribution of each variable as a predictor to the dependent variable with the standardized beta coefficients. Thus GDP_growth identifies as largest contributor (0,867) to the regression equation, whereas Population_growth contributes only 0,315. Interesting to see is, that the predictor Stock_perf doesn't contribute in the same way as the others, while higher levels of GDP_growth and Population_growth are associated with higher growth of RPP_R, Stock_perf indicates an opposite contribution due to a negative value of -0,279. This would suggest that a higher stock performance reduces real residential property prices. The output also shows that all predictors are statistically significant as their $\alpha$ is <0,05. The confidence interval of the unstandardized beta weights is worth mentioning as well, especially since the sample size is comparatively small. While GDP_growth and Stock_perf have reasonable upper and lower bounds to their betas, Population_growth shows a much larger spread with a beta of 11,592 and a lower and upper bound of 3,236 and 19,948 respectively. Concerning potential multicollinearity, one finds that all predictors have a tolerance level of >0,1 as well as a variance inflation factor (VIF) under 10, indicating no multicollinearity.

The histogram of the residuals shown in figure 17 should ideally follow a normal distribution, which in this case is close to normal. Also, the normal P-P plot of regression standardized residuals presenting the line of least squares (line of greatest fit) seems correct, as all values lie on or very close to the line (figure 18). Last, the scatterplot depicting the regression standardized predicted values (x-axis) against regression standardized residuals (y-axis), provides a visual approach towards identifying heteroscedasticity (figure 19). Since the plots are randomly spread across, there is no heteroscedasticity in the model, thus it is homoscedastic.

The model derived from the regression analysis is significant and explains over 80% of the real residential housing prices. With all variables being in the same unit form, the model quantifies the strengths of the relations as:

$$RPP\_R = (2{,}127 \times GDP\_growth) + (11{,}592 \times Population\_growth) + (-0{,}101 \times Stock\_perf) - 0{,}099$$

In order to discover investment opportunities for BlueRock Group the regression model will be used to forecast real residential housing prices in the Netherlands. The general assumption in this context is, that housing prices need to increase in order to create investment opportunities. Figure 20 shows the forecast calculation for the years 2019 and 2020 based on current estimations for the predictors. For 2019 the model predicts a decline of 0,15% for the real residential housing prices and for 2020 a decline of 2,16%. While the model represents about 80% of the real residential housing prices, these values will give a sense of direction for the market.

## 5. Results

Starting from the beginning, identifying investment opportunities for BlueRock Group commenced by understanding their business. The paper concluded that BlueRock Group depleted all opportunities within its markets, calling for expansion strategies. Five strategies were discussed, with each having multiple fields of application, leading to the result that for creating new investment opportunities BlueRock Group needs to expand to a different country. To decide on a country, characteristics of a stable economy were described as BlueRock Group's policy is to work solely in stable environments. Combining BlueRock Group's preferences with researchers' findings, a substantial list of variables was created. Using a scorecard, the variables were compared between the 28 European Union countries by assigning points from 1-28, 28 being the highest/best score. The summation of the scores revealed that

the Netherlands has the highest score with 19,75 on average. In order to find investment opportunities in the Netherlands, the paper assumes that it requires rent and housing prices to increase. Therefore, a regression analysis was conducted on both rent and nominal & real residential housing prices. The regression model was incapable of explaining rent to a sufficient degree, resulting in neglecting that factor. In addition, the paper focused on real residential housing prices as they are more explanatory due to their adjustment for inflation. The regression was able to create a statistically significant model, which explains over 80% of real residential housing prices. Lastly, a forecast of real residential housing prices for the years 2019 and 2020 for the Netherlands was calculated, based on statistical estimations of the predictors. The results show that the model predicts a decline of 0,15% for 2019 and a decline of 2,16% for 2020.

## 6. Evaluation

To pursue an expansion strategy a search for investment opportunities abroad was the first step. However, one still needs to keep in mind, that there are viable options such as forming a strategic alliance in form of a joint venture to enter a new market, gaining from the partner's expertise. Furthermore, selecting a stable economy using the scorecard method presents all EU countries in a ranking, while the Netherlands was ranked best capitalising on strong exports performances and low volatility rates, that doesn't necessarily exclude all other countries. In fact, it could be argued, that the best 5 are worth analysing. To create the most explanatory regression model for real residential property prices, all available independent variables are considered. Therefore, the method Stepwise is used to determine statistically significant predictors. This method relies on the statistics program to select the variables that form the best explaining model. As mentioned in the previous section, the paper finds a decline of 0,15% for 2019 and a decline of 2,16% for 2020 for real residential housing prices with the final model, which includes GDP_growth, Stock_perf and Population_growth as predictor. The forecasted decline in prices would lower the return on investment for BlueRock Group, which is why the

residential housing market in the Netherlands doesn't seem to be a suitable investment opportunity. Still, one needs to keep in mind, that the sample size for the regression model is relatively small, due to a lack of data, thus might be subject to small deviations. While for the forecast it was necessary to base the predictors on an external estimation, the findings might not depict a significant result. Nonetheless, the Netherlands is identified as the strongest overall economy, based on the here used factors, in the EU.

## 7. Conclusion and Discussion

This paper investigates real estate investment opportunities for BlueRock Group, starting by analyzing corporate strategies in the literature review. The findings show that BlueRock Group has currently limited access to new opportunities. Thus, after discussing possible strategic steps for BlueRock Group the conclusion let to an expansion of BlueRock Group's operations. All EU countries were considered for possible expansion, with the help of a scorecard macroeconomic factors were evaluated determining the Netherlands as most suitable economy. While the paper tried to establish a regression model explaining rent growth and real residential housing prices, it failed to provide enough significant predictors for rent growth. For real residential housing prices on the other hand, a significant model constructed by the regression explains over 80% of said variable. Implementing the model in a forecast calculation, it predicts a decline of 0,15% for 2019 and a decline of 2,16% for 2020 in real residential housing prices. With a negative outlook on real estate prices in the residential market in the Netherlands, BlueRock Group is advised to search for investment opportunities in either a different market (e.g. commercial) or in a different economy. Since the Netherlands is determined as the most stable economy in the EU, future research should investigate its commercial property market. While this study had problems generating a sufficient sample size, future study should focus on increasing its sample size in order to achieve a higher validity of the findings. Another

opportunity could result from forming a strategic alliance in form of a joint venture, and as BlueRock Group has experience in that field it might be a feasible option.

Although this study couldn't provide BlueRock Group with a tangible investment opportunity, it created a model very significant to real residential housing prices. In addition, the scorecard contains further valuable information about other economies that might provide real estate investment opportunities.

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# 9. Appendix

Figure 1: BlueRock Group Financing Example

| Deal Costs | | | |
|---|---|---|---|
| | | | |
| | | | |
| Purchase Price | | € | 60'000'000.00 |
| | | | |
| Real Estate Transfer Tax | 6.50% | € | 3'900'000.00 |
| | | | |
| Notary and Register | 0.275% | € | 165'000.00 |
| | | | |
| HEUSSEN (Tax DD) | | € | 55'000.00 |
| | | | |
| Economical + Tax DD | | € | 22'000.00 |
| | | | |
| Transaction Services Diligencia | | € | 20'000.00 |
| | | | |
| Bank Service Charge | 0.50% | € | 225'000.00 |
| | | | |
| Brokers | 2.50% | € | 1'500'000.00 |
| Finance Fee Broker | 0.40% | € | 180'000.00 |
| **Total Deal Costs** | | **€** | **66'067'000.00** |

| Financing Terms | | | |
|---|---|---|---|
| Bank | 75% | € | 45'000'000.00 |
| Interest | 2.42% | 10 Years fix | |
| Principal payment | 1.80% | | |

Figure 2: 5 Strategies

| | Name | Definition | Option |
|---|---|---|---|
| 5 Strategies | **Concentration** | The market concentration strategy involves the investment of resources in the product line, aiming for a more intense penetration, and subsequently expanding into new markets over time. It is usually the first strategy to apply since it uses already implemented operations to expand the business. | **Market penetration strategy:** The company focuses intensely on the existing market with its current product. |
| | | | **Market development type of concentration:** The company attracts new customers for the existing product. |
| | | | **Product development type of concentration:** The company introduces a new prodcut in the existing market. |
| | **Diversification** | Diversification is used to expand companies' operations by developing new products/services or adding markets. It ultimately allows the company to enter lines of business, that are different from its current operations. | **Concentric diversification:** The company introduces a new product or service which is closely related to the existing range of products and services. It is usually applied, when the industry itself is becomming unattractive forcing the company to change. |
| | | | **Conglomerate diversification:** The company expands into different areas which are not directly linked with the core activity of the company. As a result, the company can choose to a competly unrelated industry. |
| | **Integration** | It is a competitive strategy to strengthen the company's position by adopting more operations from the value chain or prodcuts with similar characteristics. | **Vertical integration:** There are two types: forward and backward integration. When the company takes control over operations located closer to the ultimate customers, one speaks of a forward integration, while moving away from the ultimate customer is descirbed as a backward integration. |
| | | | **Horizontal Integration:** Adopting a business activity that is at the same level of the value chain, or in other words a business with a similar product, one speaks of a horizontal integration. |
| | **Cooperation** | The company expands ist business and competitiveness by entering into an agreement with a competitor to adopt and carry out the operations. | **Merger:** The merger is the combination of at least two companies integrating their operations on a relatively co-equal basis. |
| | | | **Takeover:** One company acquires the other in such a way, that gains full responsible for all the acquired operations. Takeovers can either be friendly (both parties agree on the takeover) or hostile (one company either known or unknown takes the target firm). |
| | | | **Strategic alliance:** Can be executed in form of a joint venture, is a cooperations between two companies. They unite business operations to capitalise on eithers expertise (e.g. market knowledge or technology), yet both companies will part once a specific goal is achieved. |
| | **Internationalisation** | When a company has exploited all potentials of the domestic market, it searches for opportunities beyond the national boundaries, thus expands through internationalisation. | **International strategy:** The company provides ist current products and services, sometimes with slight alterations, to foreign markets. |
| | | | **Multi-domestic strategy:** Under this strategy, a strategic business unit in the new country is providing tailored products to the local market. |
| | | | **Global strategy:** It can be described as a low-cost structure standardising products for all markets. |
| | | | **Transnational strategy:** Simply stated it is the combination of a multi-domestic and global strategy. The company strives for both global efficiency and local responsiveness. |

Figure 3: Macroeconomic factors of EU

| Country/Factor | Gross GDP in mio. | Volatility of Gross GDP | Real GDP growth | Volatility of Real GDP growth | Gross GDP per capita | Export in € mio. | Exports in % of GDP | Population | Population growth | Unemployment rate | Immigration | Immigration in % of total population | Wage in € (100% AW) | Wage Growth | Sovereignty rating | Debt as % of GDP | Total Debt in mio € | CPI (Inflation) | CPI (Inflation) growth rate | Interest rate | Interest rate volatility | Legislation rating* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Time | 2017 | 10y period | 2017 | 12y period | 2017 | 2017 | 2017 | 2018 | 10y average | 2017 | 2016 | 2016 | 2015 | 2015 | 2018 | 2018 | 2018 | 2018 | 2018 | 2018 | Monthly | 2017 |
| Austria | 369.899 | 1,8% | 2,6% | 1,9% | 42.164 | 198.636 | 53,7% | 8.822.267 | 0,58% | 5,5% | 129.509 | 1,5% | 28.524 | 2,0% | 95,00 | 77,2% | 289.079 | 103,86 | 1,9% | 0,69% | 12,8% | 75 |
| Belgium | 439.052 | 1,7% | 1,7% | 1,4% | 38.677 | 376.707 | 85,8% | 11.413.058 | 0,70% | 7,1% | 123.702 | 1,1% | 26.954 | 0,7% | 86,67 | 106,8% | 469.920 | 103,82 | 1,8% | 0,85% | 14,8% | 75 |
| Bulgaria | 51.663 | 2,8% | 3,8% | 3,0% | 7.275 | 34.821 | 67,4% | 7.050.034 | -0,64% | 6,2% | 21.241 | 0,3% | 4.334 | 8,8% | 58,33 | 24,3% | 12.727 | 101,08 | 1,3% | 0,74% | 9,4% | 43 |
| Croatia | 48.990 | 3,3% | 2,9% | 3,4% | 11.793 | 25.034 | 51,1% | 4.105.493 | -0,38% | 11,1% | 13.985 | 0,3% | 8.842 | 3,7% | 48,33 | 76,1% | 37.790 | 100,75 | 1,2% | 2,09% | 2,9% | 49 |
| Cyprus | 19.571 | 3,8% | 4,2% | 3,4% | 22.895 | 12.721 | 65,0% | 864.236 | 1,22% | 11,1% | 17.391 | 2,1% | n/a | n/a | 51,67 | 93,4% | 18.531 | 96,47 | -1,5% | 2,35% | 11,8% | 57 |
| Czech Republic | 191.643 | 5,1% | 4,3% | 3,1% | 18.116 | 152.931 | 79,8% | 10.610.055 | 0,31% | 2,9% | 64.083 | 0,6% | 8.941 | 2,6% | 83,33 | 35,8% | 72.069 | 104,4 | 2,1% | 2,14% | 7,4% | 57 |
| Denmark | 292.806 | 2,5% | 2,3% | 2,1% | 50.934 | 159.579 | 54,5% | 5.781.190 | 0,54% | 5,7% | 74.383 | 1,3% | 34.878 | 5,6% | 100,00 | 36,2% | 104.137 | 100,6 | 0,6% | 0,42% | 19,4% | 88 |
| Estonia | 23.615 | 7,4% | 4,9% | 6,3% | 17.950 | 18.066 | 76,5% | 1.319.133 | -0,20% | 5,8% | 14.822 | 1,1% | 10.638 | 7,3% | 83,33 | 8,5% | 2.046 | 105,28 | 3,6% | n/a | n/a | 71 |
| Finland | 223.843 | 3,2% | 2,8% | 3,4% | 40.674 | 86.180 | 38,5% | 5.513.130 | 0,42% | 8,6% | 34.905 | 0,6% | 29.981 | 1,1% | 95,00 | 60,0% | 135.436 | 101,26 | 0,8% | 0,73% | 14,3% | 85 |
| France | 2.291.705 | 1,7% | 2,2% | 1,4% | 34.210 | 708.137 | 30,9% | 67.221.943 | 0,51% | 9,4% | 378.115 | 0,6% | 26.775 | 0,7% | 90,00 | 99,4% | 2.294.645 | 102,06 | 1,5% | 0,82% | 11,3% | 70 |
| Germany | 3.277.340 | 2,5% | 2,2% | 2,5% | 39.715 | 1.540.350 | 47,0% | 82.850.000 | 0,03% | 3,8% | 1.029.852 | 1,3% | 28.268 | 2,2% | 100,00 | 62,7% | 2.069.912 | 102,4 | 1,4% | 0,40% | 22,6% | 81 |
| Greece | 180.218 | 3,5% | 1,5% | 4,2% | 16.736 | 59.472 | 33,0% | 10.738.868 | -0,24% | 21,5% | 116.867 | 1,1% | 15.234 | -0,6% | 33,33 | 180,3% | 322.568 | 100,00 | 0,2% | 4,37% | 8,9% | 48 |
| Hungary | 124.050 | 6,0% | 4,1% | 2,9% | 12.661 | 109.412 | 88,2% | 9.778.371 | -0,27% | 4,2% | 53.618 | 0,5% | 6.702 | 5,0% | 55,00 | 73,6% | 92.183 | 104,01 | 2,1% | 3,74% | 8,7% | 45 |
| Ireland | 294.110 | 10,0% | 7,2% | 7,4% | 61.473 | 352.638 | 119,9% | 4.838.259 | 0,98% | 6,7% | 85.185 | 1,8% | 27.906 | 2,3% | 78,33 | 69,3% | 210.200 | 99,2 | 0,3% | 1,01% | 17,7% | 74 |
| Italy | 1.724.955 | 2,0% | 1,6% | 2,2% | 28.470 | 538.186 | 31,2% | 60.483.973 | 0,40% | 11,2% | 300.823 | 0,5% | 21.114 | 0,9% | 58,33 | 132,9% | 2.302.766 | 100,6 | 1,2% | 3,47% | 11,5% | 50 |
| Latvia | 27.033 | 10,7% | 4,6% | 6,6% | 13.862 | 16.517 | 61,1% | 1.934.379 | -1,24% | 8,7% | 8.345 | 0,4% | 6.815 | 8,8% | 71,67 | 35,5% | 9.765 | 103,49 | 2,0% | 2,01% | 10,4% | 58 |
| Lithuania | 42.191 | 8,2% | 4,1% | 5,9% | 14.815 | 34.132 | 80,9% | 2.808.901 | -1,31% | 7,1% | 20.162 | 0,7% | 6.652 | 5,8% | 71,67 | 36,0% | 15.377 | 105,87 | 3,6% | n/a | n/a | 59 |
| Luxembourg | 55.299 | 3,2% | 1,5% | 3,2% | 93.622 | 123.373 | 223,1% | 602.005 | 2,18% | 5,6% | 22.888 | 4,0% | 38.631 | 0,5% | 100,00 | 22,2% | 12.474 | 101,90 | 1,3% | 0,56% | 13,0% | 82 |
| Malta | 11.140 | 3,3% | 6,7% | 3,1% | 24.201 | 15.072 | 135,3% | 475.701 | 1,28% | 4,0% | 17.051 | 3,8% | 16.924 | 2,1% | 73,33 | 50,5% | 5.719 | 99,63 | 1,2% | 1,56% | 7,5% | 56 |
| Netherlands | 737.048 | 2,0% | 2,9% | 2,0% | 43.149 | 611.750 | 83,0% | 17.181.084 | 0,43% | 4,9% | 189.232 | 1,1% | 34.826 | 4,8% | 100,00 | 55,1% | 411.482 | 101,12 | 1,5% | 0,58% | 15,8% | 82 |
| Poland | 467.167 | 7,2% | 4,8% | 1,6% | 12.303 | 253.672 | 54,3% | 37.976.687 | -0,04% | 4,9% | 208.302 | 0,5% | 8.967 | 17,8% | 71,67 | 51,3% | 244.951 | 102,4 | 1,6% | 3,22% | 3,3% | 60 |
| Portugal | 194.614 | 2,9% | 2,8% | 2,2% | 18.877 | 83.100 | 42,7% | 10.291.027 | -0,21% | 9,0% | 29.925 | 0,3% | 12.400 | -1,8% | 56,67 | 125,4% | 246.014 | 101,15 | 1,1% | 1,96% | 7,1% | 63 |
| Romania | 187.940 | 7,3% | 7,3% | 4,1% | 9.567 | 77.807 | 41,4% | 19.523.621 | -0,73% | 4,9% | 137.455 | 0,7% | 5.119 | 11,0% | 55,00 | 34,5% | 64.805 | 102,66 | 3,4% | 4,90% | 3,5% | 48 |
| Slovakia | 84.851 | 2,3% | 3,2% | 3,8% | 15.611 | 82.221 | 96,9% | 5.443.120 | 0,12% | 8,1% | 7.686 | 0,1% | 8.201 | 2,1% | 78,33 | 50,8% | 43.749 | 102,59 | 2,6% | 1,07% | 10,9% | 50 |
| Slovenia | 43.000 | 3,2% | 4,9% | 3,9% | 20.814 | 35.647 | 82,9% | 2.066.880 | 0,27% | 6,6% | 16.623 | 0,8% | 12.062 | 0,7% | 71,67 | 75,5% | 32.996 | 101,56 | 1,7% | 0,92% | 16,5% | 61 |
| Spain | 1.166.319 | 2,7% | 3,0% | 2,6% | 25.068 | 400.047 | 34,3% | 46.659.302 | 0,38% | 17,2% | 414.746 | 0,9% | 20.845 | 3,3% | 68,33 | 98,7% | 1.160.736 | 101,22 | 0,7% | 1,60% | 7,4% | 57 |
| Sweden | 475.231 | 7,6% | 2,1% | 2,8% | 47.546 | 215.755 | 45,4% | 10.120.242 | 0,93% | 6,7% | 163.005 | 1,7% | 33.920 | 0,0% | 100,00 | 38,1% | 171.726 | 103,10 | 1,6% | 0,67% | 11,5% | 84 |
| United Kingdom | 2.332.087 | 8,6% | 1,7% | 1,8% | 35.437 | 704.290 | 30,2% | 66.238.007 | 0,75% | 4,4% | 588.993 | 0,9% | 37.995 | 12,7% | 90,00 | 85,6% | 2.016.042 | 104,4 | 3,0% | 1,56% | 8,0% | 82 |

Figure 4: Scorecard

| Country/Factor | Gross GDP in mio. | Volatility of Gross GDP | Real GDP growth | Volatility of Real GDP growth | Gross GDP per capita | Export in € mio. | Exports in % of GDP | Population | Population growth | Unemployment rate | Immigration | Immigration in % of total population | Wage in € (100% AW) | Wage Growth | Sovereignty rating | Debt as % of GDP | Total Debt in mio € | CPI (Inflation) | CPI (Inflation) growth rate | Interest rate | Interest rate volatility | Legislation rating* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Time | 2017 | 10y period | 2017 | 12y period | 2017 | 2017 | 2017 | 2018 | 10y average | 2017 | 2016 | 2016 | 2015 | 2015 | 2018 | 2018 | 2018 | 2018 | 2018 | 2018 | Monthly | 2017 |
| Austria | 19 | 26 | 10 | 24 | 23 | 18 | 12 | 14 | 21 | 20 | 19 | 23 | 21 | 10 | 22 | 9 | 9 | | | 21 | 9 | 20 |
| Belgium | 20 | 28 | 4 | 27 | 20 | 22 | 23 | 20 | 22 | 11 | 18 | 18 | 18 | 5 | 19 | 4 | 6 | | | 17 | 6 | 20 |
| Bulgaria | 8 | 19 | 17 | 15 | 1 | 7 | 17 | 13 | 4 | 16 | 9 | 3 | 1 | 24 | 7 | 26 | 24 | | | 19 | 16 | 1 |
| Croatia | 7 | 14 | 13 | 11 | 3 | 5 | 11 | 8 | 5 | 4 | 3 | 4 | 7 | 17 | 2 | 10 | 20 | | | 8 | 26 | 5 |
| Cyprus | 2 | 11 | 20 | 9 | 14 | 1 | 16 | 3 | 26 | 4 | 7 | 26 | n/a | n/a | 3 | 7 | 22 | | | 6 | 10 | 9 |
| Czech Republic | 14 | 10 | 21 | 14 | 11 | 16 | 19 | 18 | 14 | 28 | 14 | 10 | 8 | 15 | 17 | 23 | 17 | | | 7 | 22 | 9 |
| Denmark | 17 | 22 | 9 | 22 | 26 | 17 | 14 | 12 | 20 | 18 | 15 | 22 | 25 | 20 | 24 | 21 | 15 | | | 25 | 2 | 28 |
| Estonia | 3 | 6 | 24 | 3 | 10 | 4 | 18 | 4 | 9 | 17 | 4 | 20 | 10 | 22 | 17 | 28 | 28 | | | n/a | n/a | 18 |
| Finland | 16 | 17 | 11 | 10 | 22 | 13 | 6 | 11 | 17 | 9 | 12 | 11 | 22 | 9 | 22 | 15 | 14 | | | 20 | 7 | 27 |
| France | 26 | 27 | 7 | 28 | 18 | 27 | 2 | 27 | 19 | 6 | 25 | 9 | 17 | 7 | 20 | 5 | 2 | | | 18 | 13 | 17 |
| Germany | 28 | 21 | 7 | 19 | 21 | 28 | 10 | 28 | 11 | 27 | 28 | 21 | 20 | 13 | 24 | 14 | 3 | | | 26 | 1 | 22 |
| Greece | 12 | 12 | 1 | 5 | 9 | 9 | 4 | 19 | 7 | 1 | 17 | 17 | 13 | 2 | 1 | 1 | 8 | | | 2 | 17 | 3 |
| Hungary | 11 | 9 | 18 | 16 | 5 | 14 | 24 | 15 | 6 | 25 | 13 | 7 | 4 | 19 | 4 | 12 | 16 | | | 3 | 18 | 2 |
| Ireland | 18 | 2 | 27 | 1 | 27 | 21 | 26 | 9 | 25 | 13 | 16 | 25 | 19 | 14 | 15 | 13 | 12 | | | 14 | 3 | 19 |
| Italy | 25 | 25 | 3 | 21 | 17 | 24 | 3 | 25 | 16 | 3 | 24 | 6 | 16 | 8 | 7 | 2 | 1 | | | 4 | 12 | 6 |
| Latvia | 4 | 1 | 22 | 2 | 6 | 3 | 15 | 5 | 2 | 8 | 2 | 5 | 5 | 23 | 10 | 24 | 26 | | | 14 | 15 | 12 |
| Lithuania | 5 | 4 | 18 | 4 | 7 | 6 | 20 | 7 | 1 | 11 | 8 | 13 | 3 | 21 | 10 | 22 | 23 | | | n/a | n/a | 13 |
| Luxembourg | 9 | 16 | 1 | 12 | 28 | 15 | 28 | 2 | 28 | 19 | 10 | 28 | 27 | 4 | 24 | 27 | 25 | | | 24 | 8 | 23 |
| Malta | 1 | 13 | 26 | 13 | 15 | 2 | 27 | 1 | 27 | 26 | 6 | 27 | 14 | 11 | 14 | 19 | 27 | | | 11 | 20 | 8 |
| Netherlands | 23 | 24 | 13 | 23 | 24 | 25 | 22 | 21 | 18 | 21 | 22 | 19 | 24 | 18 | 24 | 16 | 7 | | | 23 | 5 | 23 |
| Poland | 21 | 8 | 23 | 26 | 4 | 20 | 13 | 23 | 10 | 21 | 23 | 8 | 9 | 27 | 10 | 17 | 11 | | | 5 | 25 | 14 |
| Portugal | 15 | 18 | 11 | 20 | 12 | 12 | 8 | 17 | 8 | 7 | 11 | 2 | 12 | 1 | 6 | 3 | 10 | | | 9 | 23 | 16 |
| Romania | 13 | 7 | 28 | 6 | 2 | 10 | 7 | 22 | 3 | 21 | 20 | 12 | 2 | 25 | 4 | 25 | 18 | | | 1 | 24 | 3 |
| Slovakia | 10 | 23 | 16 | 8 | 8 | 11 | 25 | 10 | 12 | 10 | 1 | 1 | 6 | 12 | 15 | 18 | 19 | | | 13 | 14 | 6 |
| Slovenia | 6 | 15 | 24 | 7 | 13 | 8 | 21 | 6 | 13 | 15 | 5 | 14 | 11 | 6 | 10 | 11 | 21 | | | 16 | 4 | 15 |
| Spain | 24 | 20 | 15 | 18 | 16 | 23 | 5 | 24 | 15 | 2 | 26 | 15 | 15 | 16 | 9 | 6 | 5 | | | 10 | 21 | 9 |
| Sweden | 22 | 5 | 6 | 17 | 25 | 19 | 9 | 16 | 24 | 13 | 21 | 24 | 23 | 3 | 24 | 20 | 13 | | | 22 | 11 | 26 |
| United Kingdom | 27 | 3 | 4 | 25 | 19 | 26 | 1 | 26 | 23 | 24 | 27 | 16 | 26 | 26 | 20 | 8 | 4 | | | 11 | 19 | 23 |

Figure 5: Scorecard Results

| Country | Sum | Average Score | Final Ranking |
|---|---|---|---|
| Netherlands | 395 | 19,75 | 28 |
| Denmark | 374 | 18,70 | 27 |
| Germany | 372 | 18,60 | 26 |
| Luxembourg | 358 | 17,90 | 24 |
| United Kingdom | 358 | 17,90 | 24 |
| Austria | 350 | 17,50 | 23 |
| Sweden | 343 | 17,15 | 22 |
| Belgium | 328 | 16,40 | 21 |
| France | 320 | 16,00 | 20 |
| Ireland | 319 | 15,95 | 19 |
| Poland | 318 | 15,90 | 18 |
| Malta | 308 | 15,40 | 17 |
| Czech Republic | 307 | 15,35 | 16 |
| Spain | 294 | 14,70 | 15 |
| Finland | 291 | 14,55 | 14 |
| Estonia | 245 | 13,61 | 13 |
| Romania | 253 | 12,65 | 12 |
| Italy | 248 | 12,40 | 11 |
| Bulgaria | 247 | 12,35 | 10 |
| Hungary | 241 | 12,05 | 8 |
| Slovenia | 241 | 12,05 | 8 |
| Slovakia | 238 | 11,90 | 7 |
| Portugal | 221 | 11,05 | 6 |
| Cyprus | 196 | 10,89 | 4 |
| Lithuania | 196 | 10,89 | 4 |
| Latvia | 204 | 10,20 | 3 |
| Croatia | 183 | 9,15 | 2 |
| Greece | 160 | 8,00 | 1 |

Figure 6: Data input table for regression analysis

| Year/Variable | Rent_growth | RPP_N | RPP_R | Interest_rate | Stock_perf | Net_nat_inc | GDP_growth | Export_growth | CPI_derived | HCPI | Unemployment_rate | Crime_rate | Wage_growth | Population_growth |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1997 | 0,0380 | 0,1144 | 0,0882 | 0,0528 | 0,3101 | 0,0555 | 0,0684 | 0,0265 | 0,0200 | 0,0190 | 0,0550 | -0,0335 | -0,0140 | 0,0056 |
| 1998 | 0,0340 | 0,1172 | 0,0976 | 0,0394 | 0,2667 | 0,0842 | 0,0638 | -0,0612 | 0,0170 | 0,0180 | 0,0430 | -0,0322 | 0,0375 | 0,0068 |
| 1999 | 0,0300 | 0,1902 | 0,1652 | 0,0548 | 0,1953 | 0,0811 | 0,0776 | 0,3040 | 0,0170 | 0,0200 | 0,0350 | -0,0060 | 0,0570 | 0,0066 |
| 2000 | 0,0260 | 0,1598 | 0,1286 | 0,0498 | -0,1014 | 0,0357 | 0,0661 | 0,0683 | 0,0220 | 0,0230 | 0,0310 | 0,0116 | 0,0486 | 0,0078 |
| 2001 | 0,0270 | 0,0878 | 0,0459 | 0,0511 | -0,1304 | 0,0378 | 0,0400 | 0,0846 | 0,0360 | 0,0510 | 0,0250 | 0,0648 | 0,0380 | 0,0074 |
| 2002 | 0,0290 | 0,0480 | 0,0192 | 0,0422 | -0,2337 | 0,0363 | 0,0233 | -0,0053 | 0,0340 | 0,0390 | 0,0310 | 0,0756 | 0,0303 | 0,0054 |
| 2003 | 0,0320 | 0,0407 | 0,0213 | 0,0429 | 0,2638 | 0,0256 | 0,0321 | 0,2016 | 0,0190 | 0,0220 | 0,0420 | 0,0137 | 0,0306 | 0,0040 |
| 2004 | 0,0310 | 0,0401 | 0,0272 | 0,0366 | 0,0899 | 0,0180 | 0,0408 | 0,1373 | 0,0090 | 0,0140 | 0,0510 | -0,0259 | 0,0182 | 0,0029 |
| 2005 | 0,0200 | 0,0398 | 0,0214 | 0,0329 | 0,0300 | 0,0922 | 0,0611 | 0,0777 | 0,0140 | 0,0150 | 0,0530 | 0,0030 | 0,0256 | 0,0018 |
| 2006 | 0,0270 | 0,0451 | 0,0358 | 0,0399 | 0,1362 | 0,0505 | 0,0592 | -0,1254 | 0,0150 | 0,0160 | 0,0430 | 0,0187 | 0,0346 | 0,0015 |
| 2007 | 0,0140 | 0,0519 | 0,0334 | 0,0441 | 0,0353 | 0,0090 | 0,0453 | 0,2566 | 0,0150 | 0,0160 | 0,0360 | -0,0356 | 0,0275 | 0,0029 |
| 2008 | 0,0190 | -0,0057 | -0,0285 | 0,0355 | -0,3849 | -0,0269 | -0,0345 | -0,1413 | 0,0220 | 0,0220 | 0,0300 | -0,1152 | 0,0282 | 0,0049 |
| 2009 | 0,0280 | -0,0481 | -0,0568 | 0,0356 | 0,2345 | 0,0373 | 0,0230 | 0,0905 | 0,0090 | 0,0100 | 0,0370 | -0,0851 | 0,0159 | 0,0054 |
| 2010 | 0,0160 | -0,0091 | -0,0256 | 0,0314 | 0,1278 | 0,0342 | 0,0175 | 0,0740 | 0,0110 | 0,0090 | 0,0450 | 0,0921 | 0,0143 | 0,0049 |
| 2011 | 0,0180 | -0,0344 | -0,0580 | 0,0218 | 0,0000 | 0,0063 | 0,0040 | 0,1456 | 0,0220 | 0,0250 | 0,0440 | -0,0241 | 0,0167 | 0,0045 |
| 2012 | 0,0280 | -0,0690 | -0,0947 | 0,0150 | 0,1341 | 0,0060 | 0,0115 | 0,0606 | 0,0210 | 0,0280 | 0,0530 | -0,0718 | 0,0241 | 0,0029 |
| 2013 | 0,0470 | -0,0441 | -0,0589 | 0,0223 | 0,2960 | -0,0013 | 0,0168 | 0,1055 | 0,0130 | 0,0260 | 0,0670 | 0,0081 | 0,0037 | 0,0030 |
| 2014 | 0,0440 | 0,0202 | 0,0111 | 0,0068 | 0,1139 | 0,0347 | 0,0275 | -0,3058 | 0,0060 | 0,0030 | 0,0690 | -0,0980 | 0,0133 | 0,0042 |
| 2015 | 0,0240 | 0,0432 | 0,0368 | 0,0079 | -0,0073 | 0,0090 | 0,0266 | 0,3975 | 0,0050 | 0,0020 | 0,0690 | -0,0031 | 0,0106 | 0,0046 |
| 2016 | 0,0190 | 0,0598 | 0,0528 | 0,0035 | 0,0954 | 0,0664 | 0,0405 | 0,0937 | 0,0030 | 0,0010 | 0,0610 | -0,0063 | 0,0084 | 0,0060 |

Source: CBS Open data StatLine: https://opendata.cbs.nl/statline/portal.html?_la=en&_catalog=CBS
Interest_rate: https://www.investing.com/rates-bonds/netherlands-10-year-bond-yield-historical-data
Stock_Perf: https://www.investing.com/indices/us-spx-500-historical-data
Unemployment_rate & Wage_growth: Data extracted on 27 Nov 2018 19:08 UTC (GMT) from OECD.Stat
RPP_R & RPP_N: https://www.bis.org/statistics/pp_selected.htm

Figure 7: Correlation of independent variables to the dependent variable “Rent_growth”

**Correlations**

| | | Rent_growth | Interest_rate | Stock_perf | Net_nat_inc | GDP_growth | Export_growth | CPI_derived | HCPI | Unemployment_rate | Crime_rate | Wage_growth | Population_growth |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rent_growth | Pearson Correlation | 1 | -,007 | ,491* | ,072 | ,182 | -,315 | -,034 | ,095 | ,397 | -,155 | -,212 | ,021 |
| | Sig. (2-tailed) | | ,976 | ,028 | ,764 | ,444 | ,176 | ,885 | ,691 | ,083 | ,515 | ,370 | ,928 |
| | N | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Interest_rate | Pearson Correlation | -,007 | 1 | -,038 | ,249 | ,451* | ,097 | ,595** | ,526* | -,757** | ,283 | ,484* | ,297 |
| | Sig. (2-tailed) | ,976 | | ,873 | ,290 | ,046 | ,683 | ,006 | ,017 | ,000 | ,227 | ,031 | ,204 |
| | N | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Stock_perf | Pearson Correlation | ,491* | -,038 | 1 | ,377 | ,452* | ,148 | -,460* | -,344 | ,463* | -,049 | -,311 | -,171 |
| | Sig. (2-tailed) | ,028 | ,873 | | ,101 | ,046 | ,533 | ,041 | ,137 | ,040 | ,836 | ,182 | ,471 |
| | N | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Net_nat_inc | Pearson Correlation | ,072 | ,249 | ,377 | 1 | ,801** | -,045 | -,091 | -,147 | -,008 | ,270 | ,234 | ,230 |
| | Sig. (2-tailed) | ,764 | ,290 | ,101 | | ,000 | ,852 | ,702 | ,537 | ,973 | ,249 | ,322 | ,329 |
| | N | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| GDP_growth | Pearson Correlation | ,182 | ,451* | ,452* | ,801** | 1 | ,184 | -,059 | -,077 | -,020 | ,291 | ,275 | ,175 |
| | Sig. (2-tailed) | ,444 | ,046 | ,046 | ,000 | | ,437 | ,804 | ,748 | ,935 | ,213 | ,241 | ,459 |
| | N | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Export_growth | Pearson Correlation | -,315 | ,097 | ,148 | -,045 | ,184 | 1 | -,099 | -,023 | -,004 | ,295 | ,068 | ,050 |
| | Sig. (2-tailed) | ,176 | ,683 | ,533 | ,852 | ,437 | | ,679 | ,922 | ,986 | ,207 | ,775 | ,833 |
| | N | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| CPI_derived | Pearson Correlation | -,034 | ,595** | -,460* | -,091 | -,059 | -,099 | 1 | ,945** | -,708** | ,329 | ,413 | ,322 |
| | Sig. (2-tailed) | ,885 | ,006 | ,041 | ,702 | ,804 | ,679 | | ,000 | ,000 | ,156 | ,070 | ,166 |
| | N | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| HCPI | Pearson Correlation | ,095 | ,526* | -,344 | -,147 | -,077 | -,023 | ,945** | 1 | -,607** | ,352 | ,373 | ,234 |
| | Sig. (2-tailed) | ,691 | ,017 | ,137 | ,537 | ,748 | ,922 | ,000 | | ,005 | ,128 | ,106 | ,320 |
| | N | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Unemployment_rate | Pearson Correlation | ,397 | -,757** | ,463* | -,008 | -,020 | -,004 | -,708** | -,607** | 1 | -,207 | -,681** | -,404 |
| | Sig. (2-tailed) | ,083 | ,000 | ,040 | ,973 | ,935 | ,986 | ,000 | ,005 | | ,382 | ,001 | ,077 |
| | N | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Crime_rate | Pearson Correlation | -,155 | ,283 | -,049 | ,270 | ,291 | ,295 | ,329 | ,352 | -,207 | 1 | ,180 | ,148 |
| | Sig. (2-tailed) | ,515 | ,227 | ,836 | ,249 | ,213 | ,207 | ,156 | ,128 | ,382 | | ,447 | ,532 |
| | N | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Wage_growth | Pearson Correlation | -,212 | ,484* | -,311 | ,234 | ,275 | ,068 | ,413 | ,373 | -,681** | ,180 | 1 | ,277 |
| | Sig. (2-tailed) | ,370 | ,031 | ,182 | ,322 | ,241 | ,775 | ,070 | ,106 | ,001 | ,447 | | ,237 |
| | N | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Population_growth | Pearson Correlation | ,021 | ,297 | -,171 | ,230 | ,175 | ,050 | ,322 | ,234 | -,404 | ,148 | ,277 | 1 |
| | Sig. (2-tailed) | ,928 | ,204 | ,471 | ,329 | ,459 | ,833 | ,166 | ,320 | ,077 | ,532 | ,237 | |
| | N | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |

*. Correlation is significant at the 0.05 level (2-tailed).

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

Figure 8: Correlation of independent variables to the dependent variable “nominal residential property prices (RPP_N)”

**Correlations**

| | | RPP_N | Interest_rate | Stock_perf | Net_nat_inc | GDP_growth | Export_growth | CPI_derived | HCPI | Unemployment_rate | Crime_rate | Wage_growth | Population_growth |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RPP_N | Pearson Correlation | 1 | ,574** | ,005 | ,597** | ,777** | ,155 | ,185 | ,079 | -,297 | ,262 | ,482* | ,560* |
| | Sig. (2-tailed) | | ,008 | ,982 | ,005 | ,000 | ,513 | ,436 | ,740 | ,203 | ,264 | ,031 | ,010 |
| | N | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Interest_rate | Pearson Correlation | ,574** | 1 | -,038 | ,249 | ,451* | ,097 | ,595** | ,526* | -,757** | ,283 | ,484* | ,297 |
| | Sig. (2-tailed) | ,008 | | ,873 | ,290 | ,046 | ,683 | ,006 | ,017 | ,000 | ,227 | ,031 | ,204 |
| | N | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Stock_perf | Pearson Correlation | ,005 | -,038 | 1 | ,377 | ,452* | ,148 | -,460* | -,344 | ,463* | -,049 | -,311 | -,171 |
| | Sig. (2-tailed) | ,982 | ,873 | | ,101 | ,046 | ,533 | ,041 | ,137 | ,040 | ,836 | ,182 | ,471 |
| | N | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Net_nat_inc | Pearson Correlation | ,597** | ,249 | ,377 | 1 | ,801** | -,045 | -,091 | -,147 | -,008 | ,270 | ,234 | ,230 |
| | Sig. (2-tailed) | ,005 | ,290 | ,101 | | ,000 | ,852 | ,702 | ,537 | ,973 | ,249 | ,322 | ,329 |
| | N | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| GDP_growth | Pearson Correlation | ,777** | ,451* | ,452* | ,801** | 1 | ,184 | -,059 | -,077 | -,020 | ,291 | ,275 | ,175 |
| | Sig. (2-tailed) | ,000 | ,046 | ,046 | ,000 | | ,437 | ,804 | ,748 | ,935 | ,213 | ,241 | ,459 |
| | N | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Export_growth | Pearson Correlation | ,155 | ,097 | ,148 | -,045 | ,184 | 1 | -,099 | -,023 | -,004 | ,295 | ,068 | ,050 |
| | Sig. (2-tailed) | ,513 | ,683 | ,533 | ,852 | ,437 | | ,679 | ,922 | ,986 | ,207 | ,775 | ,833 |
| | N | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| CPI_derived | Pearson Correlation | ,185 | ,595** | -,460* | -,091 | -,059 | -,099 | 1 | ,945** | -,708** | ,329 | ,413 | ,322 |
| | Sig. (2-tailed) | ,436 | ,006 | ,041 | ,702 | ,804 | ,679 | | ,000 | ,000 | ,156 | ,070 | ,166 |
| | N | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| HCPI | Pearson Correlation | ,079 | ,526* | -,344 | -,147 | -,077 | -,023 | ,945** | 1 | -,607** | ,352 | ,373 | ,234 |
| | Sig. (2-tailed) | ,740 | ,017 | ,137 | ,537 | ,748 | ,922 | ,000 | | ,005 | ,128 | ,106 | ,320 |
| | N | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Unemployment_rate | Pearson Correlation | -,297 | -,757** | ,463* | -,008 | -,020 | -,004 | -,708** | -,607** | 1 | -,207 | -,681** | -,404 |
| | Sig. (2-tailed) | ,203 | ,000 | ,040 | ,973 | ,935 | ,986 | ,000 | ,005 | | ,382 | ,001 | ,077 |
| | N | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Crime_rate | Pearson Correlation | ,262 | ,283 | -,049 | ,270 | ,291 | ,295 | ,329 | ,352 | -,207 | 1 | ,180 | ,148 |
| | Sig. (2-tailed) | ,264 | ,227 | ,836 | ,249 | ,213 | ,207 | ,156 | ,128 | ,382 | | ,447 | ,532 |
| | N | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Wage_growth | Pearson Correlation | ,482* | ,484* | -,311 | ,234 | ,275 | ,068 | ,413 | ,373 | -,681** | ,180 | 1 | ,277 |
| | Sig. (2-tailed) | ,031 | ,031 | ,182 | ,322 | ,241 | ,775 | ,070 | ,106 | ,001 | ,447 | | ,237 |
| | N | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Population_growth | Pearson Correlation | ,560* | ,297 | -,171 | ,230 | ,175 | ,050 | ,322 | ,234 | -,404 | ,148 | ,277 | 1 |
| | Sig. (2-tailed) | ,010 | ,204 | ,471 | ,329 | ,459 | ,833 | ,166 | ,320 | ,077 | ,532 | ,237 | |
| | N | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |

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

*. Correlation is significant at the 0.05 level (2-tailed).

Figure 9: Correlation of independent variables to the dependent variable “real residential property prices (RPP_R)”

**Correlations**

| | | RPP_R | Interest_rate | Stock_perf | Net_nat_inc | GDP_growth | Export_growth | CPI_derived | HCPI | Unemployment_rate | Crime_rate | Wage_growth | Population_growth |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RPP_R | Pearson Correlation | 1 | ,511* | ,058 | ,620** | ,796** | ,159 | ,064 | -,040 | -,218 | ,231 | ,442 | ,515* |
| | Sig. (2-tailed) | | ,021 | ,807 | ,004 | ,000 | ,502 | ,788 | ,868 | ,357 | ,326 | ,051 | ,020 |
| | N | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Interest_rate | Pearson Correlation | ,511* | 1 | -,038 | ,249 | ,451* | ,097 | ,595** | ,526* | -,757** | ,283 | ,484* | ,297 |
| | Sig. (2-tailed) | ,021 | | ,873 | ,290 | ,046 | ,683 | ,006 | ,017 | ,000 | ,227 | ,031 | ,204 |
| | N | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Stock_perf | Pearson Correlation | ,058 | -,038 | 1 | ,377 | ,452* | ,148 | -,460* | -,344 | ,463* | -,049 | -,311 | -,171 |
| | Sig. (2-tailed) | ,807 | ,873 | | ,101 | ,046 | ,533 | ,041 | ,137 | ,040 | ,836 | ,182 | ,471 |
| | N | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Net_nat_inc | Pearson Correlation | ,620** | ,249 | ,377 | 1 | ,801** | -,045 | -,091 | -,147 | -,008 | ,270 | ,234 | ,230 |
| | Sig. (2-tailed) | ,004 | ,290 | ,101 | | ,000 | ,852 | ,702 | ,537 | ,973 | ,249 | ,322 | ,329 |
| | N | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| GDP_growth | Pearson Correlation | ,796** | ,451* | ,452* | ,801** | 1 | ,184 | -,059 | -,077 | -,020 | ,291 | ,275 | ,175 |
| | Sig. (2-tailed) | ,000 | ,046 | ,046 | ,000 | | ,437 | ,804 | ,748 | ,935 | ,213 | ,241 | ,459 |
| | N | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Export_growth | Pearson Correlation | ,159 | ,097 | ,148 | -,045 | ,184 | 1 | -,099 | -,023 | -,004 | ,295 | ,068 | ,050 |
| | Sig. (2-tailed) | ,502 | ,683 | ,533 | ,852 | ,437 | | ,679 | ,922 | ,986 | ,207 | ,775 | ,833 |
| | N | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| CPI_derived | Pearson Correlation | ,064 | ,595** | -,460* | -,091 | -,059 | -,099 | 1 | ,945** | -,708** | ,329 | ,413 | ,322 |
| | Sig. (2-tailed) | ,788 | ,006 | ,041 | ,702 | ,804 | ,679 | | ,000 | ,000 | ,156 | ,070 | ,166 |
| | N | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| HCPI | Pearson Correlation | -,040 | ,526* | -,344 | -,147 | -,077 | -,023 | ,945** | 1 | -,607** | ,352 | ,373 | ,234 |
| | Sig. (2-tailed) | ,868 | ,017 | ,137 | ,537 | ,748 | ,922 | ,000 | | ,005 | ,128 | ,106 | ,320 |
| | N | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Unemployment_rate | Pearson Correlation | -,218 | -,757** | ,463* | -,008 | -,020 | -,004 | -,708** | -,607** | 1 | -,207 | -,681** | -,404 |
| | Sig. (2-tailed) | ,357 | ,000 | ,040 | ,973 | ,935 | ,986 | ,000 | ,005 | | ,382 | ,001 | ,077 |
| | N | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Crime_rate | Pearson Correlation | ,231 | ,283 | -,049 | ,270 | ,291 | ,295 | ,329 | ,352 | -,207 | 1 | ,180 | ,148 |
| | Sig. (2-tailed) | ,326 | ,227 | ,836 | ,249 | ,213 | ,207 | ,156 | ,128 | ,382 | | ,447 | ,532 |
| | N | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Wage_growth | Pearson Correlation | ,442 | ,484* | -,311 | ,234 | ,275 | ,068 | ,413 | ,373 | -,681** | ,180 | 1 | ,277 |
| | Sig. (2-tailed) | ,051 | ,031 | ,182 | ,322 | ,241 | ,775 | ,070 | ,106 | ,001 | ,447 | | ,237 |
| | N | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Population_growth | Pearson Correlation | ,515* | ,297 | -,171 | ,230 | ,175 | ,050 | ,322 | ,234 | -,404 | ,148 | ,277 | 1 |
| | Sig. (2-tailed) | ,020 | ,204 | ,471 | ,329 | ,459 | ,833 | ,166 | ,320 | ,077 | ,532 | ,237 | |
| | N | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |

*. Correlation is significant at the 0.05 level (2-tailed).

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

Figure 10: Variables Entered/Removed (dependent variable: rent_growth)

**Variables Entered/Removed[a]**

| Model | Variables Entered | Variables Removed | Method |
|---|---|---|---|
| 1 | Stock_perf | . | Stepwise (Criteria: Probability-of-F-to-enter <= ,050, Probability-of-F-to-remove >= ,100). |

a. Dependent Variable: Rent_growth

Figure 11: Model Summary (dependent variable: rent_growth)

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
|---|---|---|---|---|---|
| 1 | ,491[a] | ,241 | ,199 | ,00787 | 1,218 |

a. Predictors: (Constant), Stock_perf

b. Dependent Variable: Rent

Figure 12: ANOVA (dependent variable: rent_growth)

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | ,000 | 1 | ,000 | 5,710 | ,028[b] |
| | Residual | ,001 | 18 | ,000 | | |
| | Total | ,001 | 19 | | | |

a. Dependent Variable: Rent_growth

b. Predictors: (Constant), Stock_perf

Figure 13: Variables Entered/Removed (dependent variable: RPP_R)

**Variables Entered/Removed[a]**

| Model | Variables Entered | Variables Removed | Method |
|---|---|---|---|
| 1 | GDP_growth | . | Stepwise (Criteria: Probability-of-F-to-enter <= ,050, Probability-of-F-to-remove >= ,100). |
| 2 | Population_growth | . | Stepwise (Criteria: Probability-of-F-to-enter <= ,050, Probability-of-F-to-remove >= ,100). |
| 3 | Stock_perf | . | Stepwise (Criteria: Probability-of-F-to-enter <= ,050, Probability-of-F-to-remove >= ,100). |

a. Dependent Variable: RPP_R

Figure 14: Model Summary (dependent variable: RPP_R)

**Model Summary[d]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
|---|---|---|---|---|---|
| 1 | ,796[a] | ,634 | ,613 | ,04079 | |
| 2 | ,883[b] | ,779 | ,753 | ,03259 | |
| 3 | ,914[c] | ,836 | ,805 | ,02893 | 1,933 |

a. Predictors: (Constant), GDP_growth

b. Predictors: (Constant), GDP_growth, Population_growth

c. Predictors: (Constant), GDP_growth, Population_growth, Stock_perf

d. Dependent Variable: RPP_R

Figure 15: ANOVA (dependent variable: RPP_R)

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | ,052 | 1 | ,052 | 31,134 | ,000[b] |
| | Residual | ,030 | 18 | ,002 | | |
| | Total | ,082 | 19 | | | |
| 2 | Regression | ,064 | 2 | ,032 | 29,982 | ,000[c] |
| | Residual | ,018 | 17 | ,001 | | |
| | Total | ,082 | 19 | | | |
| 3 | Regression | ,068 | 3 | ,023 | 27,222 | ,000[d] |
| | Residual | ,013 | 16 | ,001 | | |
| | Total | ,082 | 19 | | | |

a. Dependent Variable: RPP_R

b. Predictors: (Constant), GDP_growth

c. Predictors: (Constant), GDP_growth, Population_growth

d. Predictors: (Constant), GDP_growth, Population_growth, Stock_perf

Figure 16: Coefficients (dependent variable: RPP_R)

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | | 95,0% Confidence Interval for B | | Correlations | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | Sig. | Lower Bound | Upper Bound | Zero-order | Partial | Part | Tolerance | VIF |
| 1 | (Constant) | -,046 | ,015 | | -3,002 | ,008 | -,079 | -,014 | | | | | |
| | GDP_growth | 1,953 | ,350 | ,796 | 5,580 | ,000 | 1,218 | 2,688 | ,796 | ,796 | ,796 | 1,000 | 1,000 |
| 2 | (Constant) | -,107 | ,022 | | -4,882 | ,000 | -,153 | -,061 | | | | | |
| | GDP_growth | 1,786 | ,284 | ,728 | 6,288 | ,000 | 1,187 | 2,386 | ,796 | ,836 | ,717 | ,969 | 1,032 |
| | Population_growth | 14,242 | 4,256 | ,387 | 3,346 | ,004 | 5,262 | 23,222 | ,515 | ,630 | ,381 | ,969 | 1,032 |
| 3 | (Constant) | -,099 | ,020 | | -5,034 | ,000 | -,141 | -,057 | | | | | |
| | GDP_growth | 2,127 | ,291 | ,867 | 7,321 | ,000 | 1,511 | 2,743 | ,796 | ,878 | ,741 | ,730 | 1,369 |
| | Population_growth | 11,592 | 3,942 | ,315 | 2,941 | ,010 | 3,236 | 19,948 | ,515 | ,592 | ,298 | ,891 | 1,123 |
| | Stock_perf | -,101 | ,043 | -,279 | -2,361 | ,031 | -,192 | -,010 | ,058 | -,508 | -,239 | ,731 | 1,367 |

a. Dependent Variable: RPP_R

Figure 17: Histogram (dependent variable: RPP_R)

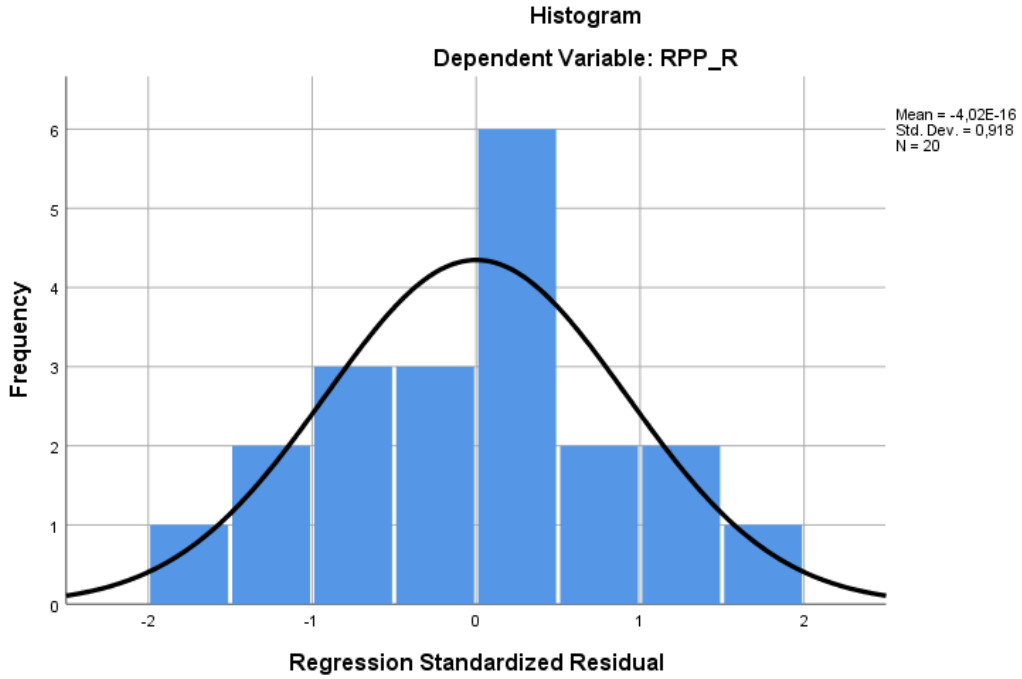


Figure 18: Normal P-P Plot of Regression Standardized Residual (dependent variable: RPP_R)

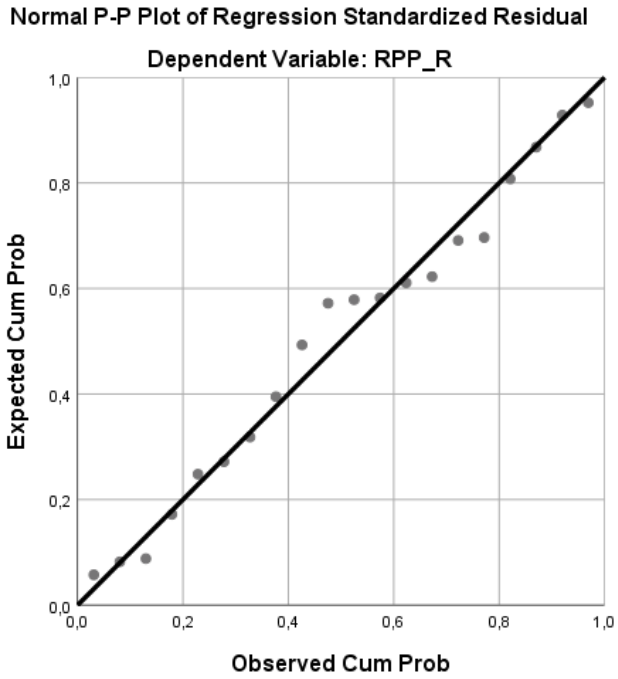

Figure 19: Scatterplot RSR/RSPV (dependent variable: RPP_R)

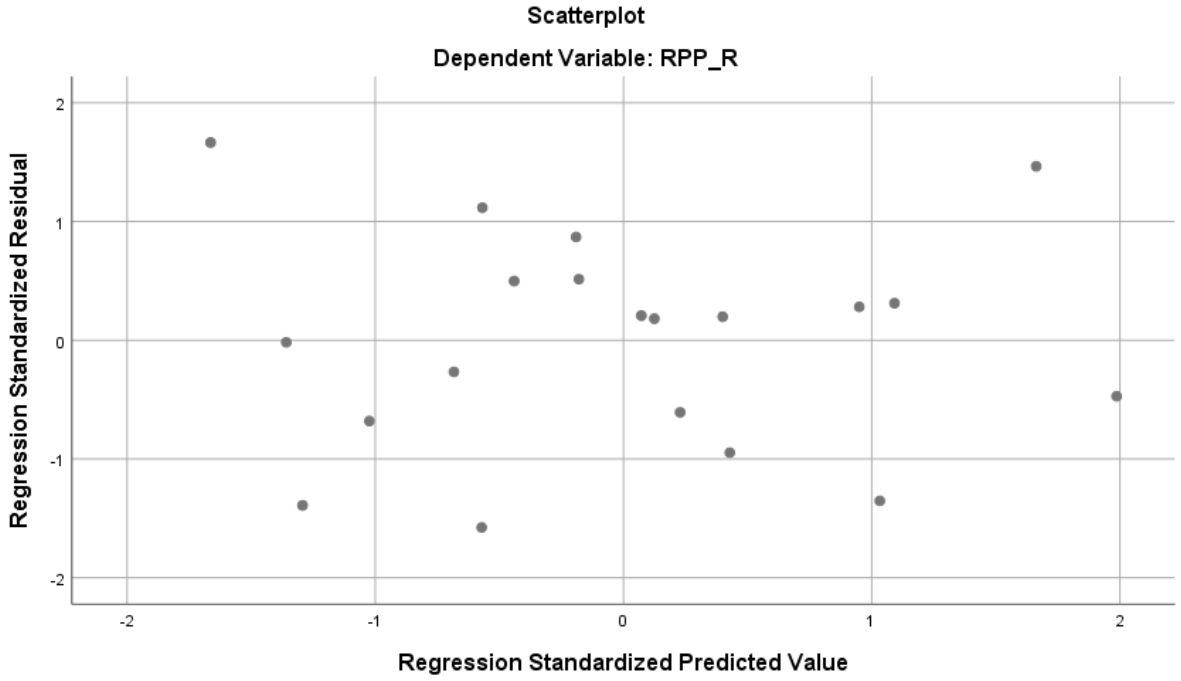


Figure 20: RPP_R forecast

| Year | RPP_R | GDP_growth | Population_growth | Stock_perf |
|---|---|---|---|---|
| 2019 | -0,15% | 2,4%* | 0,46%** | 7,27%*** |
| 2020 | -2,16% | 1,8%* | 0,41%** | 8,93%*** |

*Source GDP_growth: https://ec.europa.eu/info/business-economy-euro/economic-performance-and-forecasts/economic-performance-country/netherlands/economic-forecast-netherlands_en

**Source Population_growth: https://opendata.cbs.nl/statline/#/CBS/en/dataset/83783ENG/table?dl=5153

***Source Stock_perf: Bloomberg Analyst Forecast