ISTANBUL BILGI UNIVERSITY
INSTITUTE OF GRADUATE PROGRAMS
FINANCIAL ECONOMICS MASTER'S DEGREE PROGRAM

# Dutch Disease in Turkey

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**İstanbul**

**2020**

**DUTCH DISEASE IN TURKEY**

TÜRKİYE'DE HOLLANDA HASTALIĞI

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114621004

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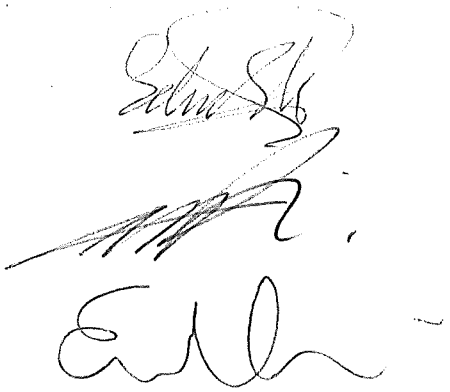

Tezin Onaylandığı Tarih : 02/01/2020

Toplam Sayfa Sayısı: 74

| Anahtar Kelimeler (Türkçe) | Anahtar Kelimeler (İngilizce) |
|---|---|
| 1) Hollanda Hastalığı | 1) Dutch Disease |
| 2) Döviz Kuru | 2) Exchange Rate |
| 3) Doğal Kaynaklar | 3) Natural Resources |
| 4) İşçi Dövizi | 4) Remittances |
| 5) Kalkınma Yardımı | 5) Development Assistance |

**Abstract**

The aim of the research is to analyse the determinants that contributed to Dutch Disease, and how the factors impacted the Turkish economy. The research is quantitative in nature with a correlational design to evaluate the research problem. The sample size of the research is 19 years, starting from 2000 to 2018. Moreover, the study uses secondary sources, i.e. the World Bank Database for data collection. It applies descriptive statistics, normality test, unit root test, OLS regression, and correlation for analysing the data. The findings of the study suggest that there is mixed evidence regarding the existence of Dutch disease in Turkey during the period under study. Further, it is noted that the tourism sector of Turkey might have contributed to the Dutch Disease phenomena. The research recommends that the financial experts should rely on the incomes from the manufacturing and tradable sector in order to avoid borrowing from international markets and relying on foreign remittances which contributes to Dutch Disease.

**Keywords**: Dutch Disease, Aid, Development Assistance, Remittances, Natural Resources, Exchange Rate, Turkey.

## Özet

Bu araştırmanın amacı, Hollanda Hastalığı'na katkıda bulunan belirleyicileri ve bu faktörlerin Türkiye ekonomisini nasıl etkilediğini analiz etmekdir. Araştırma, doğası gereği nicelikseldir ve araştırma problemini değerlendirmek için korelasyonel bir tasarıma sahiptir. Araştırmanın örneklem büyüklüğü 2008'den 2018'e kadar toplam 19 yıldır. Bununla beraber, çalışma Dünya Bankası Veritabanı'ndan kaynakları kullanmaktadır. Verilerin analizinde tanımsal istatistik, normallik testi, birim kök testi, OLS regresyonu ve korelasyon testi uygulanmıştır. Çalışmanın bulguları, incelenen dönemde Hollanda Hastalığı'nın varlığına ilişkin bazı kanıtların olduğu yönünde olmakla birlikte ayırca turizm sektörünün de Hollanda Hastalığı'na katkıda bulunabileceği belirtilmiştir. Araştırma, uzmanların uluslararası pazarlardan borçlanarak gelebilecek kaynaklara ya da sıcak para akışına güvenmek yerine, imalat sanayi ve ticarete konu olabilecek mallar üretimine ve ticaretinden kaynaklı gelirlere yönelmeleri tavisye edilmektedir.



**Anahtar Kelimeler:** Hollanda Hastalığı, Yardım, Kalkınma Yardımı, İşçi Dövizi, Doğal Kaynaklar, Döviz Kuru, Türkiye.

## ACKNOWLEDMENTS

First and foremost, I have to thank my thesis advisor, Doç. Dr. Serda Selin Öztürk, for all the support and guidance during the process of writing of this thesis. Without her assistance and dedicated involvement in every step throughout the process, this paper would never been accomplished.

I must express my very profound gratitude to my beloved wife, Nergis Çetinkaya, for providing me with unfailing support and continuous encouragement throughout my years of study and through the process of researching and writing this thesis. This accomplishment would not have been possible without her.

I am grateful to my father, Mehmet Çetinkaya, my mother, Aynur Çetinkaya and my sister Aslı Muslu, for providing me with unlimited support throughout my years of education life.

Last of all, I would like to thank my best friend, Murat Öztek, whose presence has been emotional support for me.

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## List of Abbreviations

| | |
|---|---|
| FDI | Foreign Direct Investment |
| GDP | Gross Domestic Product |
| DD | Dutch Disease |
| UN | United Nations |
| RER | Real exchange rate |
| US | United States of America |
| OLS | Ordinary Least Squares |
| ODA | Net official development assistance and official aid received |
| NR | Total natural resources rents |
| PR | Personal remittances |
| EXR | Official exchange rate |
| INF | Consumer price index |
| GDPG | GDP growth |
| UE | Unemployment |

# Introduction

## 1.1. Background

Middle Eastern economies have more profoundly accepted and attracted capital inflows in terms of FDIs, emigrant remittances and other capital investment since early 1980 (Taguchi, 2016). Out of all the rich natural resource-based middle eastern nations, Turkish Economy has always been a case of moderate economic growth (Öniş, 2010). There have been regimes when the economy has faced high inflation together with programs of disinflation, which have turned out to be a failure in the past 30 years. The inflation in the early years have been measured up to 100% annually but it has never reached the levels of hyperinflation. For example, the average inflation rate in the 1970s accounted for 20% annually, while in the early 1980s, it reached up to 35% to 40%. In the early 1990s, the average rate of annual inflation was equivalent to 80% (Ertugrul and Selcuk, 2002). However, the 2000s was an era of economic and technical shifts within the social and economic paradigm of Turkish Economy (Erinc and Ünüvar, 2016).

The global financial crisis hit the Republic of Turkey in many ways due to the sudden decrease in capital inflows. Although domestic banks of the nation were admired for their resilience via making reduced interest rates that the central bank was responsible for. However, unemployment reached to the highest levels and the declining levels of GDP made the industrial output of the economy exceptionally severe (Rodrik, 2009). Evaluating the trends, it is therefore observed that the Turkish economy has been long suffering from macroeconomic instability. In the past, comparatively, it was easy to determine who is to blame for the downfall, but with the complicated integration of economies in the international markets, one can blame the ineffectiveness of monetary policies, corrupt financial regulation, unsustainable fiscal expenditures, or volatile exchange rates. The crisis of an economy in modern times, therefore, is illustrated through the open economy is a source of vulnerability. Even when a nation has done its thorough research, economic stability still remains in the hands of developments in the international financial markets. This phenomenon can be termed as 'Dutch Disease', which is one of the major problems that various countries are facing such as Canada, Russia, Asian and Western nations as revealed by previous studies (Beine, Bos and Coulombe, 2012; Dulger, et al., 2013; Taguchi, 2016; Ploeg and Venables, 2013).

The problem of Dutch Disease is referred to the context wherein a resource boom in a nation results in the appreciation of the real exchange rate and the tradable output of the manufacturing sector is crowded out (Beine et al., 2012). The concept of Dutch Disease emerged from the crisis of the Netherlands back in the 1960s, which was a consequence of discovering a large natural gas deposit around the Northern Sea (Taguchi, 2016). The instance is theorised as a disease since it has a negative impact on the economy due to large capital inflows in terms of foreign income. The concept of Dutch Disease, as explained by Taguchi (2016), basically describes the impact of capital inflows in open economies, which have been accustomed to foreign aids, remittances from emigrants and exports of natural resources, since these three things mainly constitute for capital inflows. It is basically an economic term, characterising negative implications from a spike in the currency of a country (Magud and Sosa, 2013).

However, in the context of the Turkish Economy, despite being one of the developing countries of the Middle East, the nation is deprived of oil and natural gas reserves. Hence the region has not received much attention from economists, scholars and academic researchers with regards to the economy facing Dutch Disease after the plague of the financial crisis, which deteriorated the global economy.

### 1.2. Problem Statement

Many economists and analysts believe that if developing countries experience a large stream of capital inflows, in terms of aid, remittances, foreign direct investment (FDI), and export of natural resources, it will result in Dutch Disease instead of development of an economy. The studies of Beine, Bos and Coulombe, (2012); Dulger, et al., (2013); Taguchi, (2016); and Ploeg and Venables, (2013) have explained how large surge of capital inflows have resulted in a Dutch Disease within the regions of Canada, Russia, Europe, Ukraine, Kazakhstan, Colombia and the other Middle Eastern States. Previous research has addressed this problem with respect to Turkey with reference to examining the changing equilibrium of exchange rates being healthy or turning into a Dutch Disease for the Turkish economy compared to Europe, Russia and Ukraine (Egert, 2005). It is also studied recently, where it is revealed that growth in the tourism sector has caused this phenomenon in Turkey (Ojaghlou, 2019). However, due to the very limited number of studies on the subject in the context of Turkey, a literature gap exists. This research study aims to study the concept in relation to Turkish economic growth.

### 1.3. Research Aims and Objectives

Based on the research gap identified the current study aims to analyse the factors that contribute to Dutch Disease, and whether the factors have impacted the economy of Turkey during the period 2000-2018.

For this purpose, the study has established the following objectives:

1- To critically examine the factors or determinants of Dutch Disease.
2- To assess the impact of Dutch Disease on the economy of Turkey during the period 2000-2018.

### 1.4. Research Scope

The scope of the current study is limited to the economic aspects of Turkey. Moreover, it examines the economy to the extent of studying the presence of Dutch Disease phenomenon within its dynamics. Consequently, considering there is an on-going debate of Dutch Disease being a global economic burden on developing economies, the scope of the present study, therefore, is varied with a focus on the empirical evidence found from the literature, reviewing the impact of Dutch Disease on international economies. Furthermore, the study undertakes econometric analysis, limiting the scope of the study to quantitative testing. Lastly, the study focuses on the period before and after the financial crisis in order to investigate the presence of Dutch Disease factors and their impact on the Turkish economy.

### 1.5. Research Structure

In order to have a clear understanding of the background of Dutch Disease and its impact on the Turkish economy, the research paper is distinguished in five chapters with each chapter achieving the objectives outlined above. The first chapter is the introductory section of the thesis, which includes the background of thesis, outlines the aims and objectives which the study intends to achieve, and describe what problem the study seeks to solve. The next chapter is a critical analysis of the literature review in order to find out what already has been concluded within the area of Dutch Disease and how other economists have theorised or empirically evaluated this phenomenon in terms of different economies. Chapter three presents a detailed description of the methodologies that research adopts in order to achieve the aforementioned objectives. Chapter four is a systematic

presentation of the data used to investigate Turkish Economy aspects. The chapter also presents an analysis of the econometric data, which has been undertaken by the study. The chapter overall includes a discussion of the findings extracted from the data and quantitative testing. Lastly, Chapter five conclusively states the results with relevance to the literature review, as well as, the limitations the study faced thereby recommending the necessary steps to be followed by future studies.

## Chapter 2: Literature Review

### 2.1. Theoretical Framework of Dutch Disease

The conceptual framework of Dutch disease was initially proposed by Corden and Neary in 1982. The model basically examines the negative impact of a boom in natural resources or raw materials on macro-economic aspects, the unequal income distribution, labour market mechanics and size as well as, profitability of the industrial sector (Mironov and Petronevich, 2015). The framework, according to Corden and Neary (1982), was analysed within the economy which was divided into three sectors. First, one being the resource sector, the second one a tradable manufacturing sector and lastly, a non-tradable service sector. Within this model, the prices of tradable goods are more vulnerable to international competition and global mechanisms of market forces (i.e., demand and supply) whereas the service sector is not exposed to global competition hence their prices are also not affected by international market forces but the domestic levels of supply and demand.

Subsequently, the model is based on the following assumptions (Algieri, 2011):

1. Labour is at all-time accessible, available and mobile within all three sectors of the economy mentioned above, and therefore ensures that the wages are equally distributed among these three sectors.
2. All goods being produced are for the purpose of final consumption.
3. There is always a balance in the trade since the national output is always the same as an expenditure.
4. Prices of factors are negotiable, and all these factors are internationally available and mobile.

Keeping this in mind, the two economists exhibit that a resource boom, (resource here is referred to as energy) impacts the overall economy via two channels, the resource trade effect and the spending effect. The resource movement effect is a situation whereby the labour and capital shifts to energy sectors due to their mobility and an increase of marginal profits in, mining (Algieri, 2011). Consequently, this shift leads to a number of negative consequences on the changing foreign exchange rate with the output conditional on the ratio of capital against labour within different sectors and depending on how mobile the resources are. The spending effect, on the other hand, defines a situation where a rise in demand in all sectors, as well as services (keeping in mind

the assumption of income being equal to expenditure), leads to a surge in their respective prices and thereby contribute to the appreciation of the national currency in real terms. However, the appreciation of the national currency is dependent upon the marginal propensity of service consumption in an economy (Mironov and Petronevich, 2015).

For example, an increase in energy prices will impact the labour market by increasing the value of the marginal product of labour employed in the energy sector, thereby pushing the equilibrium wage rate to rise. This will make the labour shift from both, the manufacturing sector and non-tradable sector to the sector with high wages (i.e., energy sector). In other words, the labour will move into the most profitable sector, making the levels of employment and output in the other two sectors low. As a result, the energy sector will lead to face a rise in workers and output, which explains the resource movement effect. Thus, due to the resource movement effect, the contraction that the manufacturing sector will go through is referred to as 'Direct De-industrialization'. Consequently, the decrease of supply within the service sector will result in the prices of services to eventually rise to cause an appreciation of the exchange rate. Similarly, a boom in natural resource sector results in income growth for the economy, resulting in an increase in imports and domestic demand for tradable and non-tradable goods, which explains the spending effect.

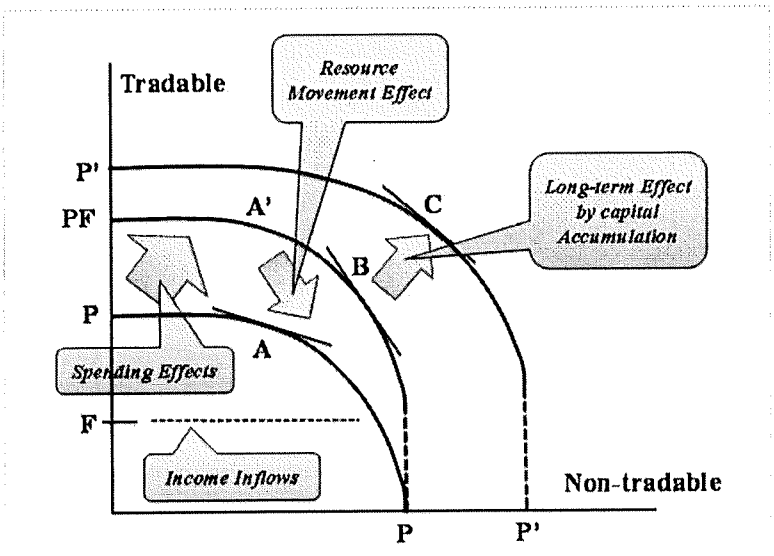


Figure 2.1: Theoretical framework of Dutch Disease. Source: Taguchi (2017).

Framework in Figure 2.1, shows a basic theory, which portrays that the production of tradable goods is reduced by capital inflows through real currency appreciation (Taguchi, 2017).

Nonetheless, in the long-term outputs of both tradable and non-tradable items would increase due to capital inflows because of capital accumulation. To sum up, economic growth under Dutch Disease is not compatible with capital inflows but can be beneficiary for growth in the long term (Taguchi, 2017).

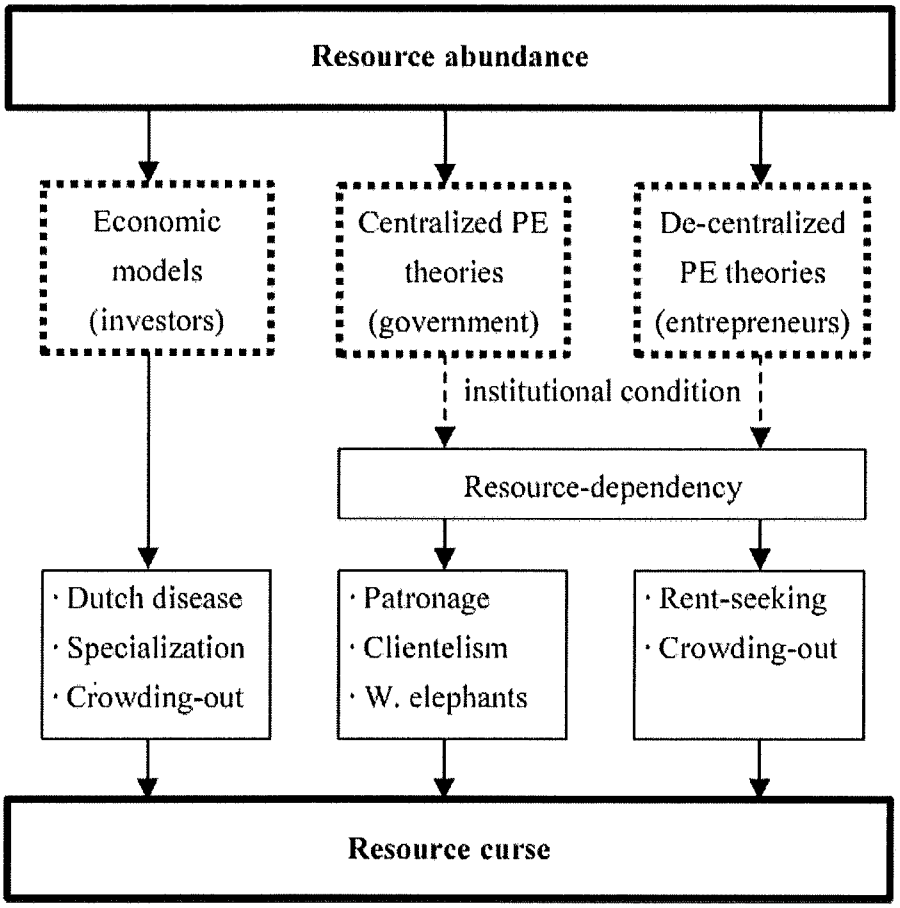


Figure 2.2: Relationship building between Resources and Dutch Disease. Source: Szalai (2018).

Figure 2.2 is used to build a relationship between Dutch Disease, resource abundance and the resource curse. It is shown in the model that Economic models link the resource abundance through Dutch Disease to the resource curse. This model supports the claims in the above theories as well which state that the abundance of resources causes issues for the country in macro-economic terms.

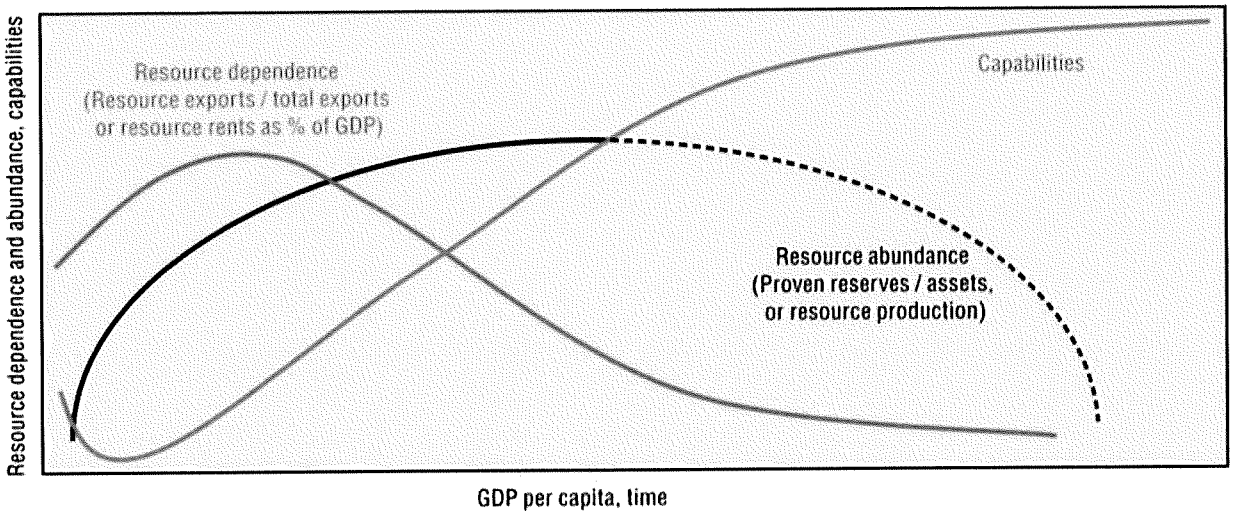


Figure 2.3: Analysis of the prevention of Dutch Disease. Source: Okumu and Clarke (2017).

Figure 2.3 shows a potential scenario for the prevention of Dutch Disease in the context of Africa. Apart from Resource dependence and GDP, this model discusses Capabilities, unlike the previously discussed theories. The model states despite the abundance of resources the GDP per capita would continue to grow if the capabilities of the labour increase over time (Okumu and Clarke, 2017). The capabilities might include the effective use of technology, business diversification, and efficient use of time resources etc. According to Okumu and Clarke (2017), Australia is trying to follow this model.

The following presents a summary of the theoretical model discussed for Dutch disease

Table 2.1: Summary of the theories used.

| Theory | Author |
|---|---|
| The Framework of Dutch Disease | Corden and Neary (1982) |
| Labour Model | Algieri (2011) |
| The theoretical framework of Dutch Disease | Taguchi (2017) |
| Relationship building between Resources and Dutch Disease | Szalai (2018) |
| Prevention of Dutch Disease | Okumu and Clarke (2017) |

## 2.2. Determinants of Dutch Disease

### *2.2.1. Foreign Aid as a determinant of Dutch Disease*

Foreign aid and assistance, particularly in monetary forms, have regenerated political interests from both developed and developing nations since the beginning of the 21st century. The establishment of MDG- Millennium Development Goals by UN including cutting down extreme poverty by half, deliver primary education globally, improve environmental sustainability methods, promote an equal distribution of wealth, reduce child mortality with attention being provided to better maternal health and further on. To attain the stated aims, global leaders recognise dependency over resource transfers and better effectiveness of financial assistance (Veiderpass and Andersson, 2007).

A large number of studies debate about the positive and negative implications of receiving foreign aid and development of the economy (Amin and Murshed, 2018). Some studies, such as Tekin (2012), prove a positive association between financial assistance and economic growth stating that aid enables better availability of capital in the least developing economies that can be utilized to improve health, education and overturn poverty. However, Alesina and Dollar (2000), counterargue that large sums of aid transferred from developed to developing nations contribute to unproductive consumption by the state due to corruption, high bureaucratic incompetence and inefficiencies of business sectors and inferior institutional development.

Rajan and Subramanian (2011), explain the link between official development aid (ODA) and the impact of Dutch disease as a two-good framework. The framework suggests that aid received by countries have two macro-economic effects. For example, ODA is spent on improving the non-tradeable sector of activities, which include education, health and well-being, construction and infrastructure which is classified as domestically-rendered services. This seems as a safe-bet in the view of developing nations as demand for these necessities is highly unmet due to shortage in supply. As capital is invested in these sectors, wages of employees (in that sector only) will tend to rise, attracting a large number of skilled labours into that particular sector of health and education. Due to globalization and transferable nature of output produced by sectors like manufacturing (tradeable goods), their prices tend to remain fixed to attain competitiveness. The fix prices cause the wages in this sector to remain constant to result in lower profits and even competitiveness resulting in decreasing exports. These long-term and cross-functional effects between the two sectors are classified as 'resource movement' effect. In the similar context, Uddin (2015), concludes that foreign financial assistance must be channelled into investments appropriately instead of ploughed into direct consumption which spike the charges of non-tradeable commodities increasing the real exchange rate (RER). Hence it is recommended to fully squeeze the advantages from ODA certain economic policies must be put into place which instead of causing a strain accelerate the growth of GDP.

Barder (2006) identified this relationship and described Dutch disease as a phenomenon of appreciation in RER. The literature referred that this appreciation will cause changes in the GDP produced per sector which can conflict the growth prospects in the long run of the aid-recipient country.

### *2.2.2. Natural Resources as a Determinant of Dutch Disease*

Natural resources, whether renewable or non-renewable, are referred to as economic assets that significantly contribute to economic development (Willebald, Badia-Miro and Pinilla, 2015). Rising incomes and wealth from the discovery of natural reserves of fossil fuels cause a new equilibrium to form with higher earnings, high consumption, and expenditures on both tradeable as well as non-tradeable commodities. As the lands produce valuable fuels that can be used as raw materials, governments collect easy rents from firms that are used to fund public welfare projects (health, education, transportation, infrastructure, grants) which otherwise would have been

unaffordable. This is evident in the history of the US and even European nations where high-rent operations have significantly donated to overall growth (Lederman and Maloney, 2006).

In contrast, while the obvious gains of an abundant supply of natural resources are gained by governments in the short-run and sometimes long-run as well, some literature argues that this benefit is achieved by bearing long-run expenses of slow and even stagnant economic growth. When governments in these economies become dependent over the primary sector, they often crowd out the secondary and tertiary ones which are necessary for long-run economic growth. The profits earned from fossil fuel extraction acute to the minority of elites, their incentive to invest in productive resources is quite low and is rather spent on costly lifestyles, putting upward pressure over the prices of goods and services (OECD, 2011). Rent-seeking by state officials furthermore raises dependency on natural reserves. However, once these natural resources deplete, the economy must earn from its manufacturing and other non-natural resource tradeable sectors. The manufacturing sector would be expensive and time-consuming to re-construct and will initially produce increasing returns to scale (as the economy lacks an advance industrial base). Moreover, if this harms labour-intensive firms more badly than capital-intensive ones, the burden to rebuild and bounce back would be greater than ever as it will result in a decline in employment which was evident in the case of UK and Netherlands (Ismail, 2010). This phenomenon is often referred to as 'resource curse' when instead of providing benefits to the economy, natural reserves like oil and gas results in a constraint or have a downward effect on growth. Literature published by Sachs and Warner (1995, 2005), to prove a strong relationship between resource abundance and negative economic growth. It stated that a 10% rise in the exports of natural fuels to GDP was linked to a decline in exports of manufactured goods from 1970 to 1990.

### *2.2.3. Remittances as a determinant of Dutch Disease*

Remittances as a source of funding received by host countries amount up to $429 billion in the year 2016 despite a 2.4% decline. Globalization and increased mobility of labour have further paved the way for remittances resulting in advancing growth since 1990 as shown below (World Bank, 2017):

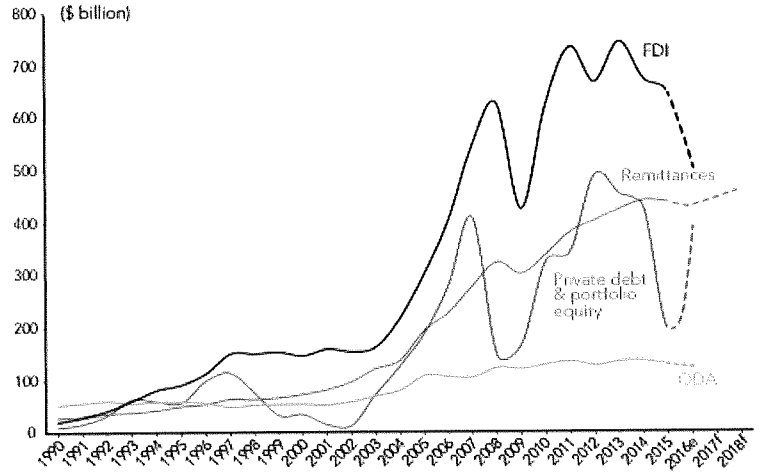


Figure 2.4: Remittances flows to developing countries. Source: World Bank (2017).

Chowdhury and Rabbi (2014), suggest a strong link between remittances and adverse macro-economic impacts in the case of Bangladesh. The literature points out that remittances over the past years' worker remittances have been characterized as a welfare-enhancing source of finance as it can be utilized to encourage businesses and entrepreneurship, upgrade health services, improve schooling, enhance financial development and further on. However, in spite of such benefits, remittances flowing generously into developing nations result in a set of challenges as recipient countries observe a severe decline in their trade competitiveness. The occurrence is due to the fact that as the flow of remittances rise, households are left with more disposable income which consequently causes an increase in expenditure too (apportioned more towards over non-tradeable commodities). Moreover, remittances result in a decreased availability of labour which ultimately pushes up the wages and costs of production within non-tradeable or manufacturing industries. These costs are reflected in rising prices which are held constant with RER appreciation as explained by Acosta, Lartey and Mandelman (2009).

Similar affairs were evident in the case of Cape Verde's economy which was favourably supported by external assistance (remittances) for its economic prosperity (Bourdet and Falck, 2006). The literature concluded that while external worker's incomes contributed significantly to annual GDP (15% of the total 60% of external financial support), it did raise a 'Dutch disease' impact by reducing the competitiveness, in terms of costs and prices, of its exporting tradeable sector.

Rodrik (2008) illustrates that worker's remittances bring benefits but at the expense of lowering long-run economic growth prospects, especially in least-developed countries, due to less diversified exporting industries along with inferior institutional infrastructure facilities. Furthermore, a large amount of literature shows evidence in Mexico, Latin-American nations and El Salvador that a resource movement effect from exporting goods and services (tradeable) to health and educational sectors (non-tradeable) consequent with an unwanted appreciation in the RER caused by inflows of external remittances (Fuentes and Herrera, 2007; Bussolo, Molina and Lopez, 2007).

### 2.3. Exchange Rates and Dutch Disease

In market economies, the exchange rate (ER) is an important existing strategic macro-economic price. Other prices of macro-economic such as inflation, wage, profit and the interest rate are also significant; however, except ER, none of the above said prices have a substantial impact on the stability and growth of the national economy. In international economics, yet ER was for very long consigned to textbooks; only in the early 1980s, it was included as key aspect of macroeconomics; and till present it is left out from development economics, due to the fact that its rise and fall would be for a shorter period (Bresser-Pereira, 2013).

Dutch Disease (DD) according to Amin and Murshed (2017) can be denoted as an acknowledgement in the real-exchange rate (RER) resulting influx of foreign currency triggering damage to the long-run opportunities of economic growth of the country. DD is a problem for policymakers as it decreases the value of inflows of foreign currency in the accomplishment of socio-economic development objectives of the economy (Barder, 2006).

According to the findings of Magud and Sosa (2013), economic growth is observed to be impacted by RER. Some interpretations indicate that any deviance of the RER from its essential value (i.e. long-term) decreases economic growth. In contrary to this view, overvalued ER impedes growth; therefore, growth can be fostered by undervalued ER. Further, it has been asserted that RER instability obstructs growth. On the other hand, relating the DD phenomenon with the association between growth and the RER, Sosa, Magud and Magud (2010) proposed that DD reduces economic growth. Therefore, effects of DD should be there in economic policy.

According to Greelay (2019), most frameworks of DD emphasis on ER, request for a primary product of a country makes its currency comparatively valued, decreasing exports of manufactured goods. However, it has been suggested that if the manufacturing sector is neglected a by country, then it will be challenging to rebuild it. In the context of the manufacturing sector, Goda and Torres (2013) conducted a study to assess the effect of 2004-2012 boom in the mining and energy on the RER in Colombia and sectorial arrangement of its economy.

The concept of extended DD was introduced, and as per this concept, appreciation of currency occurs not only because of the 'relocation' and 'spending' effect however also because of the exports and huge external capital inflows that finance the growing sector. The empirical findings suggest that Colombia witnessed the RER overvaluation, which in result adversely impacted that effectiveness of its agricultural and manufacturing sector.

Sy and Tabarraei (2010) conducted research to elucidate the capital inflows effect such as foreign direct investment (FDI) remittances and foreign aid on the RER movements in developing nations. As per the theory of DD, foreign aid negatively affects growth via an appreciation of the RER. In developing countries, approximately 20% of real exchange fluctuation is explained by capital inflows while remaining by real fundamentals. Therefore, the outcomes of the study do not scrap the DD theory, however, it assesses that its impact on depreciation or real exchange appreciation is comparatively low from factors which impact the RER.

Kubelec and Sá (2012) assess the success of the policy of ER stabilization in diminishing the adverse effects of a DD episode. It was revealed that inclining against a valued ER can avert the cost of tradable output, however at the cost of creating a misallocation of resources in different sectors of the economy. It was found in the study that welfare was a diminishing function of ER intervention. The outcome of the study proposed that stabilizing the insignificant ER in reply to a DD episode could be very distortionary.

According to Hodge (2012), the DD argument advocates that in countries with commodity-exporting, 'overvaluation' of currency because of the increase in prices of commodity affect manufacturing despite economy is being benefited by booming sector of natural resources. The association between manufacturing and RER was examined with reference to South Africa which is a rich mineral exporting economy. A sample period from 1980 to 2010 was taken using quarterly data. The results revealed that the most significant factor of domestic manufacturing is the world

growth; whereas the RER has the showed negative signal, and no proof found on DD effect on manufacturing. Also, manufacturing was dragged down in South Africa since the early 1980s due to the significant rise in unit labour costs.

Nikas and Blouchoutzi (2014) argue that external foreign exchange inflow can result in currency appreciation of the receiving country, a decline of its attractiveness and a drop-in net export. The theory of economics recognized this as the DD, even though it is frequently witnessed in developing economies. Nikas and Blouchoutzi (2014) tested that applicability of the DD for two growing economies under a free-floating ER regime, specifically Moldova and Albania. In the contemporary era, these economies have seen striking outflows of expatriates and also more striking inflows of remittances. Nevertheless, the outcomes of econometrics, centred on the ordinary least squared fixed effects, revealed the effect of worker's remittances of the RER differs among Albania and Moldova. It was confirmed that macroeconomic repercussions of large inflows of capitals have been dissimilar between the two countries.

Similarly, Kyophilavong et al. (2013) and Taguchi and Khinsamone (2018), using macro-econometric framework and model of computable general equilibrium, individually assessed the capital inflows impact in resource sectors in Lao. Two side effects were found: negative effects in the long-term and positive effects in short-term, the DD effect via appreciation of RER.

Likewise, Insisienmay, Nolintha and Park (2015), investigated from the proof of the DD on Lao economy by examining the causal relationship from exports of the natural resources to RER, by assessing multiple equations of regression. A few symptoms of the policy options and disease were found like investments for education and resource revenues for infrastructure.

## 2.4. Implications of Dutch Disease

### *2.4.1. Positive Implications of Dutch Disease*

There are multiple positive implications of the Dutch disease, for instance, according to Brahmbhatt, Canuto, and Vostroknutova (2010), increment in wealth due to the discovery of natural resources or permanent rise in the trade have a positive influence on the overall economy. The discovery of natural resources leads towards new equilibrium; hence, leading the economy towards new equilibrium with higher income as well as higher consumption of the non-tradable as well as tradable goods. Moreover, the rent provided by the mineral resources collected by the

government can also provide resources for carrying out investment in public goods. In this regard, the Dutch disease can positively contribute to fulfilling the development expenditures, which are most often not affordable in other circumstances.

The analysis of historical development of the United States and different European countries revealed that the boosting economies for performing high-rent activities provided a strong stimulus to growth (Lederman and Maloney, 2008). The provision of resources for economic development provides an indication of the obvious gains, such that these gains are likely to provide long-term stability to economic growth. Specifically, manufacturing industries and other non-resource tradeable contributes towards acquiring economic growth for a long-term duration. The presence of positive technology spill-overs and increment in return to the scales in production are positive implications of the Dutch disease.

Corden (2012) carried out an analysis with reference to Australia and found that Dutch disease caused a significant increment in the export income of the mining sector of Australia, with respect to the international prices, which also appreciated exchange rate. Dutch disease in Australia contributed to the capital inflow, which appreciated the exchange rate. Thus, expenditure on the mining sector resulted in higher income and higher outcomes and improved capital investment due to financing provided by the foreign capital inflow (Corden, 2012). Dutch disease also results in expenditure on imports, remittance of dividends, as well as on the purchase of foreign assets.

According to Botta, Godin, and Missaglia (2015), the likelihood of favourable implications of the Dutch disease is also dependent on the presence of natural resources. It is argued that Dutch diseases have a negative influence on the economic performance of the countries that are rich in natural resources, in comparison to the countries that have limited natural resources. In this regard, considering Dutch disease as a curse for the natural resource is strongly influenced by the growth-enhancing resources possessed by a country (Chang, 2010). For the countries having large manufacturing economies, the Dutch disease results in increment in the profit rate, real wage, and labour productivity growth, in comparison to the countries having specialization in non-tradable and non-manufacturing sectors (Botta, 2010).

According to Égert (2005), the countries rich in natural resources and specifically the countries having the economic structures that are heavily reliant on the oil production and exports are considered as perfect candidates for the implementation of the Dutch Disease phenomenon. The

increment in prices of the exported items with reference to the global market results in more investments in the given sector, which contributes to significant increment in the sectoral output. The increment in sectoral output increase the demands for a greater number of labours, for producing more output within the commodity sector; thereby, resulting in a significant increment in wages. For equalizing wages across several sectors, the wages in other sectors of the economy are also increased. The increment in wages also increases the relative prices of non-tradable that results in increasing the prices of products within the production sector. According to Égert (2005), the Dutch disease results in increment in the commodity prices, which is resulted in the appreciation of the real exchange rates triggered by the inflows in export revenues. Thus, maintaining balance in trade revenue is one of the positive implications of the Dutch disease.

### *2.4.2. Negative Implications of the Dutch Disease*

The Dutch disease has more negative implications, as compared to the positive implications. In this account, the research carried out by Beine, Bos, and Coulombe (2012) assessed the presence of Dutch disease in Canada by incorporating the error correction method and the Monte Carlo method. It was found that Dutch disease was one of the fundamental reasons behind the development of exchange rates between the years 2002 and 2007, which resulted in a considerable loss in Canadian manufacturing firms. In addition, Mohammadi and Jahan-Parvar (2012) ascertain the presence of Dutch disease in approximately 13 oil-exporting countries of the world and found a weak association between the prices of oil as well as real exchange rates, demonstrating the presence of weak Dutch effects within the considered economies of the world.

The research conducted by Tyers and Walker (2016) found that the Dutch disease in Australia resulted in the de-industrialising effect. In addition, another study conducted by Chao et al. (2006) stated that the decline in capital stock had adverse impacts on the manufacturing sector, contributing to de-industrialization, which is reminiscent of the Dutch disease. With reference to the economy of Japan, the Dutch disease resulted from the demand shocks due to the tourism boom.

Brahmbhatt et al. (2010) stated that the Dutch disease results due to increment in the returns and cost and contribute to time-consuming learning in manufacturing. Moreover, the depletion of natural resources requires additional efforts conducted by the government to rebuild the sources of growth. It has been discussed that the Dutch disease has more impacts on the labour-intensive

industries, in comparison the capital-intensive industries (Ismail, 2010). For this reason, the Dutch disease is likely to result in a significant increment in the rate of unemployment, similar to the cases of the United Kingdom and Netherlands (Ismail, 2010).

Dutch disease results in a decline in the spillover effect and other growth-enhancing qualities in the tradable sector, resulting in a negative influence on the economy. Thus, with reference to these research outcomes, the countries at risk of experiencing Dutch disease are required to take measures for overcoming the negative impacts of the Dutch disease. Prior to introducing the Dutch diseases, the countries are required to focus on the availability of resources and take measures for reducing the impacts of de-industrialisation, resulted due to the Dutch disease.

### 2.5. Dutch Disease in Developing Countries

Dutch disease is primarily a failure of the market that impacts nearly every developing country and may perpetually hinder their industrialisation, as the market joins on a long-term balance exchange rate triggered by Dutch disease. In the long run, Dutch disease depends on the equilibrium of foreign account of a country; that is, with a balanced current account nothing occurs with the growing foreign saving policy whose threshold is the balance of payment.

It is found that developing countries possess technological competencies to execute more compound activities domestically, but does not accomplish them and fails to attain primarily due to the Dutch disease that triggers an overvaluation of its exchange rate. The country may have low or limited technological processes in this case. Work processes requiring adequate qualification are for developed countries on the notion that developed countries do not have qualified labour; however, this is not relevant in the case of developing countries since high rates of unemployment of skilled labours are prevalent in developing countries (Bresser-Pereira, 2008)

Taguchi (2016), in his study, has the relation of Dutch Disease with capital inflows via accepting emigrant remittance and foreign aid and exporting natural resources. The emphasis was on Asian economies that are likely to withstand their growth.

There were three key findings of the research. First, the economies of Vietnam, Cambodia, Myanmar, and Lao PDR and their foreign aid did not trigger the Dutch Disease instead stimulated their economic growth, because of their foreign aid supported their infrastructure development. Second, in perspective of the abundance of natural resource in Asian economies, it was found that

Dutch Disease was recognised for the period between 1980s to1990s, but not for 2014, largely due to their institutional developments. Third, concerning the effects of Dutch Disease related to emigrant remittances, it was found that disease was confirmed in Nepal, because of their various policy efforts and demand structures. Therefore, recently, in Asian economies, Dutch Disease may not be applicable. One of the understandings on the change of the resource effects may be from the development of institutional excellence and the development in policy endeavours in the current Asian economies (Taguchi, 2016).

On the other hand, it is suggested by Van der Ploeg (2011) that as far as Asian economies consist of capital inflows in different forms, these economies may be vulnerable to Dutch Disease. So in order the avert the risk of Dutch Disease, these economies should place emphasis on "capital accumulation effect" from the perspective of long-term and argued by Bourdet and Falck (2006). The economies of Asia need human resource development, infrastructure development and industrial policies to assist and encourage production.

### 2.6. Effect of Dutch Disease on Turkish Economy

Dutch disease is referred to as the negative economic development caused by an increment in the foreign exchange earnings, resulting due to increment in the natural resources as well as an appraisal of the national currency (Mironov and Petronevich, 2015). The Dutch disease is related to the export of natural resources; however, the factors increasing the flow of the foreign currency in the country also increase the likelihood of the Dutch disease.

Analysing from the context of Turkey, this country does not possess rich natural resources, consistent export potential, or strong industry; similar to other countries having wealth due to the natural resources. However, despite having no rich natural resources, this country was reported to experience the Dutch disease, presenting that it is not essential to possess natural resources for experiencing the Dutch disease (Konak, 2019). Increment in money flow due to increment in the interest rates within the country, increment in the remittances of workers, increment in incomes of the tourism sector, and increment in income (in the form of foreign currency due to large-scale investments) are likely to give rise to the Dutch disease.

The inflow of foreign currency is high in numbers and is not only influenced by the possession of natural resources; therefore, Dutch disease cannot be considered as an economic problem, which is likely to experience by the countries rich in natural resources (Palma, 2014). In one of the

developing countries, i.e., Turkey, capital flow takes place through various economic channels and under the influence of different economic reason; however, Turkey still encountered the Dutch disease (Égert, 2005).

In the decade of 1970s, Turkey experienced a significant transfer of resources and provided young labour to the European countries. The remittance accounts of workers, which were used for transferring the foreign currency by the workers working in other countries contributed to a significant share in assets of Turkey (Konak, 2019). Therefore, on the basis of these literature findings, it can be affirmed that the remittances of workers increased the deindustrialisation tendencies in Turkey as a result of structural changes. Due to significant transfer of resources, the consumption structure within Turkey was also rapidly changed; hence, indicating that the Dutch disease is also likely to be caused from the economic development providing high amounts of inflow of foreign currency within the countries having limited natural resources.

Another most significant problems that contributed to the Dutch disease in Turkey were political and economic problems in the country (Konak, 2019). The currency flows from the countries which are rich in natural resources to the developing countries, such as Turkey, due to political and economic problems. Analysing with reference to Turkey, in the decade of 1980s, the demand for imported goods was significantly increased, which increased the expenses at first and when these expenses exceeded from revenues, it became essential to borrow from the international markets.

Considering the context of Turkey, the country, due to the strategic location, has been experiencing large scale investment, resulting in the Dutch disease. According to Konak (2019), Turkey has experienced increment in the demands of the imported products due to the mechanism of a free market, which increased the expense; hence, ultimately contributing to the increment in the exchange rates, resulting in the significant hot money flow. The hot money flow had a significant influence on the Turkish economy, which was similar to the effects caused by the discovery of natural resources.

The hot money flow initially seemed to have a positive influence on the economy of Turkey; however, during the cases of negative economic and political development, the hot money flows increased the risk of prevention of economic growth in the long term. Thus, the hot money flows resulted in the Dutch disease, causing serious problems to the financial markets as well as in the

real markets (Aytekin, 2018). According to Eşiyok (2012), the hot money inflow in Turkey was resulted due to high rates of interests, increment in the values of natural currency and decrement in the cost of importation. Thus, the appraisal of national currency also caused a significant increment in the demand for production.

The increment in demands of products was only associated with imported goods due to which the national industry was regressed and the rate of unemployment was significantly increased. The privatization activities in Turkey were also accelerated and Turkey was perceived as a secure country for investment, due to political stability. The acceleration of privatization activities contributed towards improving the inflow of foreign currencies, in the form of hot money, or real investment. However, the abundant amount of hot money increased the value of the national currency of Turkey and decreased the demands and production of exportable goods.

The appraisal in Turkey's national income decreased the prices of national currency and the demand changed its direction from importing substitute to imported goods. The increment in the imported input usage, in the process of production, had negative impacts on the industrials sector of Turkey. In the decades of 1980s, similar to the process of economic liberalization, the Turkey's economy experienced similar process, and the foreign currency which was transferred to Turkey in various ways, resulted in the appraisal of the national currency, having a negative influence on the national currency. Thus, it can be contended that the Turkish economy experienced Dutch disease, due to a variety of reasons.

When the Dutch disease is assessed with reference to Turkey, the impacts of the Dutch disease has been found to possess association with the tourism sector, such that the tourism sector is categorised as the most significant sectors that can serve as a cause of the Dutch disease. Ojaghlou (2019) investigated whether or not the growing tourism industry in Turkey has resulted in the resource movement and caused spending effect; thereby, led the economy of Turkey towards the Dutch disease. The research outcomes revealed that due to growth in the tourism sector of Turkey, the economy of this country has been experiencing the allocation of resources to the non-tradable sectors and de-industrialisation (Ojaghlou, 2019). Due to this reason, the Turkish economy has been experiencing instability in the long-term growth and de-industrialisation.

## 2.7. Key Findings of the Literature

The above section provided a comprehensive review of literature related to the problem under study. The summary of the literature studied is discussed in this section with respect to the key findings.

Table 2.2: Summary of the Literature.

| Author | Findings |
|---|---|
| **Foreign Aid as a determinant of Dutch Disease** | |
| Veiderpass and Andersson (2007) | World leaders recognise dependency over resource transfers and better effectiveness of financial assistance to attain the stated aims. |
| Tekin (2012) | There is a positive association between financial assistance and economic growth. |
| Alesina and Dollar (2000) | Large sums of aid transferred from developed to developing nations contribute to unproductive consumption. |
| Rajan and Subramanian (2011) | The link between official development aid (ODA) and the impact of Dutch disease is a two-good framework. |
| Uddin (2015) | Foreign financial assistance must be channelled into investments appropriately instead of ploughed into direct consumption. |
| Barder (2006) | Dutch disease is a phenomenon of appreciation in real Exchange Rate, which is affected by ODA. |
| **Natural Resources as a Determinant of Dutch Disease** | |
| Willebald, Badia-Miro and Pinilla (2015) | Natural resources are referred to as economic assets that significantly contribute to economic development. |
| Lederman and Maloney (2006) | High-rent operations have significantly donated to the overall growth. |

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| OECD (2011) | The profits earned from fossil fuel extraction put upward pressure over the prices of goods and services. |
| Ismail (2010) | Labour-intensive firms are hurt more badly than capital-intensive ones due to the depletion of natural resources, which results in a decline in employment. |
| Sachs and Warner (1995) | 10% rise in the exports of natural fuels to GDP is linked to a decline in exports of manufactured goods from 1970 to 1990. There is a strong relationship between resource abundance and negative economic growth |
| **Remittances as a determinant of Dutch Disease** | |
| World Bank (2017) | Growth has advanced due to globalization and increased mobility. |
| Chowdhury and Rabbi (2014) | There is a strong link between remittances and adverse macro-economic impacts |
| Acosta, Lartey and Mandelman (2009) | Costs are reflected in rising prices which are held constant with real Exchange Rate. |
| Rodrik (2008) | Worker's remittances bring benefits but at the expense of lowering long-run economic growth prospects |
| Fuentes and Herrera (2007) | Resource movement effect from exporting goods and services to health and education sectors consequent with an unwanted appreciation in the real exchange rate. |
| **Exchange Rates and Dutch Disease** | |
| Bresser-Pereira (2013) | Due to the fact that its rise and fall would be for a shorter period, the exchange rate has been left out from development economics. |

| | |
|---|---|
| Amin and Murshed (2017) | Dutch Disease results in an influx of foreign currency triggering damage to the long-run opportunities of economic growth. |
| Magud and Sosa (2013) | Economic growth is observed to be impacted by the real exchange rate. |
| Greelay (2019) | Request for a primary product of a country makes its currency comparatively valued, decreasing exports of manufactured goods. |
| Goda and Torres (2013) | Appreciation of currency occurs also because of the exports and huge external capital inflows that finance the growing sector. |
| Sy and Tabarraei (2010) | Foreign aid negatively affects growth via an appreciation of the real exchange rate. |
| Kubelec and Sá (2012) | Inclining against a valued exchange rate can avert the cost of tradable output. |
| Hodge (2012) | Overvaluation of currency, because of the increase in prices of commodity affect manufacturing despite the economy being benefited by the booming sector of natural resources. |
| Nikas and Blouchoutzi (2014) | External foreign exchange inflow can result in currency appreciation of the receiving country. |
| Taguchi and Khinsamone (2018) | The Dutch Disease effect via appreciation of real exchange rate has negative effects on the long-term and positive effects in short-term. |
| **Implications of Dutch Disease** | |
| Brahmbhatt, Canuto, and Vostroknutova (2010) | The increase in wealth because of natural resource discovery or rise in trade has shown to positively influence the economy. The Dutch Disease positively contributes to accomplishing development expenditures, which are usually not affordable in many cases. |

| | |
|---|---|
| Lederman and Maloney (2008) | It was revealed from the analysis of different European countries and the United States that advancing economies for performing high-rent activities gave robust stimulus to growth. |
| Corden (2012) | In Australia, Dutch Disease contributed to capital flow, which increased the exchange rate. Therefore, the mining sector's expenditure resulted in high-income and high-results and enhanced capital investment because of the financing made through foreign capital inflow. |
| Botta, Godin, and Missaglia (2015) | It is reasoned that Dutch Disease negatively affects the economic performance in economies that are rich in natural resources, as compared to those having limited resources. |
| Chang (2010) | It is argued that Dutch Disease is not favourable for natural resource and is largely influenced by the growth-increasing resources possessed by an economy. |
| Botta (2010) | The countries rely more on the manufacturing sector, the Dutch Disease as a consequence increases real wage, profit rate, labour productivity growth, in relation to countries having expertise in non-manufacturing and non-tradable sectors. |
| Beine, Bos, and Coulombe (2012) | The author examined the presence of Dutch Disease in Canada and it was established that Dutch Disease is the key reason behind the exchange rate development which results in a significant loss in the manufacturing firms of Canada. |
| Mohammadi and Jahan-Parvar (2012) | It was found that there is a weak relation between oil prices and exchanges rates in approximately 13 oil-exporting countries of the world, signifying the |

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|---|---|
| | presence of weak Dutch influence in the said countries. |
| Tyers and Walker (2016) | It was found that Dutch Disease in Australia impacts the de-industrialisation in the country. |
| Chao et al. (2006) | It was stated that the decrease in capital stock had a negative impact on the manufacturing sector, resulting in de-industrialisation, which is indicative of Dutch Disease. |
| Ismail (2010) | It was found that Dutch Disease impacts more on labour-intensive industries, as compared to capital-intensive industries. For this purpose, Dutch Disease results in a significant increase in the employment rate. |
| **Dutch Disease in Developing Countries** | |
| Bresser-Pereira (2008) | It was found that economies having technological expertise implement more multifaceted activities; however, it fails to accomplish them largely due to Dutch Disease which activates overvaluation of exchange rates. |
| Taguchi (2016) | It was found that Dutch Disease in relation to Asian economies many is not applicable. |
| **Effect of Dutch Disease on Turkish Economy** | |
| Konak (2019) | Despite having adequate natural resources, Turkey experienced Dutch Disease. This implies that it is necessary to have a natural resource for experiences Dutch Disease. |
| Palma (2014) | It was noted that Dutch Disease may not be viewed as an economic challenge, which is probable to experience by the economies rich in natural resources. |

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|---|---|
| Égert (2005) | In developing economies like Turkey, inflows of capital take place via different economic medium under the influence of various economic reasons; but Turkey still experiences the Dutch Disease. |
| Aytekin (2018) | It was concluded that the hot money inflows in Dutch Disease result in serious issues to the real markets and also the financial markets. |
| Esiyok (2012) | The author established that inflow of hot money in Turkey was the outcome of high-interest rates, decrease in the cost importation and increase in the values of national currency. |

## Chapter 3: Research Methodology

### 3.1. Research Approach

A research approach can be understood as the plan of action that signifies the direction for carrying out research work in a systematic and efficient manner. According to Creswell and Creswell (2017), the researcher has the choice to choose the best research approach from three types, i.e., qualitative approach, quantitative approach, and mixed approach, depending on the objectives of the research. According to Creswell and Poth (2017), qualitative research is performed when there is a need to study behaviours, patterns or trends, instead of using statistical data. On the other hand, quantitative research involves the statistical analysis of the relationship between the selected variables (Myers, Well, & Lorch, 2013).

For the present research, quantitative research approach seems to be suitable as the objective of the research is to critically examine the determinants of Dutch disease while assessing the impacts of Dutch disease on the Turkish economy. In particular, the research requires a thorough examination of the determinants of the Dutch disease in the Turkish economy and to what extent they affect the economy of Turkey and this assessment can only be conducted by using numeric data. This aspect justifies the selection of quantitative research approach, as a qualitative approach does not support numeric data.

### 3.2. Research Design

The foundation of the research design is laid by the selection of an appropriate research approach. According to Rahi (2017), an adequate research design helps the researcher to accomplish the goals of the research by studying the factors pertaining to the research problem. Research design enables the research approach to be implemented properly by giving it a direction to achieve the desired goals. According to Akhtar (2016), the research design is a blueprint of the research that gives it a proper structure and keeps all the elements glued together to attain the pre-defined objectives. Therefore, it is important for the researcher to carefully select the research design.

There are various types of research designs that include descriptive design, correlational design, and experimental design. In the context of the present research work, the correlational design has been selected. The rationale for selecting a correlational design is that it allows the analysis of the relationship between the different dependent and independent variables that are also required in

the present research work (Smith, 2017). In particular, the current study is intended to measure the relationship between Dutch disease and the Turkish economy that can easily be conducted using correlational design. Therefore, the use of correlational research design is justified in this particular case.

### 3.3. Data Sources

The next step in the research process is to identify the suitable data sources from where accurate and relevant data can be retrieved. There are two basic types of data sources, i.e., primary and secondary data sources. According to Hox and Boeije (2005), primary data sources are the ones that provide first-hand information, specifically through carrying out interviews and surveys. On the other hand, the secondary data collection involves the process of retrieving data from already existent literature, i.e., government archives, textbooks, journal articles, industry reports, etc.

This research aims to use secondary data sources because the information related to economic factors and their impact can be accurately retrieved from the official records of government and relevant departments. However, the current study considers the use of the World Bank Database, which contains world development indicators, to extract data. According to Minton, Gurel-Atay, Kahle and Ring (2013), primary data involves a certain level of opinion and prejudice, therefore, for this research secondary data sources are suitable for obtaining a clear picture of economic factors causing Dutch disease and its impact.

### 3.4. Sample Size

Sampling is a critical process that involves the selection of a particular segment from a population. The present research work is based on secondary data sources and requires an appropriate sample size. Moreover, sampling is important due to data accessibility/availability issues. In this case, the research uses the time series macroeconomic data of Turkey for the period 2000-2018 (19 years).

The selected sample period is in line with the objectives of the study i.e. before and after the financial crisis period. Using the sampled data, various determinants of Dutch Disease are identified and a thorough analysis is carried out by the researcher to assess the impacts of these factors on the economy of Turkey.

### 3.5. Variable Description

The variables used in the study are:

Table 3.1: Variables code, unit and nature.

| Variable Code | Variable Name and Unit | Nature |
|---|---|---|
| **ODA** | Net official development assistance and official aid received (in USD) | Independent Variable |
| **NR** | Total natural resources rents (in USD) | Independent Variable |
| **PR** | Personal remittances received (in USD) | Independent Variable |
| **EXR** | Official exchange rate (LCU per US$, period average) | Independent Variable |
| **INF** | Consumer price index (2010 = 100) | Independent Variable |
| **GDP** | GDP (USD) | Dependent Variable |
| **UE** | Unemployment, total (% of the total labour force) (modelled ILO estimate) | Dependent Variable |

Note: The variable description provides raw forms of the variables, which are later transformed for analysis

### 3.6. Data Analysis

Data analysis techniques of the research must be in line with the research problem and research approach so that consistent results can be achieved. According to Zikmund et al (2013), data analysis deals with the examination of the collected data findings of the research with respect to research objectives. Therefore, it is important for the researcher to select such data analysis approach that complements the research approach.

As mentioned by Cope (2014), the data analysis techniques that are used in the qualitative approach include content analysis, thematic analysis, narrative analysis, and observational studies. However, according to Clemence, Doise, and Lorenzi-Cioldi (2014), in a quantitative approach, regression analysis, correlation, variance analysis, descriptive statistics, and various other techniques are used.

Since the approach selected for this research is quantitative, therefore, the analysis techniques used in the current study are summary (descriptive statistics), unit root test, normality test, correlation, and OLS regression.

The main analysis technique that addresses the research objectives are correlation and OLS techniques. Correlation analysis measures the relationship between two or more variables via particular coefficients, which is also applicable in the present study as the relationship between multiple variables of Dutch disease and the Turkish economy is examined.

Regression, on the other hand, examines the impact of one variable on another and also illustrates the degree of these effects (Cohen, West, and Aiken, 2014). In this case, the impact of Dutch disease determinants and other variables (EXR and I) is examined over GDPG and UE (Turkish economy).

### 3.7. Ethical Consideration

It is conducted as one of the greatest responsibilities of the researcher to ensure that the study is justified on the ethical grounds. In primary researches, ethical considerations deal with protecting the confidentiality, objectivity, and integrity of personal information of the participants (Woodfield and Iphofen, 2017).

However, the present research work is based on secondary data sources, so ethical considerations for the study revolves around protecting the credibility of the final findings. In this account, the researcher has ensured that the information, included in the study is free of plagiarism and for this purpose, all authors and data sources are fairly acknowledged.

The data collected in this research are from official, and professional works of literature, and journals, therefore, data accuracy is regarded as highly important. The numerical and statistical data obtained from professional literature, and journals were checked twice, as delivering false information could potentially decrease the credibility and authenticity of this research.

In addition to this, theoretical data which includes factors or determinants of Dutch disease, are checked twice and made sure that no manipulated data is included in the research data manipulation and plagiarism are avoided. Moreover, it was made sure throughout the research that data and information mentioned are collected from authentic journals and literature sources.

## 3.8. Summary of the Research Methodology

Table 3.2: Summary of the research methodology.

| | |
|---|---|
| Research Approach | Quantitative Research |
| Research Design | Correlational design |
| Sample Size | 19 years, 2000-2018 |
| Variables | Independent variables: ODA, NR, PR, EXR, and INF (CPI)<br>Dependent variables: GDPG, UE |
| Data Analysis Techniques | Descriptive statistics, Normality test, Stationarity Test, Correlation Matrix, and OLS regression. |

# Chapter 4: Data Analysis

## 4.1. Summary Statistics

Table 4.1: Summary Statistics, using the observations 2000 – 2018.

| Mean | Median | Minimum | Maximum |
|---|---|---|---|
| 0.19348 | 0.13597 | 0.00000 | 0.41831 |
| **Std. Dev.** | **C.V.** | **Skewness** | **Ex. kurtosis** |
| 0.13454 | 0.69536 | 0.43049 | -1.2905 |
| **5% Perc.** | **95% Perc.** | **IQ range** | **Missing obs.** |
| undefined | 0.41831 | 0.27645 | 0 |

Table 4.1 exhibits the statistical measures of ODA in Turkey as a percentage of GDP. These measures mainly include the average (i.e., mean), Standard Deviation, the minimum and maximum range of ODA taken by Turkey in the 19 years. ODA referring to the total development assistance and foreign aid received, officially recorded in turkey averages to 0.19% of the total GDP within the period of 19 years (2000-2018).

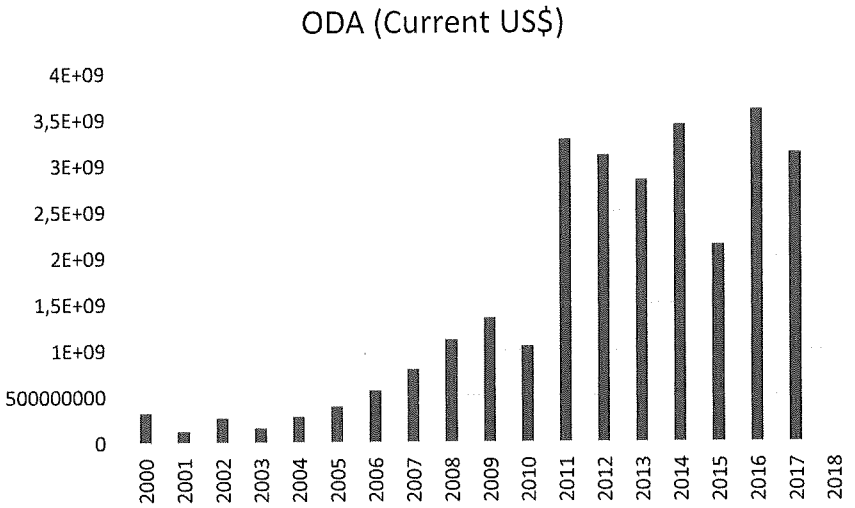


Figure 0.1: The total development assistance and foreign aid received.

However, ODA in Turkey deviates by 0.13% on average, showing some volatility. Moreover, the maximum value of ODA recorded during the period is 0.41% of the total GDP, in the year 2016 as shown in Figure 4.1. It can also be observed in Figure 4.1 that the values are considerably lower prior to 2011.

Table 4.2: Summary Statistics, using the observations 2000 – 2018 for the variable NR (19 valid observations)

| Mean | Median | Minimum | Maximum |
|---|---|---|---|
| 0.36845 | 0.36330 | 0.00000 | 0.69930 |
| **Std. Dev.** | **C.V.** | **Skewness** | **Ex. kurtosis** |
| 0.16686 | 0.45286 | 0.078860 | 0.028612 |
| **5% Perc.** | **95% Perc.** | **IQ range** | **Missing obs.** |
| undefined | 0.69930 | 0.20682 | 0 |

The table above demonstrates the descriptive statistics for the natural resources rents (NR) in Turkey as a percentage of GDP. The descriptive statistics include computing the average, maximum and minimum range, percentage of variations and whether the NR combined in 19 years is negatively or positively skewed.

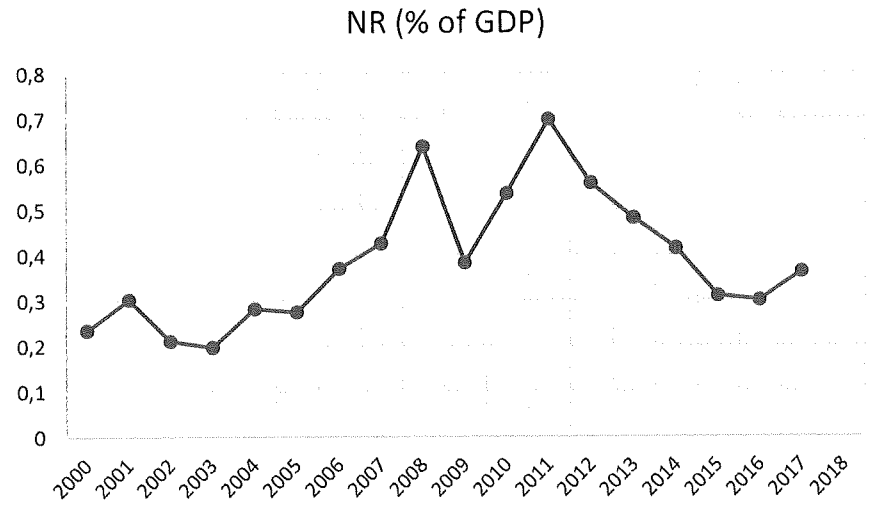


Figure 0.2: Natural resources in Turkey.

NR as a percentage of GDP in Turkey shows that the average rent in 19 years has totalled to 0.36% of the GDP. Whereas the maximum NR has accounted for 0.69% in the year of 2011. The middle value (percentage of NR) has been seen as 0.36% as well, with a standard deviation of 0.16%. Lastly, the data is positively skewed by being less than 1 as shown in Figure 4.2.

Table 4.3: Summary Statistics, using the observations 2000 – 2018 for the variable R (19 valid observations)

| Mean | Median | Minimum | Maximum |
|---|---|---|---|
| 0.39246 | 0.23379 | 0.12307 | 1.6705 |
| **Std. Dev.** | **C.V.** | **Skewness** | **Ex. kurtosis** |
| 0.42985 | 1.0953 | 2.1911 | 3.3859 |
| **5% Perc.** | **95% Perc.** | **IQ range** | **Missing obs.** |
| undefined | 1.6705 | 0.13295 | 0 |

The inflow of remittances in Turkey, in the 19 years, is showing in the table above. the average personal remittances received as a percentage of GDP is computed, with its highest and lowest value in the 19 years, and how much the total value is deviating. Further, the table also exhibits that Remittances received as a part of GDP is highly skewed as shown by the value of 2.1. In the case of the average remittances, the mean value shows that the average inflow of remittances is 0.39% of the total GDP from 2000 to 2018 in Turkey.

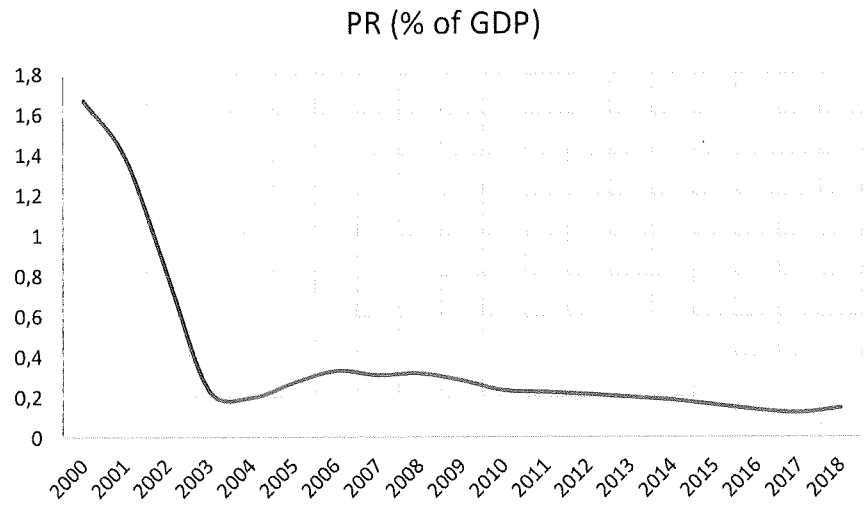


Figure 4.3: The inflow of Remittances in Turkey.

However, the lowest remittances received accounts for 0.12% of the total GDP whereas the highest remittance received range up to 1.67% of the total GDP. The gap between the maximum and minimum range can be confirmed by the standard deviation of 0.42% as displayed in Figure 4.3.

Table 4.4: Summary Statistics, using the observations 2000 – 2018 for the variable EXR (19 valid observations)

| Mean | Median | Minimum | Maximum |
|---|---|---|---|
| 1.9207 | 1.5072 | 0.62522 | 4.8284 |
| **Std. Dev.** | **C.V.** | **Skewness** | **Ex. kurtosis** |
| 0.99556 | 0.51833 | 1.6135 | 2.1303 |
| **5% Perc.** | **95% Perc.** | **IQ range** | **Missing obs.** |
| undefined | 4.8284 | 0.84496 | 0 |

Table 4.4 exhibits a summary of the main statistical measures of the Official Exchange Rate (EXR) in Turkey, for the period of 19 years (2000-2018). The EXR is taken as the local currency units relative to the US Dollar. The measures according to the table, shows that EXR has an average of 1.92 LCU relative to the US Dollar from 2000 to 2018, and maximum Turkey's LCU has gone in relation to the US dollar is 4.82 LCU, while the lowest being 0.62 LCU. In addition, in the 19 years of time, the EXR has deviated by 0.99 LCU, making the EXR highly skewed in Turkey by 1.6.

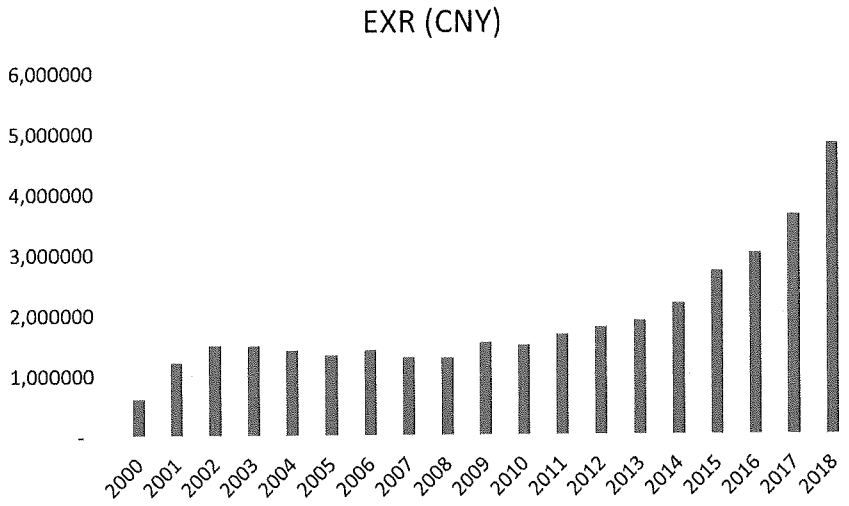


Figure 4.4: Exchange Rate in Turkey.

The above-mentioned trends of Turkey's exchange rate can be observed in Figure 4.4. The highest value is observed in 2018, whereas, the increment in the value starts from 2013, before that time a consistent trend is portrayed.

Table 4.5: Summary Statistics, using the observations 2000 – 2018 for the variable GDPG (19 valid observations)

| Mean | Median | Minimum | Maximum |
|---|---|---|---|
| 5.1041 | 6.0859 | -5.9623 | 11.113 |
| **Std. Dev.** | **C.V.** | **Skewness** | **Ex. kurtosis** |
| 4.4520 | 0.87224 | -1.2445 | 1.0181 |
| **5% Perc.** | **95% Perc.** | **IQ range** | **Missing obs.** |
| undefined | 11.113 | 5.3035 | 0 |

The GDP growth in the period of 19 years is shown in the table above, measuring the average growth reported in these 19 years, the minimum and maximum range and how much the GDP deviates from the average each year due to the variation in total GDP of each year. According to the table, the average annual GDP growth is equal to 5.1%, where the highest GDP has gone up to 11% annually in the year 2011.


Figure 4.5: GDP Growth Rate in Turkey.

On the other hand, the country recorded the lowest GDP in the year 2001, which went down to negative 5.96% due to severe imbalances and anaemic performance in the country that resulted in a financial crisis. The highest and lowest range, the GDP varies by 4.4%, being highly skewed by negative 1.2 as shown in Figure 4.5.

Table 4.6: Summary Statistics, using the observations 2000 – 2018 for the variable UE (19 valid observations)

| Mean | Median | Minimum | Maximum |
|---|---|---|---|
| 9.7949 | 10.236 | 6.4950 | 12.552 |
| **Std. Dev.** | **C.V.** | **Skewness** | **Ex. kurtosis** |
| 1.3809 | 0.14098 | -0.43150 | 0.20153 |
| **5% Perc.** | **95% Perc.** | **IQ range** | **Missing obs.** |
| undefined | 12.552 | 2.0870 | 0 |

Table 4.6, measures the statistical data of average unemployment in Turkey for the 19-year period. The unemployment ratio, as discussed earlier, is computed as a percentage of the total labour force, which accounts for an average of 9.7% from 2000 to 2018.

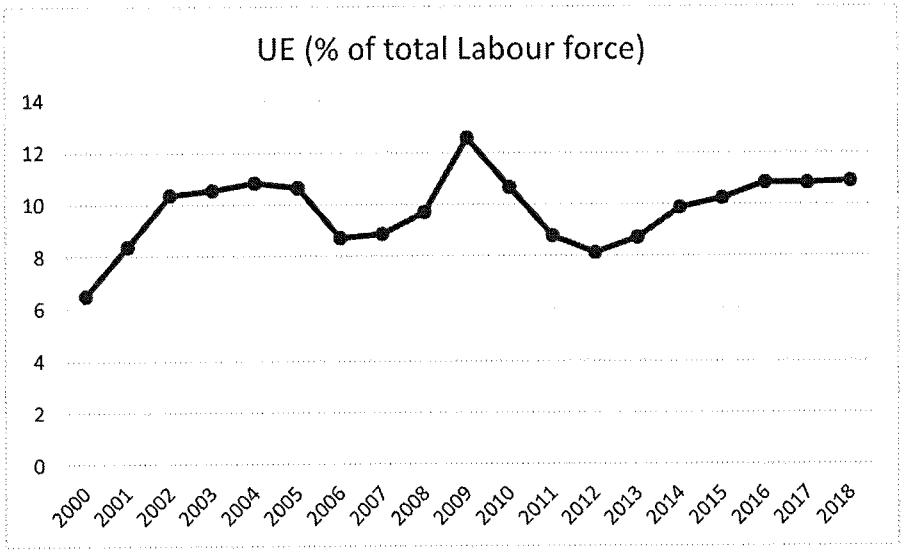


Figure 4.6: Unemployment in Turkey.

High unemployment has been recorded at a rate of 10.23% from 2002 to 2005, as well as again from 2015 to 2018. The Figure 4.6 shows that it was its highest peak at 12.5% in the year of 2009 (global financial crisis period) whereas the lowest unemployment rate has been recorded in the year 2000 when it was 6.69% annually.

Table 4.7: Summary Statistics, using the observations 2000 – 2018 for the variable INF (19 valid observations)

| Mean | Median | Minimum | Maximum |
|---|---|---|---|
| 16.364 | 8.8546 | 6.2510 | 54.915 |
| **Std. Dev.** | **C.V.** | **Skewness** | **Ex. kurtosis** |
| 16.112 | 0.98463 | 1.7528 | 1.3811 |
| **5% Perc.** | **95% Perc.** | **IQ range** | **Missing obs.** |
| undefined | 54.915 | 8.5573 | 0 |

In case of the inflation (INF), the table above demonstrates, average statistical data, minimum and maximum ranges, standard deviation and skewness of consumer prices (annual %) in the years from 2000 to 2018. Accordingly, the inflation index has been highest in 2000 at 54.915% inflation, whereas, it hit its minimum record in 2000 at 6.251% inflation.

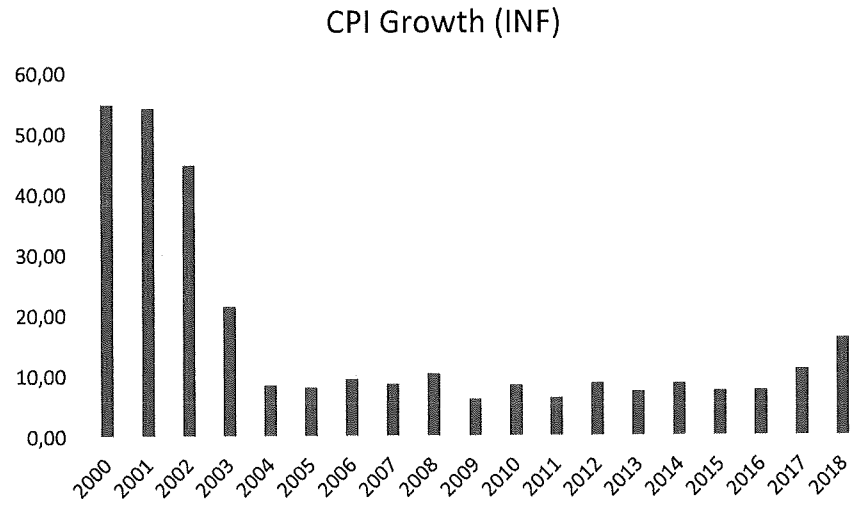


Figure 4.7: Inflation in Turkey.

The CPI index averages at 16.364 % inflation in the 19 years, with the rate varying around 16.112. Moreover, the inflation is observed to positively skewed at 1.7528 as shown in Figure 4.7.

## 4.2. Parametric Tests

For establishing relationships and addressing the research problem, the study performs a number of steps. The researcher starts with raw data i.e. measuring the study variables as ODA$, NR$, PR$, EXR (LCU per US$), UE%, CPI and GDP$. In the next step, the natural log (ln) is applied to reduce skewness observed in the dataset (see appendix). The researcher then tests logged data for assessing its stationarity property.

### *4.2.1. Test for Stationarity*

Table 4.8: Test for Stationarity

| Test for Stationarity | | | | | |
|---|---|---|---|---|---|
| **Variables** | | **ADF test statistics** | | | **Outcome** |
| | | **I (0)** | **I (1)** | **I (2)** | |
| | | **With Constant** | **With Constant** | **With Constant** | |
| **ln (ODA)** | Test Statistics | -1.10298 | -8.1792 | | Stationary at1st Diff |
| | *P-Value* | 0.717 | 0.0000 | | |
| **ln (NR)** | Test Statistics | -1.4536 | -3.8425 | | Stationary at1st Diff |
| | *P-Value* | 0.5318 | 0.0116 | | |
| **ln (PR)** | Test Statistics | -3.35943 | | | Stationary at level |
| | *P-Value* | 0.0125 | | | |
| **ln (EXR)** | Test Statistics | -0.895059 | -0.5046 | -4.6349 | Stationary at 2nd Diff |
| | *P-Value* | 0.76560 | 0.8880 | 0.0029 | |
| **ln (UE)** | Test Statistics | -3.08026 | | | Stationary at level |
| | *P-Value* | 0.02808 | | | |
| **ln (CPI)** | Test Statistics | -4.63458 | | | Stationary at level |
| | *P-Value* | 0.002066 | | | |
| **ln (GDP)** | Test Statistics | -1.48944 | -1.0759 | -5.1596 | Stationary at 2nd Diff |
| | *P-Value* | 0.5158 | 0.7275 | 0.0011 | |

While assessing time series data, it is important to examine the stationarity property of data since many financial and economic variables exhibit non-stationarity and trend (Mushtaq, 2011). A unit root test is performed to check the stationarity property of a variable, where the null hypothesis is that 'there is a unit root'.

In this case, using the Augmented Dickey-Fuller (ADF) Test, stationarity is tested (with constant) at level, first difference and second difference (where necessary). The results of this test are presented in Table 4.8. Results suggest that three variables, ln (PR), ln (UE) and ln (CPI) are

stationary at level. Therefore, they are not further transformed. Ln (ODA) and ln (NR) stationary at 1st difference, whereas ln (EXR) and ln (GDP) are stationary at the second difference.

Based on this finding, the researcher takes first difference of ln (ODA) and ln (NR) and second difference of ln (EXR) and ln (GDP) to be used for performing correlation and regression analysis. The final is presented in the appendix section.

### *4.2.2. Normality*

Table 4.9: Test for Normality

| Tests of Normality | | | | | | |
|---|---|---|---|---|---|---|
| | Kolmogorov-Smirnov[a] | | | Shapiro-Wilk | | |
| | Statistic | df | Sig. | Statistic | df | Sig. |
| ln (ODA) Growth | 0.119 | 16 | .200* | 0.967 | 16 | 0.792 |
| ln (NR) Growth | 0.141 | 16 | .200* | 0.957 | 16 | 0.610 |
| ln (PR) | 0.263 | 16 | 0.004 | 0.866 | 16 | 0.024 |
| D (ln EXR Growth) | 0.178 | 16 | 0.187 | 0.903 | 16 | 0.091 |
| ln (UE) | 0.166 | 16 | .200* | 0.929 | 16 | 0.233 |
| ln (CPI) | 0.075 | 16 | .200* | 0.978 | 16 | 0.941 |
| D (ln GDP Growth) | 0.196 | 16 | 0.100 | 0.882 | 16 | 0.042 |

*. This is a lower bound of the true significance.
a. Lilliefors Significance Correction

Normality is an assumption or a condition for performing parametric tests and analysis (Garson, 2012). It determines whether or not the sample data belongs to a normally distributed population. Since this relies on a number of parametric tests, including correlation analysis and OLS, testing normality is important.

Normality is tested for each variable using two statistical tests: Shapiro-Wilk and Kolmogorov-Smirnov. According to table 4.9, the test statistics of the variables ODA, NR, EXR, UE, CPI are statistically insignificant at the 0.05 level. It suggests that these variables' samples are normally distributed. However, two of the given variables: PR (remittances) and GDPG (GDP growth) have statistically significant test statistics at 0.05 level; thus, they violate the assumption of normal distribution.

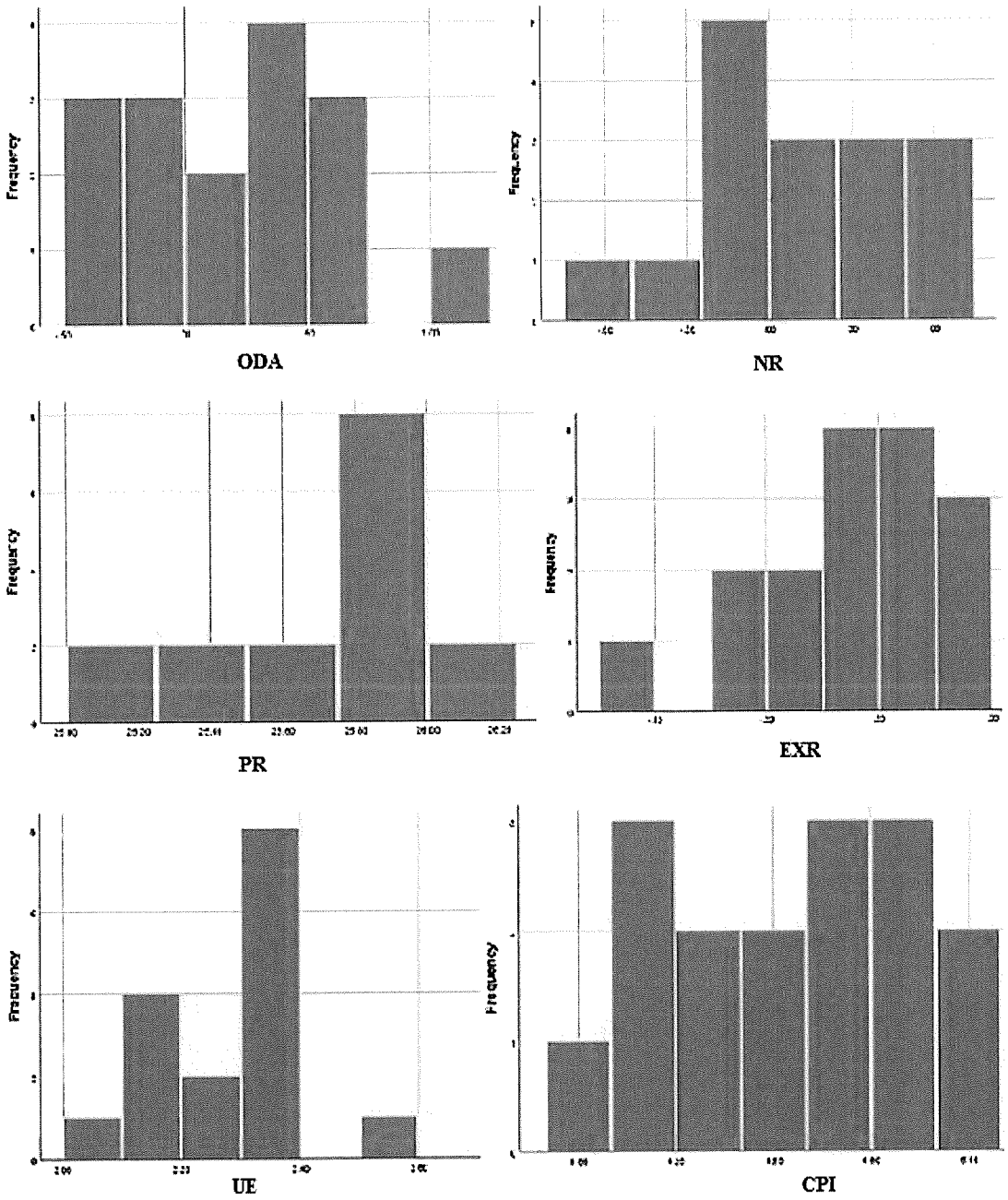


Figure 4.8: Normality Histograms

Due to the importance of GDPG variable in the study, which is the dependent variable, the researcher assumes using it for parametric tests, which can be termed as a limitation of the study.

## 4.4. Correlation Matrix

Table 4.10: Correlation coefficients, using the observations 2000 – 2018

**Correlations**

| | | ln (ODA) Growth | ln (NR) Growth | D (ln EXR Growth) | ln (UE) | ln (CPI) | D (ln GDP Growth) |
|---|---|---|---|---|---|---|---|
| ln (ODA) Growth | Pearson Correlation | 1 | 0.246 | 0.013 | 0.082 | 0.122 | -0.013 |
| | Sig. (2-tailed) | | 0.341 | 0.961 | 0.753 | 0.642 | 0.961 |
| | N | 17 | 17 | 16 | 17 | 17 | 16 |
| ln (NR) Growth | Pearson Correlation | 0.246 | 1 | -0.100 | -0.196 | -0.176 | 0.217 |
| | Sig. (2-tailed) | 0.341 | | 0.713 | 0.452 | 0.499 | 0.420 |
| | N | 17 | 17 | 16 | 17 | 17 | 16 |
| D (ln EXR Growth) | Pearson Correlation | 0.013 | -0.100 | 1 | -0.025 | .527* | -.935** |
| | Sig. (2-tailed) | 0.961 | 0.713 | | 0.924 | 0.030 | 0.000 |
| | N | 16 | 16 | 17 | 17 | 17 | 17 |
| ln (UE) | Pearson Correlation | 0.082 | -0.196 | -0.025 | 1 | .511* | -0.027 |
| | Sig. (2-tailed) | 0.753 | 0.452 | 0.924 | | 0.025 | 0.920 |
| | N | 17 | 17 | 17 | 19 | 19 | 17 |
| ln (CPI) | Pearson Correlation | 0.122 | -0.176 | .527* | .511* | 1 | -0.365 |
| | Sig. (2-tailed) | 0.642 | 0.499 | 0.030 | 0.025 | | 0.150 |
| | N | 17 | 17 | 17 | 19 | 19 | 17 |
| D (ln GDP Growth) | Pearson Correlation | -0.013 | 0.217 | -.935** | -0.027 | -0.365 | 1 |
| | Sig. (2-tailed) | 0.961 | 0.420 | 0.000 | 0.920 | 0.150 | |
| | N | 16 | 16 | 17 | 17 | 17 | 17 |

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

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

Correlation is a parametric test, which measures the association between two or more variables. It assesses the significance, magnitude and direction of the relationship. In this case, the study is unable to establish any correlation between the determinants of Dutch disease and the state of the economy (measured via GDPG). It may suggest that the phenomenon of Dutch disease does not exist in the case of Turkey during the period under investigation (2000-2018).

The study is able to find a negative and strong link between EXR growth and GDP growth differences, suggesting that devaluation of the local currency compared to USD is associated with a decline in GDP growth of the country.

Unemployment, as a proxy of economy, exhibits a significant positive association with inflation at 0.05 level, showing some signs of Dutch disease. Moreover, the coefficient values reveal a

strong link between the two variables (.511), where the direction is positive. It shows that increasing inflation is linked with increasing unemployment, which may support an economic condition under Dutch disease.

### 4.5. OLS Regression

Table 4.11: OLS Results (1)

Dependent Variable: DLGDP
Method: Least Squares
Sample (adjusted): 2002 2017
Included observations: 16 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| ln (ODA) Growth | 0.011031 | 0.036755 | 0.300119 | 0.7697 |
| ln (NR) Growth | 0.092586 | 0.044298 | 2.090063 | 0.0606 |
| D (ln EXR Growth) | -1.151859 | 0.105871 | -10.87979 | 0.0000 |
| ln (CPI) | 0.117973 | 0.048013 | 2.45709 | 0.0318 |
| C | -0.564376 | 0.223551 | -2.524596 | 0.0282 |

| | | | |
|---|---|---|---|
| R-squared | 0.927366 | Mean dependent var | 0.018477 |
| Adjusted R-squared | 0.900954 | S.D. dependent var | 0.18536 |
| S.E. of regression | 0.058336 | Akaike info criterion | -2.594897 |
| Sum squared resid | 0.037434 | Schwarz criterion | -2.353463 |
| Log likelihood | 25.75917 | Hannan-Quinn criter. | -2.582533 |
| F-statistic | 35.11111 | Durbin-Watson stat | 2.409484 |
| Prob(F-statistic) | 0.000003 | | |

The OLS regression performed on the four variables, which include ln (ODA) Growth, ln (NR) Growth, D (ln EXR Growth), and ln (CPI) to examine their impact on D (ln GDP Growth), making GDP the dependent variable and rest of four independent. Note that the PR variable has been removed from the regression model due to violation of the normality assumption.

Overall, Table 4.11 helps to determine that the model is statistically significant, with the P-value being less than 0.05 level, as well as the F value combined effect of the model being 35.11. It suggests that the overall regression model, which constitutes determinants of Dutch disease along with control variables, is significant in predicting economic growth.

Further, the value of R Square in the OLS regression model is 0.92, so the amount of variance explained is 92.7% in the dependent variable. Even the adjusted R Square value shows that after

adjusting the number of predictors and sample size the variance is 0.90 i.e. 90%. Hence, showing that there is a high level of a good fit, making the model appropriate and a good fit.

The test further reveals that individually, three of the four variables tested are statistically significant in predicting D ln GDP growth. According to the p-values, D ln EXR growth is significant at 0.01 level; ln CPI is significant at 0.05 level; while ln NR growth is significant at 0.1 level only.

The impact of ln NR growth is positive on the economic growth of Turkey, with a coefficient value of 0.09, suggesting a per cent increase in NR growth would lead to GDP growth by 0.09 per cent only.

Similarly, ln CPI also has a positive and significant impact on the economic growth of Turkey. 1 per cent increase in LCPI is resulting in an increase of 0.11 per cent in the GDP growth of the country over the period.

Finally, the impact of the D (ln EXR Growth) is also statistically significant but negative, while controlling other variables. It suggests that an increase in the exchange rate (depreciation in the local currency value) would reduce the GDP growth.

Table 4.12: OLS Results (2)

Dependent Variable:
LUE
Method: Least Squares
Sample (adjusted): 2002 2017
Included observations: 16 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| DLODA | -0.032359 | 0.079318 | -0.407966 | 0.6911 |
| DLNR | -0.08852 | 0.095598 | -0.925964 | 0.3743 |
| DDLEXR | 0.007067 | 0.228475 | 0.030933 | 0.9759 |
| LCPI | -0.056198 | 0.103615 | -0.54237 | 0.5984 |
| C | 2.569741 | 0.482432 | 5.326644 | 0.0002 |

| | | | |
|---|---|---|---|
| R-squared | 0.10154 | Mean dependent var | 2.298617 |
| Adjusted R-squared | -0.225173 | S.D. dependent var | 0.113735 |
| S.E. of regression | 0.125891 | Akaike info criterion | -1.056496 |
| Sum squared resid | 0.174334 | Schwarz criterion | -0.815062 |
| Log likelihood | 13.45197 | Hannan-Quinn criter. | -1.044133 |
| F-statistic | 0.310793 | Durbin-Watson stat | 0.989967 |
| Prob(F-statistic) | 0.864852 | | |

The OLS regression is also performed using the four variables, respectively ln (ODA) Growth, ln (NR) Growth, D (ln EXR Growth), and ln (CPI) on Unemployment Rate ln (UE) (measured as a percentage of the total labour force), making UE the dependent variable and rest of four independent. This regression model is statistically insignificant at the 0.05 level. This can be observed through the P-value (F) which is insignificant and the declined value of F value of 0.311 compared to the previous model.

Further, the value of R square in the current OLS regression model as compared to the previous one has decreased to 10.15%. So, the amount of variance explained is lower in this case. Also, the adjusted R Square value shows that after adjusting the number of predictors and sample size the variance has also declined to -0.22, thereby showing that the model is not indicating a good fit. Moreover, it should be noted that none of the individual variables (except for the constant term) is statistically significant.

### 4.6. Discussion

Based on the findings extracted from regression analysis, it can be said that in the Turkish economy within the period of 19 years, growth in GDP has been significantly affected by EXR (exchange

rates). This can be rendered to the study of Bresser-Pereira, (2013) who explained that the exchange rate has been a major macro-economic factor impacting the prices in an economy. The relationship of the Exchange rate and GDP is further explained by Amin and Murshed (2017) proving that the appreciation in real-exchange rate (RER) is a result of injecting foreign currency in the country, further preventing the long-run opportunities of economic growth. From the results, it can be implied that Turkey's depreciation of LIRA against US Dollars will significantly affect the GDP, however in a negative way. As discussed earlier, the number of reasons prevailing to the negative impacts of over-valuation of the exchange rate to the economic growth includes; the existence of Dutch Disease. However, in this case, the existence of Dutch disease from the perspective of the exchange rate is not evident.

The phenomenon is further investigated by Sy and Tabarraei (2010) proving that capital inflows of FDI, foreign aid or remittances affect the fluctuations in the exchange rate. Consequently, an influx of foreign aid negatively affects the growth through the appreciation of the RER. Moreover, Kubelec and Sa (2012) discussed this phenomenon by revealing that although an increasing EXR can increase the cost of exports and decrease imports, simultaneously make the economy dependent upon the international goods, further creating a misallocation of resources in different sectors of the economy. Thus, as per the findings of Hodge (2012); Kyophilavong et al. (2013); Nikas and Blouchoutzi (2014) and Taguchi and Khinsamone (2018), the economy of Turkey is not likely to be exposed to the risk of DD, as the analysis exhibit a significantly negatively affect of the EXR on the GDP, further explaining that a devaluation in the currency of LIRA against Dollar will impact the economic growth negatively.

Further, based on the study of Bresser-Pereira, (2013) the growth in GDP is affected by an increase in prices through EXR, remittances and CPI, raising the inflation rate and making most of the commodities unaffordable for the residents of the economy, thereby highlighting the signs of DD. For this reason, the study undertook the variable of CPI as a controlled variable to determine the effect of the inflation rate on the growth of GDP in the Turkish economy. As per the results of the regression analysis, the positive significant association of CPI with the GDP growth implies that a rise in prices will enhance the growth in GDP and vice versa.

In addition, the determinant of Dutch Disease being the rent of natural resources (NR) is also found to impact the Turkish GDP on a significant level, however, positively. This means that a rise in

the rent of economic assets (i.e., renewable or non-renewable natural resource; Willebald, et al., 2015) will increase economic growth. On the other hand, a decline in rent prices will decrease the growth rate of GDP with a substantial amount. This trend of NR and GDP is demonstrated by Willebald et al. (2015) explaining that the discovery of fossil fuels and natural resources will eventually increase incomes and wealth-creating more supply, with higher earnings, high consumption, and expenditures on both domestic goods as well as international goods. These rents collected by the government from firms will further be utilised in creating public welfare and making health, education, transportation, infrastructure, subsidies easily available for the citizens of the economy, which otherwise would not have been possible. However, in the context of the existence of DD in the economy, according to OECD, (2011) and Ismail, (2010) increase in the rent of economic assets further raises dependency on natural resources, making them deplete at one point. This then results in the manufacturing sector increasing prices and taking time to re-construct another mechanism that helps to cater to the demand of the economy, ultimately leading to a drop in GDP growth. In contrast to this occurrence which indicates the factors of DD risk, the regression analysis highlights no such indication with a positive impact of NR to the GDP growth in the Turkish Economy over the period of 19 years.

The results of the study indicate very small signs of the Dutch disease phenomena in the case of the Turkish economy, where only a few variables are found significant in predicting the economy. Therefore, it can be concluded that the study observes mixed evidence regarding the existence of Dutch disease in Turkey.

## Chapter 5: Conclusion and Recommendations

### 5.1. Conclusion

The present study aimed to assess the factors that contribute to Dutch Disease, and how these factors impacted the Turkish economy after the global financial crisis of 2008. A comprehensive overview of Dutch Disease and the Turkish economy was discussed in the study. It was elucidated in the research of Taguchi (2016) that the Dutch Disease as a concept arose from the Netherland crisis in early 1960, which was a result of a discovery of huge deposits of natural gas near the Northern Sea. This occurring was labelled as disease as it exerted an adverse impact on the economy because of the inflows of large capital in relation to foreign income. In the context of the Turkish economy, it was noted that Turkey has moderate economic growth. There have been periods when the economy witnessed high inflation along with programs of disinflation, which proved to be a failure in the past decades. Nevertheless, within the economic and social paradigm of the Turkish economy, the era of technical and economic shifts started from the early 2000s (Erinc and Ünüvar, 2016; Öniş, 2010). In 2008, Turkey was impacted by the global financial crisis in different ways because of the abrupt drop in capital inflows. Nevertheless, the level of unemployment climbed to the highest point and the decreasing levels of GDP exceptionally affected the industrial output of the Turkish economy (Rodrik, 2009).

The research has also elaborately discussed the key themes related to the topic in the literature review section and discussed the theoretical concepts related to Dutch Disease. For example, it was highlighted that in 1982, Corden and Neary initially proposed the conceptual framework of Dutch Disease. The model primarily assesses the adverse effect of a rise in raw materials or natural resources on macro-economic aspects, labour market mechanism, unequal income distribution, profitability and the size of the industrial sector. The framework, as the Corden and Neary, was assessed within the economy and was categorised into three sectors, such as the resource sector, tradable manufacturing sector and non-tradable service sector (Corden and Neary, 1982; Mironov and Petronevich, 2015).

The significant determinants of Dutch Disease were also discussed which is one of the key objectives of the study. It includes foreign assistance, natural resources and remittances. In relation to foreign remittances, a considerable number of researches discoursed about the positive and adverse effects of receiving foreign aid for the growth and development of the economy. A few of

the researches like Tekin (2012) and Amin and Murshed (2018) established a positive relationship between economic growth and financial assistance explaining that aid assists in better availability of capital in the least developing nation that can be used to overturn poverty and improve health and education. Nevertheless, it was discussed by Alesina and Dollar (2000), that a considerable amount of aid transferred from developed to developing countries results in unproductive consumption by the government because of bureaucratic incompetence, corruption and inferior institutional development and business sector's inefficiencies.

With respect to natural resources as a determinant of Dutch Disease, Willebald, Badia-Miro and Pinilla (2015) pointed out that natural resources, renewable or non-renewable are the economic assists that contribute significantly to economic development. The states become more dependent on natural resources when rent is taken by them. Nevertheless, once the natural resources deplete, the states should go for the alternatives and look to earn from manufacturing and tradable sectors. The findings of Sachs and Warner (2005) established a positive association between economic growth and resource abundance. A 10% increase was noted in the exports of natural fuels was associated with a drop-in export of manufactured goods from the period of the 70s to the 1990s.

In the context of remittances, it was found that globalisation and increasing mobility of labours and has paved the way for foreign remittances which contributed to increasing growth. There has been a strong relationship between adverse macro-economic impacts and remittances in relation to Bangladesh (Chowdhury and Rabbi, 2014). It was discussed that worker remittances over the past years have been considered welfare-increasing financing sources as it can be used to encourage entrepreneurship, businesses, improve schooling, upgrade healthcare and increase financial development. Nevertheless, irrespective of such advantages, remittances, coming to developing countries are somehow creating adverse impacts such as the decline in their trade competitiveness etc. On the other hand, the study also examined the relationship between the Dutch Disease and the exchange rate. It was noted that Dutch Disease has been related to return on the exchange rate and growth, and it was proposed by Magud and Magud (2010) that Dutch Disease decreases economic growth.

Further, the research also comprehensively examined the implication of Dutch Disease, and it was categorised into positive and negative implications. In the context of positive implications, it was noted that an increase in wealth due to the constant rise in trade or discovery of natural resources,

positively impacts the economy. The natural resource discovery results in a new equilibrium, therefore leading the economy towards higher income along with increased use of the non-tradable and tradable goods. The countries rich in natural resources as per Égert (2005), especially those having economic structures rely heavily on the production and exports of oil and are viewed as suitable candidates for the application of Dutch Disease. The increase in the price of exporting items with relation to the international market results in increase investments, which contributes to an increase in the sectoral output. The rise in the sectoral output raises the demands for more labours for producing more in the commodity sector, hence, consequential in a significant rise in wages. It was further discussed by Égert (2005) that Dutch Disease effects in raising the commodity prices, which impacts in the appreciation of real exchange rates caused by inflows in the revenues of exports. Therefore, maintaining equilibrium in trade income is a positive implication of Dutch Disease.

In the context of the negative implications of Dutch Disease, Beine, Bos, and Coulombe (2012), the research examined the Dutch Disease presence in Canada by using the Monte Carlo and error correction method. It was noted that Dutch Disease was a key reason for the exchange rate development from the period (2002 & 2007), which caused a significant loss in manufacturing firms of Canada. Furthermore, Mohammadi and Jahan-Parvar (2012) determined the occurrence of Dutch Disease in around 13-oil exporting nations and found a weak link with real exchange rates and oil prices, revealing the presence of negative effects of the disease in the said economies. Dutch Disease effects in decreasing the spill-over effect and other growth-increasing qualities in the sector of trade, resulting in an adverse impact on the economy. Therefore, with relation to the research outcomes, nations vulnerable to facing Dutch Disease must take measures to address the negative implications of the disease. Before announcing the Dutch Disease, nations are required to emphasise on the resource availability and take measures for decreasing the effect of de-industrialisation.

On the other hand, the present research also reviewed the effect of Dutch Disease on the developing economies and it was noted that developing countries have the more technical expertise to execute comprehensive activities, but does not attains and fail to accomplish because of Dutch Disease that generates an overvaluation of its exchange rates. In this case, the country may have limited or low technological processes. In the study of Taguchi (2016), the Dutch Disease relation with foreign

aid and remittances was examined. The focus of the study was on Asian economies that are probable to endure their growth. It was noted that the economies such as Lao PDR, Cambodia, Vietnam and Myanmar and their foreign aid were not the reason behind Dutch Disease rather it increases their economic growth, as the foreign aid assisted their development of infrastructure. On the contrary, Van der Ploeg (2011) suggested that Asian countries have different forms of capital inflows, and these economies are at risk of Dutch Disease. Hence, for averting the menace of the disease, these countries need to focus on long-term accumulation of capital (Bourdet and Falck, 2006).

Another key objective of the research was to assess the impact of Dutch Disease on the Turkish economy during the period 2000-2018. It was noted that Turkey does not have adequate natural resources, strong industry, or consistent export potential. Nevertheless, irrespective of limited natural resources, Turkey experiences Dutch Disease, signifying that it not necessary to have natural resources to face the threat of Dutch Disease (Konak, 2019). The rise in money flow because of the increase in the interest rates in the economy, rise in the remittances of labours, increment in the income in the form of foreign currency and in the tourism sector, are probably to increase the chances of Dutch Disease. The political and economic challenges within Turkey were significant enough to contribute to the Dutch Disease (Konak, 2019). The flows of currency from economies rich in natural resources to developing economies like Turkey are due to economic and political issues. In the decades of 80s, the demand for imported goods in Turkey increased significantly which raised the expanses and even exceeded the revenues, causing Turkey to borrow from international lenders. The impacts of Dutch Disease in relation with Turkey were found more with the tourism sector, and this sector is considered to be significantly behind the primary cause of the Dutch Disease.

In order to investigate the aims and objectives of the research, a proper methodology was required for this purpose. In this context, quantitative research approach was adopted which is suitable and in line with the objectives of the study to examine the Dutch Disease determinants and assessing its impact on the Turkish economy. In the context of the research design, correlational design was used in order to measure the link between the Turkish economy and Dutch Disease. For collecting the research data, the study used secondary data sources due to the nature of data. The sample size for the study was the period before and after the global financial crisis. In order to analyse the data,

techniques such as descriptive statistics, normality test, unit root test, OLS regression, and correlation were used.

After testing assumptions, the research study performed a correlation analysis to assess the relationships between the given variables (determinants of Dutch disease and economy performance). The Pearson correlation suggests no significant correlation between the determinants of Dutch disease and the state of the economy (measured via GDPG). Similar results are observed in the case of unemployment. After applying OLS regression, the study is able to find a significant impact on natural resource rents, exchange rate and inflation on GDP growth of the country. However, the nature of relationships does not show significant evidence regarding Dutch disease.

### 5.2. Recommendations and Further Research

On the basis of the findings of the research, the following recommendation can be useful for policymakers and financial experts in dealing with the Dutch Disease phenomenon:

1. The emphasis on financial experts should be on increasing capital inflows from the domestic industry and rely on local currencies instead of remittances and foreign aid to avoid Dutch disease.
2. Manufacturing and tradable goods should be promoted which can help to support the local industry, increase employment and mitigate the effects of the Dutch Disease.
3. Turkey should reduce its dependence on income from the tourism sector, looking for foreign remittances or seeking foreign to balance current account deficits. Instead, it needs to address the political and economic conditions in the country and devise favourable strategies which make Turkey less reliant on inflows of currency from the developed countries.

In case of this study, further research can be carried out to reduce to impacts of Dutch Disease on the economy. The research can focus on ways to avert this phenomenon and search for other sectors which contribute to Dutch Disease. In addition, similar to Turkey, other developing countries should also be considered which lacks rich natural resources so that profound evidence can be available how Dutch Disease impacts countries with low or limited natural resources.

### 5.3. Limitations of the Research

The search was quantitative in nature and hence, the emphasis was more on the statistical relationship. Qualitative research would have provided comprehensive findings with reference to the impact of Dutch Disease on the Turkish economy. The study only focused on a single developing country and concluded its findings. Instead, more developed and developing countries should have been selected which are affected by financial crisis so that more robust results could be derived that could have helped to determine the level of impact Dutch Disease exert on the developing countries' economy.

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# Appendix

## A. Variables and Data

### *A1. Raw Data*

| Years | ODA $ | NR $ | PR $ | EXR (LCU per US$) | UE% | CPI | GDP $ |
|---|---|---|---|---|---|---|---|
| 2000 | 328,570,000 | 64,381,628,667 | 456,000,000,000 | 0.63 | 6.49 | 20.59 | 272,979,390,334 |
| 2001 | 133,260,000 | 60,848,798,729 | 278,600,000,000 | 1.23 | 8.38 | 31.80 | 200,251,925,228 |
| 2002 | 273,440,000 | 50,669,768,776 | 193,600,000,000 | 1.51 | 10.36 | 46.10 | 238,428,125,942 |
| 2003 | 167,640,000 | 61,936,842,889 | 72,900,000,000 | 1.50 | 10.54 | 56.05 | 311,823,003,789 |
| 2004 | 288,880,000 | 114,471,453,780 | 80,400,000,000 | 1.43 | 10.84 | 60.87 | 404,786,739,603 |
| 2005 | 399,330,000 | 138,195,019,121 | 136,800,000,000 | 1.34 | 10.64 | 65.85 | 501,416,301,536 |
| 2006 | 569,260,000 | 204,996,312,990 | 183,300,000,000 | 1.43 | 8.72 | 72.17 | 552,486,912,922 |
| 2007 | 795,660,000 | 288,357,140,780 | 209,600,000,000 | 1.30 | 8.87 | 78.49 | 675,770,112,180 |
| 2008 | 1,117,480,000 | 488,702,771,032 | 243,900,000,000 | 1.30 | 9.71 | 86.69 | 764,335,657,638 |
| 2009 | 1,356,240,000 | 247,676,553,640 | 183,400,000,000 | 1.55 | 12.55 | 92.11 | 644,639,901,974 |
| 2010 | 1,049,590,000 | 414,226,968,192 | 181,900,000,000 | 1.50 | 10.66 | 100.00 | 771,901,768,870 |
| 2011 | 3,288,270,000 | 582,179,799,036 | 188,300,000,000 | 1.67 | 8.80 | 106.47 | 832,523,680,908 |
| 2012 | 3,112,170,000 | 489,216,988,813 | 188,100,000,000 | 1.80 | 8.15 | 115.94 | 873,982,246,612 |
| 2013 | 2,847,840,000 | 458,587,296,137 | 190,100,000,000 | 1.90 | 8.73 | 124.63 | 950,579,413,123 |
| 2014 | 3,446,770,000 | 388,945,241,582 | 173,900,000,000 | 2.19 | 9.88 | 135.66 | 934,185,915,386 |
| 2015 | 2,145,220,000 | 267,233,480,496 | 139,500,000,000 | 2.72 | 10.24 | 146.07 | 859,796,872,678 |
| 2016 | 3,613,070,000 | 260,339,135,097 | 118,600,000,000 | 3.02 | 10.84 | 157.42 | 863,721,648,069 |
| 2017 | 3,141,610,000 | 309,370,631,923 | 104,800,000,000 | 3.65 | 10.82 | 174.97 | 851,549,231,503 |
| 2018 | - | - | 112,200,000,000 | 4.83 | 10.90 | 203.55 | 766,509,088,838 |

*A2. Logged Data*

| Years | ln(ODA) | ln(NR) | ln(PR) | ln(EXR) | ln(UE) | ln(CPI) | ln(GDP) |
|---|---|---|---|---|---|---|---|
| 2000 | 19.61026 | 24.888094 | 26.845759 | -0.4696541 | 1.8710326 | 3.0250399 | 26.332662 |
| 2001 | 18.707813 | 24.831658 | 26.353043 | 0.2034208 | 2.1259672 | 3.4594176 | 26.022842 |
| 2002 | 19.426593 | 24.648595 | 25.98906 | 0.4102712 | 2.3377591 | 3.8307336 | 26.197334 |
| 2003 | 18.937329 | 24.849381 | 25.012354 | 0.4060551 | 2.3553673 | 4.0263205 | 26.465702 |
| 2004 | 19.481522 | 25.463591 | 25.11028 | 0.3545488 | 2.3830585 | 4.1088057 | 26.726626 |
| 2005 | 19.805299 | 25.651932 | 25.641786 | 0.29534 | 2.3642444 | 4.1874243 | 26.940703 |
| 2006 | 20.159848 | 26.046258 | 25.93439 | 0.3565923 | 2.1653899 | 4.2790663 | 27.037696 |
| 2007 | 20.494683 | 26.387466 | 26.068467 | 0.2646163 | 2.1824493 | 4.3630046 | 27.239119 |
| 2008 | 20.834342 | 26.91502 | 26.220024 | 0.2635341 | 2.2731563 | 4.4623442 | 27.362273 |
| 2009 | 21.027982 | 26.23539 | 25.934935 | 0.438229 | 2.52988 | 4.522978 | 27.191958 |
| 2010 | 20.771665 | 26.74968 | 25.926723 | 0.4073624 | 2.3664984 | 4.6051702 | 27.372123 |
| 2011 | 21.913627 | 27.090045 | 25.961302 | 0.515786 | 2.174297 | 4.6678809 | 27.447728 |
| 2012 | 21.858586 | 26.916072 | 25.96024 | 0.5855625 | 2.0978952 | 4.7530633 | 27.496326 |
| 2013 | 21.769827 | 26.851417 | 25.970816 | 0.6438352 | 2.1669945 | 4.8253197 | 27.580338 |
| 2014 | 21.960703 | 26.686704 | 25.881746 | 0.7832358 | 2.2905125 | 4.9101623 | 27.562941 |
| 2015 | 21.486508 | 26.311389 | 25.66133 | 1.000635 | 2.3259109 | 4.9840711 | 27.479962 |
| 2016 | 22.007824 | 26.285251 | 25.499022 | 1.1053014 | 2.3831507 | 5.0589478 | 27.484516 |
| 2017 | 21.868001 | 26.457806 | 25.37532 | 1.2942154 | 2.3813039 | 5.1646071 | 27.470323 |
| 2018 | | | 25.443549 | 1.574509 | 2.388304 | 5.3158891 | 27.365112 |

### *A3. Final Data*

| ln(ODA) Growth | ln(NR) Growth | ln(PR) | D(lnEXR Growth) | ln(UE) | ln(CPI) | D(lnGDP Growth) |
|---|---|---|---|---|---|---|
| | | 26.84575865 | | 1.871032633 | 3.025039891 | |
| -0.90244779 | -0.05643625 | 26.3530429 | | 2.125967187 | 3.459417565 | |
| 0.71878011 | -0.18306262 | 25.98906001 | -0.466224532 | 2.337759149 | 3.830733649 | 0.4843118 |
| -0.4892634 | 0.20078575 | 25.01235448 | -0.211066434 | 2.355367261 | 4.026320485 | 0.09387613 |
| 0.54419255 | 0.61421028 | 25.11028001 | -0.047290234 | 2.383058505 | 4.1088057 | -0.0074432 |
| 0.32377677 | 0.18834039 | 25.64178584 | -0.00770244 | 2.364244443 | 4.187424259 | -0.0468483 |
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