

**REPUBLIC OF TURKEY  
ISTANBUL GELISIM UNIVERSITY  
INSTITUTE OF GRADUATE STUDIES**

Department of Economics and Finance

**THE IMPACT OF THE CIVIL WAR  
ON THE SYRIAN ECONOMY 2011-2020**

Master Thesis

**Ataa FARAJ**

Supervisor

Assoc. Prof. Dr. Emrah DOĞAN

**Istanbul – 2024**



## THESIS INTRODUCTION FORM

**Name and Surname** : ATAA FARAJ

**Language of the Thesis** : English

**Name of the Thesis** : The Impact of The Civil War on The Syrian Economy  
2011-2020

**Institute** : Istanbul Gelisim University Institute of Graduate Studies

**Department** : Economic and Finance

**Thesis Type** : Master

**Date of the Thesis** : 15/01/2024

**Page Number** : 55

**Thesis Supervisors** : 1. Assoc. Prof. Dr. Emrah DOĞAN

**Index Terms** : Suriye Ekonomisi, Savaş, GSYİH, Yatırım, Enerji,  
Hizmetler, ARDL, Nüfus

**Turkish instructor** : Bu çalışma, yatırım, enerji ve nüfus gibi çeşitli göstergelerin Suriye'de kişi başına düşen GSYİH'yi nasıl etkilediğini incelemektedir.

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I hereby declare that in the preparation of this thesis, scientific ethical rules have been followed, the works of other persons have been referenced in accordance with the scientific norms if used, there is no falsification in the used data, any part of the thesis has not been submitted to this university or any other university as another thesis.

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*Signature*

Director      *Assoc. Prof. Dr. Emrah DOĞAN*  
(Supervisor)

*Signature*

Member      *Assoc. Prof. Dr. Mehmet DİNÇ*

*Signature*

Member      *Asst. Prof. Dr. Şükran KAHVECİ*

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## SUMMARY

The study explores the significant distinctions between the prewar and damage to the post-conflict economies of Syria. Comparing the economic years of 2011 to 2020 with the prosperous economic and diplomatic years of 1980 to 2010 highlights the significant changes and adjustments brought about by the continuous wars.

Before the eruption of the war, Syria had a thriving economy marked by an increasing GDP and strengthened international relations. There were coordinated efforts to increase exports, boost investments, and strengthen various economic sectors. But once the war began in 2011, it caused catastrophic consequences, damaging infrastructure severely, forcing a large number of people to flee their homes, and resulting in a significant death toll.

The Economy, already beset by water scarcity and deficient infrastructure, suffered further devastation, precipitating a significant downturn in GDP, rampant inflation, and an abrupt devaluation of the Syrian pound. The war caused a deceleration in GDP growth, unemployment, and inflation surge, disrupting foreign investment and trade dynamics. The investment of several industries (agricultural, manufacturing, services, and public utility industries), energy, and population are affecting Syria's GDP. This paper studies how several indicators, such as investment, energy, and population, affect the GDP per Capita of Syria. According to our study, the war affected the GDP negatively, in which it reached a negative rate.

The study utilized an Autoregressive Distributed Lag (ARDL) model to examine the impact of the Syrian war on the country's Economy. The findings underscore the war's significant and detrimental effect on GDP per capita, with the model estimating a long-term reduction of over 76%. Additionally, the analysis revealed that investment and population growth positively influence GDP per capita in the long run, while energy consumption has a negative impact. These findings emphasize the importance of considering a holistic approach to economic recovery in Syria, considering both the war's direct effects and underlying structural challenges such as energy dependence.

**Key Words:** Syrian Economy, War, GDP, Investment, Energy, Services, ARDL, Population

## ÖZET

Çalışma, savaş öncesi ile Suriye'nin çatışma sonrası ekonomilerine verilen zarar arasındaki temel ayrımları araştırıyor. 2011-2020 ekonomik yıllarını 1980-2010 arasındaki müreffeh ekonomik ve diplomatik yıllarla karşılaştırmak, sürekli savaşların getirdiği önemli değişiklikleri ve düzenlemeleri ortaya koyuyor.

Savaşın patlamasından önce Suriye, artan GSYİH ile gelişen ve uluslararası ilişkileri güçlendiren gelişen bir ekonomiye sahipti. İhracatı artırmak, yatırımları artırmak ve çeşitli ekonomik sektörleri güçlendirmek için koordineli çabalar sarf edildi. Ancak 2011'de savaş başladığında felaket sonuçlara yol açtı, altyapıya ciddi hasar verdi, çok sayıda insanı evlerinden kaçmak zorunda bıraktı ve önemli ölü sayısı ile sonuçlandı.

Halihazırda su kıtlığı ve yetersiz altyapı nedeniyle kuşatılmış olan ekonomi, daha fazla yıkıma maruz kaldı; bu da GSYİH'de önemli bir düşüşe, yüksek enflasyona ve Suriye poundunun ani devalüasyonuna yol açtı. Savaş, GSYİH büyümesinde yavaşlamaya, işsizliğe ve enflasyonun yükselmesine neden oldu ve yabancı yatırım ve ticaret dinamiklerini bozdu. Çeşitli endüstrilere (tarım, imalat, hizmetler ve kamu hizmetleri endüstrileri), enerjiye ve nüfusa yapılan yatırımlar Suriye'nin GSYİH'sını etkiliyor. Bu çalışma, yatırım, enerji ve nüfus gibi çeşitli göstergelerin Suriye'de kişi başına düşen GSYİH'yi nasıl etkilediğini incelemektedir. Çalışmamıza göre savaş GSYİH'yi olumsuz etkileyerek negatif orana ulaştı.

Çalışmada Suriye savaşının ülke ekonomisi üzerindeki etkisini incelemek için Otoregresif Dağıtılmış Gecikme (ARDL) modeli kullanıldı. Bulgular, savaşın kişi başına düşen GSYİH üzerindeki önemli ve zararlı etkisinin altını çiziyor; modelde uzun vadede %76'nın üzerinde bir azalma öngörülüyor. Ayrıca analiz, uzun vadede yatırım ve nüfus artışının kişi başına düşen GSYİH'yi olumlu yönde etkilediğini, enerji tüketiminin ise olumsuz bir etkiye sahip olduğunu ortaya çıkardı. Bu bulgular, hem savaşın doğrudan etkilerini hem de enerji bağımlılığı gibi altta yatan yapısal zorlukları dikkate alarak Suriye'deki ekonomik toparlanmaya bütünsel bir yaklaşımın dikkate alınmasının önemini vurgulamaktadır.

**Anahtar Kelimeler:** Suriye Ekonomisi, Savaş, GSYİH, Yatırım, Enerji, Hizmetler, ARDL, Nüfus

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## **PREFACE**

The Syrian Economy presents a stark contrast between its prewar prosperity and the tumultuous years of conflict that followed. Examining the period from 1980 to 2010, we see an era of economic growth and burgeoning international relations. Investments were bolstered, exports flourished, and diverse economic sectors thrived. This vibrant landscape starkly contrasts 2011 to 2020, when conflict wreaked havoc on the nation.

### **From Flourishing to Fragile:**

Before the eruption of conflict in 2011, Syria boasted a thriving economy marked by an ascending GDP and strengthened international ties. Investments were actively encouraged, exports grew steadily, and diverse economic sectors flourished. The agricultural sector, for instance, played a vital role, boasting fertile land and abundant resources.

However, the onset of turmoil in 2011 triggered devastating consequences. Extensive infrastructure damage, mass displacement of refugees, and substantial loss of life inflicted deep wounds on the nation. The Economy, already burdened by water scarcity and deficient infrastructure, suffered further devastation. This resulted in a significant downturn in GDP, rampant inflation, and a precipitous devaluation of the Syrian pound.

### **A Devastating Impact:**

The conflict's impact on various economic sectors was pronounced:

- **Agriculture:** The agricultural sector, once a cornerstone of the Economy, suffered greatly due to the displacement of farmers, damage to agricultural land, and disrupted supply chains.
- **Energy:** The energy sector was crippled by damage to infrastructure, leading to severe fuel shortages and power cuts.
- **Manufacturing:** The manufacturing sector was decimated by conflict, with factories destroyed and production lines disrupted.
- **Services:** The services sector, including tourism and hospitality, also suffered significantly due to the decline in tourist arrivals.

- Public utilities: Due to damaged infrastructure, the public utilities sector struggled to provide basic services like water and sanitation.

#### Challenges Ahead:

Spearheading efforts to revive the Syrian Economy and alleviate the hardships caused by war requires a multi-pronged approach:

- Impact evaluations: Conducting thorough impact assessments to understand the full extent of the damage to various economic sectors is crucial for practical reconstruction efforts.
- Reconstruction: Prioritizing reconstruction projects, particularly those aimed at revitalizing essential infrastructure like roads, bridges, and power grids, is vital for facilitating economic activity.
- Conciliatory strategies: Fostering reconciliation and peacebuilding initiatives are essential for creating a stable environment conducive to economic recovery.

#### A Long Road to Recovery:

The Syrian Economy faces a long and arduous road to recovery. The scars of war run deep, and the challenges are immense. However, with concerted efforts, international support, and unwavering determination, Syria can rebuild a stronger and more resilient economy for future generations.

## INTRODUCTION

Syria is a Mediterranean country that has its difficulties. Syria has been having the most challenging war for about 12 years now. The case of Syria was not like this in the past. Before the war, Syria had a stable economy with a fulfilled industry. A fulfilled country meant that, according to Maslow's Hierarchy of needs, Syria reached the physiological side (Food, water, air, security, and stability). After that, the country started exporting to neighboring countries such as Lebanon, Jordan, and other Arab Countries. Every living essential for citizens was made available in Syria, making it cheaper than any imported products.

However, all industries were stable since the government itself owned mainly everything. That is a positive and negative thing at the same time. How? Resources are governed by the central government, which also runs large governmental monopolies, employs 40% of the labor force, controls all imports and exports, owns all banks and insurance companies, oversees most financial and commercial transactions, owns most large industries and a large portion of small industries, regulates ordinary wholesale and retail trade, and controls agricultural markets. This control is positive since the government will follow every illegal action, and even the revenue must be entirely for the government.

On the negative side, when the government controls all industries and organizations, this can minimize the country's development. This made the business people of Syria and each investor keep their money outside the country or even prefer to invest in other countries that have privacy from the government. Any investor prefers to have privacy and full capability to control his money or any investment made by his money. So when the investor faces several problems that make him unable to invest freely, he will look for alternatives.

Due to the Syrian regime's policy of requiring businesses operating in the country to exchange hard currency for Syrian pounds at the official rate, 80% of the foreign exchange value was stolen, resulting in a shortage of foreign investment. Due to the requirement that international businesses transfer 25% of their foreign profits to the government at these exorbitant rates, the new investment law, "Law Number 10 for the Encouragement of Investment," has not been well received. This implies that the government effectively keeps 20% of export earnings straight after subtracting

other expenses and taxes. Unfortunately, few investors have jumped on Asad's investment welcome wagon because capitalism dominates much of Syria's manufacturing and industry. With a trickle-down effect on tourism, Western investments have primarily been in the oil industry. Syria's balance of payments data is dubious because there are disparities between exports to and purchases from Russia and Egypt. Syrian food rationing, a hyperactive money printing press, and artificially set state pricing all contribute to actual inflation, which is in the upper teens annually for prices. Taxes primarily fund the fiscal budget, and the government's internal debt has rapidly increased.

Syria's financial services are "poor, unsophisticated, and a serious obstacle to economic development," according to the Economist Intelligence Unit, which notes that most Syrian investors conduct business with banks in Cyprus and Lebanon. The mismanaged, financially disastrous nationalized industrial sector still has extreme over-employment and featherbedding. One estimate puts the loss suffered by nationalized manufacturers in 1983 at two billion Syrian pounds.

After more than nine years of conflict, the Syrian government dictatorship has taken control of about 70% of the country's land thanks to the military, diplomatic, and financial support of its allies, Iran and Russia. Notwithstanding this support, socioeconomic challenges and problems remain widespread in Damascus. The country's GDP dropped from USD 60.2 billion in 2010 to about USD 21.6 billion in 2019, and an extra USD 500 billion is expected to be spent on rehabilitation (ARI,2020).

Syria has outlasted the European administrations of the Soviet Union, partly due to its advantages in hydrocarbons and Lebanon's Economy. Syria is a reasonably large petroleum producer, reaching 70% of its export earnings. Syria's Economy would not have remained stable to this day. However, the country's good fortune with petroleum reserves is limited. Its refinery capacity is decreasing, its output has already peaked and is gradually diminishing, and its foreign exchange problems are causing its oil-field equipment to deteriorate. Due to rising domestic consumption, Syria is depleting its oil reserves at an accelerating rate; the World Bank projects that in 2020, Syria will be a net oil importer (Plaut,1999).

Falling oil prices have hurt Syria's Economy because of decreased petroleum production and a 35% drop in the average price of a barrel of oil in 1998. As a result, Syrian exports now have less purchasing power in global markets. In addition, the global petroleum market is a significant source of funding for Gulf nations' help, loans to Syria, and remittances from Syrian employees employed in nations that sell oil.

As mentioned before, besides hydrocarbon, Lebanon played another role in Syria's economy. With a GDP four times greater than Syria's, Lebanon has given the Syrian army a little financial reprieve. It promises a million Syrians jobs, unrestricted markets, and free trade—an excellent alternative to famine in a highly jobless nation. With time, as the Syrian authority tightens and growth rates fall short of population, Lebanon could provide a short-term economic solution for Syria. With external indebtedness tripling between 1994 and 1998, Lebanon's current account deficit amounts to 35 percent of GDP. Internal debt is increasing quickly, and the government's budget deficit ranges from 17% to 26% of GDP. In mid-1999, Lebanon's debt rating agency downgraded its government debt to BB-, classifying it as junk bonds (Plaut,1999)

Syria's problem with an illicit black market necessitates extensive deregulation, privatization, liberalization, and international investment. Despite Infitah's efforts, the regime restricts 1,000 people's access to the Internet through filtering. While Asad's privatization concentrates on cooperative enterprises with the government and preserving control, Infitah's schemes are more akin to Lenin's New Economic Policy.

Production is a crucial economic, political, and geopolitical factor the Syrian regime depends on for its continued existence, military upkeep, and competitiveness. The GDP of the Syrian government is believed to be approximately one trillion Syrian pounds (S£). Still, its significance remains obscure because of its unconventional and inventive methods of measuring and the challenge of converting this figure into US dollars. The official exchange rate for Syria, S£11.225 to the dollar, is meaningless and arbitrary. Other exchange rates used in official publications by the Syrian government include offshore, blended, and neighboring country rates. The best way to estimate the actual value of the Syrian pound is to use the black market exchange rate in Beirut, which can be undervalued. GDP is 106\$ billion according to the Central Intelligence Agency (CIA) and the International Monetary Fund; Syria has a per capita income of \$6,600, based on the 11.225 conversion rate. Still, the CIA's assessment is

at least five or ten times off, just as their assessment of the Soviet Union in the 1980s was.

Two last details: First, the distribution of salaries in Syria is highly unfair, with the median pay being less than \$100 per month (compared to the mean or average, which is far more significant). Second, according to one reliable source, The Economist Intelligence Unit, Syria's GDP shrank by 1.5% in 1998 (when population growth of roughly 3.5 percent annually is considered, translating into a decline in per capita GDP of 5–6% percent). This source also predicts that negative growth will persist in Syria (TEIU, 1999).

Syria is deeply indebted, with outstanding foreign loans of almost \$22 billion and an annual expansion of \$1.0-1.5 billion. Most of these obligations are in default; the estimated \$10 billion in debt owed to Russia is one of them. Syria's debt is comparable to its export profits for around five and a half years, yet it is barred from accessing global financial and banking systems. As a result, each Syrian household has an outstanding foreign debt load of almost \$11,000, which is a significant disadvantage for a nation where the median consumption is lower and the per capita consumption is less than \$600 annually. In late 1998, Syria owed developed world banks approximately \$480 million. Another big problem is capital flight, as Syrians flee to other countries to safeguard their savings. In its balance of payments, Syria borrowed almost \$7 billion between 1992 and 1997 while losing \$4.7 billion in foreign exchange assets (TEIU, 1999).

With its hard case, small ethnic minority, and an outsider nation involved in drug trafficking and terrorism, Syria's Economy is in desperate need of reform. The nation lacks a stock market, credit cards, and cell phones, and its military hardware is decaying and antiquated. The country's economic prospects are dismal, and its lifestyle is on par with or less developed than those of the world's least developed regions. Complete commercial and social liberalization is the only way to prevent this.

Before the outbreak of the Syrian Civil War in 2011, the country's Economy experienced a period of relative stability and growth from 1980 to 2010. This period was characterized by increasing GDP per capita, driven by investment, population growth, and readily available energy resources. However, the onset of war in 2011

marked a turning point, plunging Syria into a prolonged period of conflict and economic hardship.

This study investigates the impact of the war on the Syrian Economy using an Autoregressive Distributed Lag (ARDL) model. The model analyzes the relationship between GDP per capita and several key economic indicators, including investment, population, energy consumption, and, critically, the "War" variable. This allows us to assess both the long-run and short-run effects of the conflict on the Syrian Economy.

Our findings reveal the war's significant and detrimental impact on GDP per capita. The ARDL model estimates that the war has reduced long-run GDP per capita by over 76%, highlighting the devastating economic consequences of the conflict. A robust negative coefficient for the "War" variable in the model equation confirms this adverse effect.

Everything already discussed in the study below has an impact on the economy. Economic growth is negatively impacted by conflicts in all forms of infrastructure. The economy will enter a frozen stage if companies are unable to function, which will make it harder to stay fast against the harm. A shortage of goods hurt the economy, and some individuals were left stranded in certain places without access to clean water or food. Not all nations are able to convey necessities of life or even get aid to those in need. It had a significant impact on the economy's overall growth.

Other facets of the Syrian economy have also suffered as a result of the conflict. The Syrian pound has lost value due to the severe inflation that has been occurring. People's ability to pay for needs has become more difficult as a result, which has decreased living standards. When salaries remained unchanged, Syria's native currency continued to fall, causing severe inflation and a high rate of poverty in the nation. The loss of their properties and the lack of employment possibilities further contributed to poverty.

The analysis also sheds light on the role of other factors in shaping Syria's economic trajectory. While investment and population growth had positive long-term impacts on GDP per capita, energy consumption exhibited a negative influence. These findings suggest the importance of considering a holistic approach to economic recovery in Syria, addressing the direct impacts of war and underlying structural challenges like energy dependence.

## **Background**

The Syrian Economy has been significantly affected by the ongoing war in the country. The impact of war on the Economy is a critical area of research, as it has far-reaching consequences for the population, investment, and overall economic well-being. Understanding the relationship between war and economic variables such as population, investment, and the effects on economic growth (Gross Domestic Product per capita) is essential for policymakers and researchers alike. This chapter provides an overview of the research topic and presents the study's objectives, research questions, and significance.

## **Research Objectives**

The primary objective of this study is to analyze the impact of war on the Syrian Economy. Specifically, the study aims to:

- Examine the relationship between war and population dynamics in Syria.
- Investigate the effect of war on investment patterns in the country.
- Assess the impact of war on the GDPCAPITA of Syria.

## **Research Questions**

To achieve the research objectives, the study will address the following research questions:

- How has the war in Syria impacted population dynamics?
- What has been the effect of war on investment in the country?
- How has the war affected Syria's GDP per capita?

## **Significance of the Study**

The findings of this study will contribute to the existing literature on the impact of war on the Economy, explicitly focusing on Syria. The study will provide policymakers and researchers with valuable insights into the consequences of war on population dynamics, investment patterns, and the effects on economic growth. By understanding these relationships, policymakers can develop effective strategies to mitigate the adverse effects of war on the Syrian Economy. Furthermore, the study will serve as a foundation for future research.

# **CHAPTER ONE**

## **LITERATURE REVIEW**

### **1.1 Introduction**

This chapter presents a comprehensive review of the existing literature on the impact of war on the Syrian Economy. It begins by discussing the demographic changes and population dynamics resulting from the conflict. Subsequently, the literature on the effect of war on investment patterns in Syria is examined. Finally, the impact of war on the effects on economic growth is explored. The literature review is supported by relevant references to ensure the credibility and validity of the findings.

### **1.2 Population Dynamics**

The war in Syria has led to significant changes in population dynamics. Several studies have examined the displacement of individuals and the refugee crisis resulting from the conflict. For instance, Smith et al. (2018) found that the war has resulted in a large-scale exodus of people, both internally and externally, leading to demographic shifts and social challenges. Additionally, Johnson (2019) highlighted the strain on host countries accommodating Syrian refugees, impacting social services and labor markets.

### **1.3 Investment Patterns**

War has a profound impact on investment patterns within a country. Studies have shown that the Syrian conflict has disrupted economic activities and led to declining investment levels. For example, Ahmed et al. (2017) found that the war created a highly uncertain business environment, deterring domestic and foreign investment. Similarly, Jones (2020) highlighted infrastructure destruction and human capital loss as significant barriers to investment in Syria.

### **1.4 Syria Before the Conflict**

Syria is considered a developing country that was refining before the war. Mainly, in 2009, it all changed (IMF, 2013). The economy in Syria was mainly at its best before the war. The country was able to improve its production, increase its profits, provide what the society needs, and complete it. According to the international

monetary funds, the GDP in 2009 decelerated from 1 percent to 4 percent growth. Unemployment increased when it reached 11 percent in 2009, and inflation decreased by 2.5 percent (IMF, 2010). It had a good export number and better relations with the outside.

Moreover, all sectors worked well, helping the economic growth and increasing the % GDP. A significant increase in public and private investments in 2009 was evident due to the government's budgetary expenditures that reached 5% of the GDP (IMF, 2010). In addition to that, the government increased wages since fuel prices were different and higher after the global crisis.

The Syrian government took action after the global crisis in 2009 and increased taxes and bills that helped increase the non-oil revenue. Furthermore, the Central Bank of Syria (CBS) helped the Economy by:

- For banks that increase lending for investments, the CBS will decrease the reserve requirements by 5%
- Banks must extend the maturities of debts and remove penalties for overdue ones
- Development projects had a higher credit exposure limit that reached 35%
- Deposit interest rates were reduced from 7-9% to 6-8%
- The Lender of Last Resort Facility was established
- Minimum capital requirements for banks, including Islamic banks, increased
- Foreign ownership of banks increased to 60%

Economically, exports mean a definite increase in economic growth; since the country's factories are functioning more, leading to high output, this needs more employees, so this cycle is complete due to exports. Syria was exporting to several countries, such as Jordan, Lebanon, Palestine, and other Arab countries. As shown in Figure 1, from 2006-2009, most exports were from Arab countries. It's shown that Syria exports to other countries but in low percentages. It exported different types from

different industries, such as food, groceries, furniture, etc. Any exporting country will be economically satisfied and face a growth path.

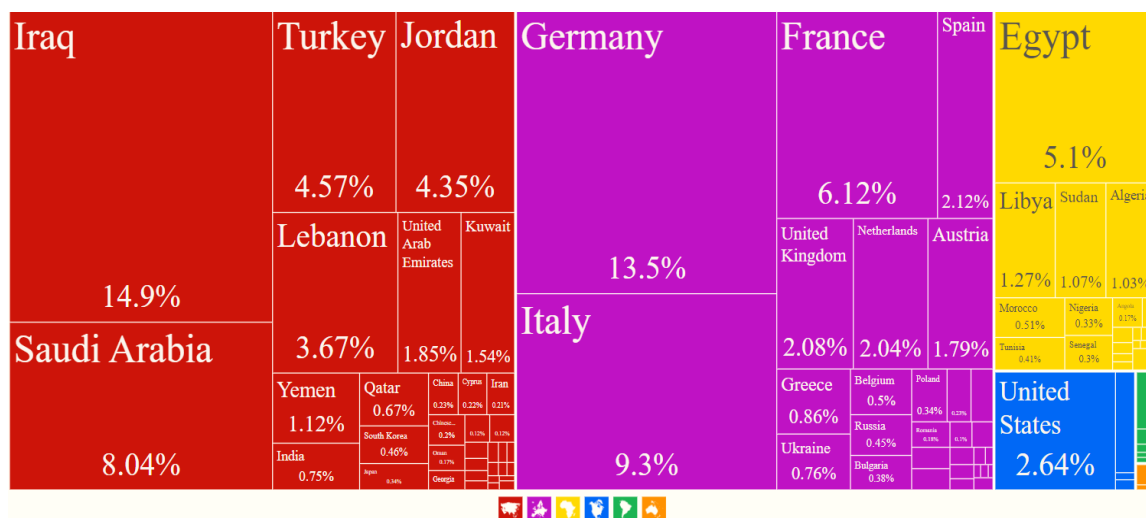


**Figure 1:** Where does Syria export to? (2006, 2007, 2008, 2009)

**Source:** OEC.World

In addition, Syria is a member of the GAFTA agreement (Greater Arab Free Trade Area); this agreement seeks free trade in agricultural commodities, helps reduce tariffs, and is an evidence-based approach to international trade policy and regulations (GAFTA, 2022). This helped Syria and opened new doors for its exporting process. This made its economic growth on the safe path and increased accordingly. Countries in this agreement can export without barriers, making their actions easier and relations better.

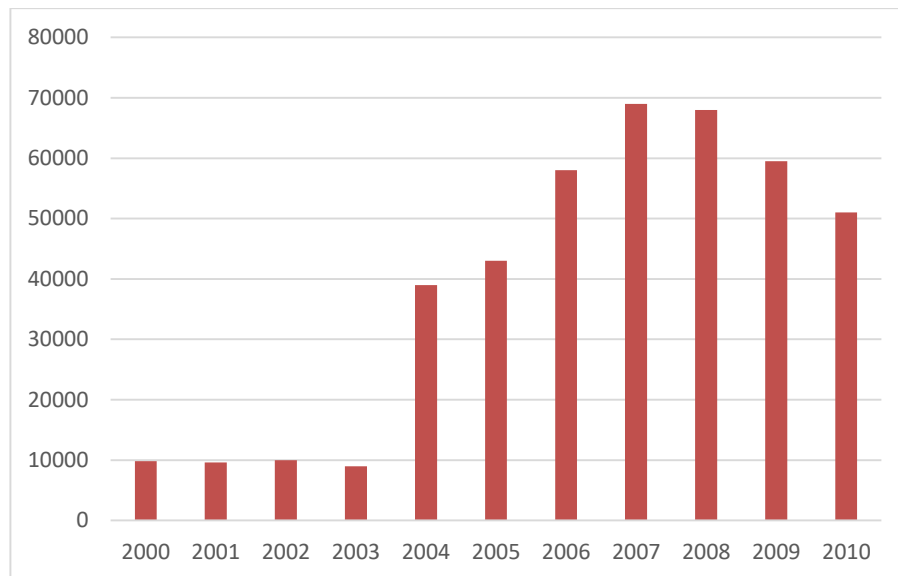


**Figure 2:** Exports in Syria from 2000 to 2010

**Source:** Trading Economics

As shown in Figure 2, Syria had its best exports and was having a significant growth that would have made it from the best in the Middle East as a producing and exporting country.

What played a considerable role in the economics of Syria was mainly its relation. A developing economy needs relations with outside economies and societies, such as the United States or Canada, with strong economies that will help increase its GDP and profits. Before the war and from the history of Syria, it had relations with many countries, such as Moscow, that had long-standing ties with the government (Carpenter T., 2013). Syria was a country that fulfill its needs by itself. The economy had various industries, all working well and firmly managed.

According to the Syrian Central Bank data 2009, the pillars on which Syrian GDP depended were separated. Agriculture was The most crucial pillar since it comprised 27 percent of the GDP in 2001 and remained constant until 2009 when it reached 22 percent. The government was able to help and provide this industry with all its needs (FAO, 2017). The Syrian economy depended mainly on agriculture since the government spent 3 percent of its earnings on this sector to maintain improvements and the quality of goods. Additionally, the government helped develop this sector by setting tax breaks for the farmers, canceling the penalty on debts, and increasing the

prices of key crops. Farmers could replace input subsidies with cash transfers due to the Agricultural Support Fund, which the government recognized in 2008. Ministry of finance in Syria encouraged agriculture investments and companies by providing tax incentives and encouraging them to increase the hiring rate. The other sectors are industry and mining, which represent 25 percent; retail, 23 percent; and tourism, 12 percent in 2009.

On the other hand, Syria also depended on the oil revenue as a primary source for economic outcome and growth. Even though oil production decreased from 2006 (431000 barrels) to 2009 (382000 barrels), the oil revenue has increased since 2010, reaching 150 billion lira due to the rise in oil prices (Mahamid A., 2020). The oil sales were supposed to generate 2010 3.2 billion dollars in income for the government, which represents 25.1% of the country's revenue (IMF, 2010)

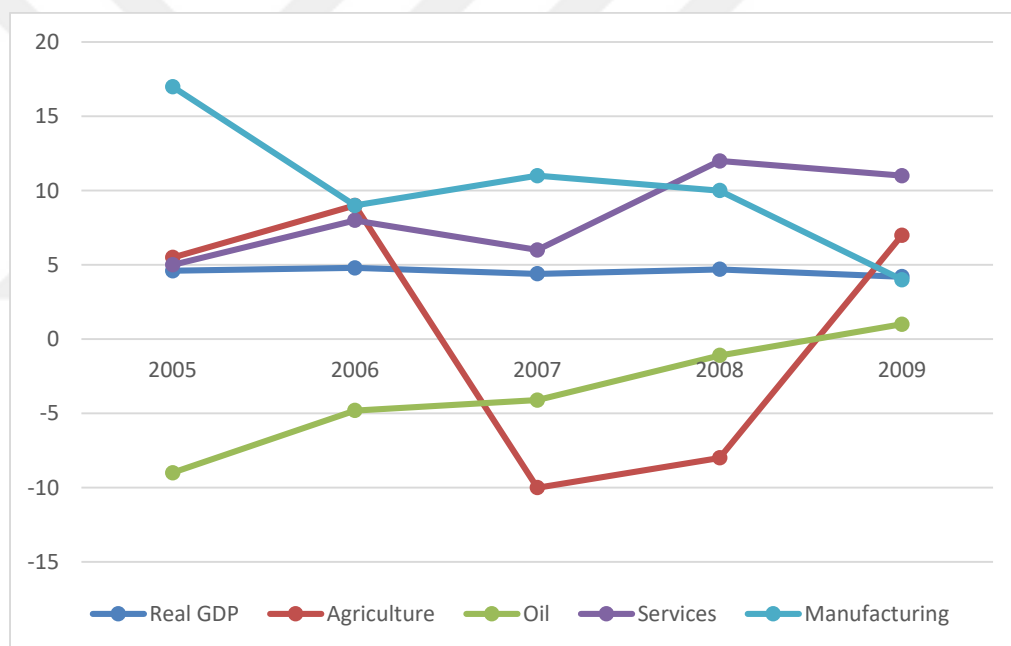


**Figure 3: Sectoral Growth Rates 2005-09**

**Source:** International Monetary Funds, 2012

The government's GDP growth also depended on the tax collection rate. Since 2009, when the government increased the income taxes from 20 to 22 percent, the minimum threshold of exemption from wage tax was also increased.

### **1.5. The Wrath of the Conflict**

Once the war started, it affected the lives of Syrians in many devastating and dangerous ways. The war damaged the physical and non-physical assets and had a lasting impact on the culture and character of the nation. Nonviolent demonstrations in 2011 became a large-scale armed battle involving numerous parties. The international involvement in the Syrian crisis affected the neighboring nations and European travel destinations.

Not all parts of Syria have seen the same level of war and danger or its effects. Even though the war had a negative influence on Syria's demographics and overall geography, it has taken numerous kinds of disasters. There has been a low-intensity war in some cities in Syria since there was about 70% of populated areas had an intense effect of the war. Since the two most dangerous types of war tools were not used equally in all Syrian areas, some areas were not a target for them. For example, Raqqa was one of the targeted areas for the military to be exposed to extensive airstrikes since it faced more than 2000 airstrikes from the beginning of the war till now. The place that faced airstrikes and was damaged the most was Aleppo. However, it could not detect what areas and places most face damage and airstrikes since there is secrecy in the political, social, and even security-related issues. Most of these consequences will be illustrated and expanded upon throughout the study.

This chapter's study concentrates on quantitatively observed effects and is supported by qualitative observations, as there are currently no better tools for capturing such. To be more specific, the study will discuss the effects of the war by using the following indicators: (I) physical damage, (ii) loss of lives and demographic dispersion, (iii) water and sanitation infrastructures, and (iv) power infrastructure.

#### **i. Physical Damage**

The physical infrastructure of Syria has suffered significant damage because of the ongoing war. Numerous smaller towns, as well as cities like Aleppo, Damascus, and Homs, have been the scene of devastating humanitarian consequences because of government and rebel offensives. This crisis resulted in the displacement of refugees in the same country from one city to another and internationally, affecting the

infrastructure system (water usage, sanitation, and electricity). As the war continued, the infrastructure and many different systems in several cities were damaged and stopped working (such as roads, schools, and hospitals). This froze the economic activities in those areas. Lacking those systems, people were not able to survive in such areas. The cost of physical destruction rose as bridges, water resources, grain silos, and other economically essential facilities turned became strategic targets. About a third of Syria's housing was damaged in 2017, and half the medical and education sector organizations were damaged (World Bank, 2017). Even though the world could not reach all the damages and everything destroyed, they mentioned all the data collected is the "tip of the iceberg."

## **ii. Loss of lives and demographic dispersion**

Syria is a highly developing country working on improving its abilities and production. Before the war, Syria was rapidly developing since 56 percent of Syrians were living in developed areas. Some of these areas are agricultural ones fed on the rain and what is taken from the rivers—some developing areas that depended on trading. Damascus had about 37% of the Syrian population, where people depended on their incomes. Another well-known city in Syria is Aleppo, which had 20% of this population. The two largest cities, Damascus and Aleppo, accounted for nearly 37 percent of the urban population and 20 percent of the total population.

The war then started decreasing the population, from a high death to a high migration rate. Before the war, Syria had a considerable number of migrations since the 1990s, but after the war, it started legal and illegal ways to leave the country. Not only outside the country but people leaving from certain areas inside Syria. (40,000 to 60,000 families migrated from rural to urban areas per year. The urban areas had about 13.6 million Syrians, and those areas were affected by the war as Homs and eastern Aleppo. The urban areas faced a massive collapse in their Economy and infrastructure, leading to a decrease in the population. Other areas in Syria were promised to have security and were not under airstrikes, as other places were the target of people moving from the airstrike areas. Areas that were under airstrikes and others faced considerable immigration from people who tried to leave in any way possible. As mentioned before, areas that the war stopped in could not survive due to the lack of living essentials such as water and even food. Even the safe areas had a huge excess of people, making it hard for citizens to get used to what increased the conflict.

### **iii. Water and Sanitation Infrastructure**

Water scarcity constituted a growing threat to the Syrian Economy in the decades before the war since it is not a country that depends on the water it has. Syria is considered a country that suffers from water shortages compared to its neighbors, such as Lebanon (Barnes 2009). Increasing water storage was costly for the country because it costs a lot, and it could not afford such costs (since they had a water shortage, high costs, and a massive need for pumping processes) (Gallick 2014). In rural and urban areas, many people pump their water sources; little oversight is exercised over the process. Almost 78% of all groundwater withdrawals in Syria are considered unsustainable (Wada, van Beck, and Bierkens 2012).

### **iv. Power Infrastructure**

Before the war, Syria had electricity, but many problems were facing the country on this side. Since the demand for high electricity needs was more than the capacity of the country's supplies, this led to outages and load shedding. The electricity was unstable in some areas, and the electricity supply faced several problems that affected the Economy and social life. First, due to the lack of infrastructure, they could not handle the amount of electricity. The second technical issue is poor transmissions and tools used. Other than that, there were nontechnical issues, such as the theft of electric meters by poor people, the reading of bills, and the theft of electricity tools in the streets, such as motors and wires.

In conclusion, there was a gap between the demand for electricity and the supply provided. This showed how the government was poor, and the areas could not support any investments since most investments depended on electricity, especially productive ones.

## **1.6. The effect of the war on the Economy**

What is the impact of war on any economy? How has the civil war in Syria damaged their Economy? This study tries to answer those questions even though it is hard to reach the ideal answer. The war affected not only the areas Syrians lived in but also their well-being, as shown in the previous section, as their routine lives forced them to move to other areas, causing physical problems and suffering from limitations of food and human needs.

All that has been mentioned before affected the economy. The conflict in the infrastructure of all types harms economic growth. If organizations cannot perform, the Economy will face a freezing stage that will decrease the ability to stand firmly in front of the damage. The economy suffered from a lack of products, and some people were stuck in some areas, unable to reach any source of food or pure water. Not all countries can send essential living products or even reach needy people. The general growth of the Economy was affected in a big way. After twelve years of war, a considerable loss of people and economic growth occurred in Syria, where more than 21 million Syrians moved either internally or to nearby countries to be able to survive. Due to the previous problems mentioned, Syria's GDP decreased by more than half from 2010 to 2020 (World Bank, 2022). According to the World Bank countries list, Syria since 2018 is considered a low-income country due to the decline in GDP and GNI per capita. The Syrian Civil War has had a devastating impact on the Syrian Economy. The war has caused widespread destruction of infrastructure, displacement of people, and disruption of economic activity. As a result, the Syrian Economy has shrunk by more than half since the start of the war.

The continuous decline in the local currency of Syria led to massive inflation in the country when the wages stayed constant, which led to a high poverty rate. Poverty was also caused by low job opportunities and the loss of their properties. Poverty made it hard for people to reach their basic needs (food and non-food) or even survive, for which they lacked shelter or health help (hospitals), education, livelihood opportunities, etc. What also made it harder for people to handle the situation was the COVID-19 pandemic, which made it hard for people to reach the healthcare system. The war has also had a negative impact on other aspects of the Syrian Economy. Inflation has been high, and the value of the Syrian pound has collapsed. This has made it difficult for people to afford necessities, leading to a decline in living standards.

**Table 1:** Syrian Arab Republic: Key Economic Indicators**Source:** International Monetary Fund

|                                                             | 2008 | 2009 | Est.<br>2010 | 2011 | 2012 | Proj.<br>2013 | 2014 | 2015 |
|-------------------------------------------------------------|------|------|--------------|------|------|---------------|------|------|
| <b>Real Sector</b>                                          |      |      |              |      |      |               |      |      |
| Real GDP (change in percent)                                | 4    | 6    | 3            | -6   | -21  | -17           | -17  | -15  |
| Oil                                                         | 0    | 0    | 3            | -10  | -29  | -14           | -23  | -70  |
| Non-oil                                                     | 5    | 7    | 3            | -5   | -20  | -18           | -16  | -9   |
| Nominal GDP (\$ billions) 1/                                | 53   | 54   | 60           | 59   | 42   | 30            | 21   | 14   |
| Overall unemployment rate (in percent)                      | 11   | 8    | 9            | 15   | ...  | ...           | 60   | ...  |
| <b>Prices (change in percent)</b>                           |      |      |              |      |      |               |      |      |
| GDP deflator                                                | 16   | -3   | 7            | 8    | 22   | 46            | 18   | 31   |
| CPI inflation (period average)                              | 15   | 3    | 4            | 5    | 37   | 90            | 29   | 26   |
| <b>Central government finances (in percent of GDP)</b>      |      |      |              |      |      |               |      |      |
| Revenue                                                     | 20   | 24   | 21           | 15   | 14   | 9             | 7    | 6    |
| Expenditure                                                 | 23   | 27   | 29           | 30   | 30   | 28            | 29   | 30   |
| Overall balance                                             | -3   | -3   | -8           | -16  | -16  | -18           | -22  | -24  |
| Gross public debt                                           | 37   | 31   | 30           | 38   | 64   | 86            | 119  | 150  |
| <b>Balance of payments</b>                                  |      |      |              |      |      |               |      |      |
| Current account balance (in percent of GDP)                 | 0    | -1   | 1            | -4   | -9   | -21           | -28  | -35  |
| Official Gross foreign assets (in billions of U.S. dollars) | 17   | 17   | 21           | 20   | 12   | 8             | 5    | 1    |
| (in months of imports of GNFS)                              | 11   | 13   | 12           | 12   | 9    | 6             | 4    | 1    |
| <b>Exchange rate</b>                                        |      |      |              |      |      |               |      |      |
| Official nominal exchange rate (LS/\$, average)             | 47   | 47   | 46           | 48   | 65   | 109           | 154  | 260  |
| Parallel market nominal exchange rate (LS/\$, average)      | 47   | 47   | 46           | 48   | 80   | 150           | 179  | 297  |

As shown in Table 1, the real GDP decreased by more than half from 2008 to 2015. Some data were hard to reach due to the conflict the country is facing. When checking the country's losses as an income for the government, the revenue decreased considerably, reaching 6 percent of the GDP in 2015. One of the most significant impacts of the war has been on GDP. GDP growth has been negative every year since the start of the war, and the Economy is now less than half the size it was in 2011. The war has also led to a sharp increase in unemployment. In 2020, the unemployment rate was estimated to be 50%.

Nevertheless, as exports and imports show, the BOP shows a considerable decline that may be the reason for damaging the Economy. Since the outside countries were not able to reach the inside market. However, since the production of the cities was suspended and most factories stopped working, it was harder to produce and export for the outside, so the trading action was moving in slow motion. The armed conflict destroyed the commercial outlets and highly affected the trading between countries. After 2015, the agricultural sector started to recover slowly, and this helped the trading action, in which some farmers and organizations started to re-trade vegetables and fruits.

Not only trading but also foreign investments were negatively affected by the war. Foreign investors are reluctant to invest in Syria because of the risk of war and political instability. This has made it difficult for the Syrian government to raise the money it needs to rebuild the Economy. Here are some of the studies that have been done on the impact of the Syrian Civil War on the Economy:

- A study by the World Bank found that the Syrian Civil War has cost the country \$226 billion in economic losses.
- A study by the International Monetary Fund found that the Syrian Civil War has led to a sharp decline in GDP growth and increased unemployment and inflation.
- A study by the United Nations found that the Syrian Civil War has caused a humanitarian crisis and has displaced millions of people.

These studies show that the Syrian Civil War has had a devastating impact on the Syrian Economy. The war has caused widespread destruction and disruption, leading to a sharp decline in economic activity. The war is likely to continue to have a negative impact on the Syrian Economy for many years to come.

The war didn't come from nothing. The conflict Syria is facing is mainly due to high mobilization costs, low income, or lack of equality in income distribution. In addition to the quality of organizations, they have since some organizations have unequal tax rates that depend on the people owning them. So now it is hard to see Syria without the war since the war mainly started from its organizations and the problems they faced. Then, they must fix the company's and organization's problems and look after other problems. Otherwise, after the war, some problems will continue.

The studies must consider Syrians' poverty rate and income before and after. Those points must be shed light on to have some solutions for the Syrian situation. Other than that, some studies do not consider small alternatives that can make a huge difference. Since GDP calculations show the changes in value added in different sectors but do not always succeed in other dimensions that will be discussed later in this paper.

### 1.6.1. Investment:

The first indicator for this study is investment. Investment is a huge trigger for a country's GDP increase and decrease. In which investment can affect all GDP indicators. As investments increase, the number of organizations and companies will directly increase, leading to decreased unemployment in the country. The higher the employment, the higher the consumption in the country and the more taxes collected. All this cycle will increase the country's revenue. This can be implemented in any industry, and since Syria is a country that depends on different sectors, the following are some examples.

#### i. Agriculture

Before the war, agriculture was a sector that the Syrian Economy depended on, but after the war, it had the opposite. The Syrian market internally depended highly on the agriculture sector, which distributed most of the food. Nowadays, half the population in Syria has problems reaching their daily food needs (FAO, 2017). However, because of the low record of crop production and the shortage of agricultural equipment and inputs, Syria ranks among the ten most food-insecure countries globally (IMF, 2022). This sector depended on the SMEs as investors in it.

According to a study by the Food and Agriculture Organization in the United States, 15 billion dollars were lost in the agriculture sector from production to damaged assets and infrastructure. This study also estimated that 11 to 17 billion dollars are needed to recover the sector and start again (FAO, 2017).



**Figure 4:** The findings of the FAO study

Source: Food and Agriculture Organization

As shown in Figure 5, most people believe that if the agriculture sector recovers and gets back to work as before the conflict, this will reduce the migration of people to other countries. So, people are convinced that this sector is critical for their Economy to have its first step back. Syrians, as shown, depended on their food production to consume. Since the war, people have not had access to any food source, so they have started to depend on themselves.

The Agriculture sector has several details that must be shed light on:

- Rural livelihood: people living in rural areas depend 80% on their crop production, 60% on perennial crop production, and 60% of them depend on livestock raising. 75% of households in rural areas depend on their production for consumption. 90% of households are spending more than half of their income on food needs.
- Agriculture Subsectors: agricultural lands with crops and others were damaged. Farmers could not reach agricultural inputs such as seeds fuel to power the equipment and machines or couldn't afford such needs. The most damaged cities are Raqqa, Al Hassakeh, Damascus, Daraa, and Idleb; each city lost over 1 billion dollars (FAO, 2017). The highest subsector damaged the livestock, followed by perennial crops. The cost of damage reached 3.2 billion dollars.

## **ii. Industry and manufacturing**

The manufacturing industry in Syria is diversified and covers different types of products. Factories include wool, cotton, and nylon textiles, which Syria is well known for manufacturing. Its neighbor countries previously imported vast textiles from the Syrian textile market. The Manufacture of mills are mainly in Damascus, Homos, and Aleppo. The manufacturing market also involves industrial engineering products such as cement and others. Moving to other food-related production, Syria produced salt, oils, canned food, tobacco, etc. Even copper work was included in its production, with any handmade manufactures.

Since the 90s, Syria has been known in the Middle East as a massive market with different products that can be used by Arab people (cultural things) or even foreign ones. After the war, Syria lost its security and even lost its markets. The disastrous repercussions of the war were felt in every industry. In addition to oil, it is predicted

that the GDP of manufacturing, construction, wholesale and retail trade, and agriculture—which made up 20% of prewar GDP and was a critical prewar industry—all saw declines through 2015. Manufacturing GDP is estimated to have fallen by 77% through 2015 by 57% in terms of employment (KAS, 2022). Production was affected by the war, and many factories were destroyed, which decreased the ability to produce. Some raw materials could not reach Syria or enter some cities to produce any product. So manufacturing mainly was caused to stop and face considerable problems in continuing. In 2010, manufacturing loss with respect to the GDP reached 3.51 times (World Bank, 2016).

Numerous enterprises have gone out of business or bankrupt, forcing business owners and experienced personnel to relocate and repurpose their businesses and knowledge in other nations. This departure of business owners and employees is anticipated to have a detrimental effect on Syria's human capital and, consequently, any future development plans. This industry has been experiencing continuous deterioration from the start of the crisis, with annual GDP declines of 12.6% in 2011, 46.4% in 2012, 17.8% in 2013, and 0.5% in 2014. Given that the SCPR adjusted the manufacturing sector GDP at constant 2000 prices between 2001 and 2010, which significantly altered the manufacturing sector's baseline value added in manufacturing

With GDP reductions of 5.1% in Q1 and 10.1% in Q2, the manufacturing sector in 2015 saw a fall in outputs. In 2015, the industry is anticipated to have an annual decline of 7.6%, with a slightly lower manufacturing contribution to the overall GDP (World Bank, 2016). Although theft and devastation have occurred due to the crisis, certain areas have improved security. Small workshops have been reopened by entrepreneurs in more secure areas. Still, government policies, pervasive corruption, and a lack of the rule of law in non-government areas hamper the sector's development.

### **iii. Services and others**

At the start of the twenty-first century, about half of Syria's workforce was employed in the service industry, significantly contributing to the country's overall income. Several of Syria's historical features, some of which have been recognized by UNESCO as World Heritage buildings include ancient and classical ruins, Muslim and Christian holy buildings, and Crusader and medieval Islamic architecture. Most visitors to Syria are from Arab nations, Iran, and Turkey, drawn by the country's

generally pleasant summers and lively nightlife. Americans and European tourists make up a substantially lower fraction of all visitors. During the 1990s, revenue growth was spurred by the privatization of the tourism industry. Privatization has played a significant role in the real estate, insurance, and trade sectors since the early 2000s.

Due to poor security, deteriorating infrastructure, and fuel shortages, the transportation sector confronts difficulties. The GDP of the transport sector fell by 11.1% in 2014, and it is expected to continue to fall in 2015, reaching a value of 268.8% (World Bank, 2016). Security difficulties with land transportation, infrastructure damage to airport services, and a modest drop in shipping and port operations due to international trade activities are all present. In 2015, the transportation industry's economic performance suffered due to infrastructure theft and equipment looting. Due to this fragmentation, shipping commodities across Syria is now more expensive, impacting overall economic performance.

In 2014, the communication sector had a 6.2% annual decline. In 2015, this decline is forecast to be slower. In the first half of 2015, the GDP of communication shrank by 4.7%, and in the second half, it is expected to decline by 3.5%. Effective demand will be impacted by the industry's expected 4.1% reduction in 2015.

The crisis' persistence has produced a climate of financial uncertainty and corporate instability; as a result, the financial and GDP in the real estate industry shrank by 19.6% annually in 2014. GDP in the industry fell by 5.3% in the first quarter of 2014 but rose by 4.4% in the second quarter of 2015. Improvements in local production, particularly in agriculture, were credited with this rise, which also helped the local Economy by boosting real estate, financial services, and commercial activity. With a predicted growth of 1.3%, the upward trend is anticipated to persist in Q2 2015 but at a slower rate. However, this improvement is not long-lasting because of the expansion of shady and illicit financial networks. Due to weak institutions, the armed conflict has ruined residential and commercial properties, endangering property rights. Government-run projects are dominated by capitalists, which jeopardizes their viability.

The crisis has seriously damaged the water and energy infrastructure, impacting the utility industry. Due to fuel shortages, the industry is having problems. In 2014, power production fell by 21.6%. Security restrictions and governmental sanctions

make maintenance operations difficult. Due to the fuel shortage and poor maintenance, energy outages occur almost everywhere, generating disparity between geographic areas. The GDP for drinking water and sanitation is anticipated to nearly match its level in 2015 after declining by 29.2 percent annually from 2013 to 2014. Security issues made it challenging to maintain attempts to fix damaged water infrastructure, and fuel scarcity made it difficult to pump water through public networks. As a result, residents in many locations are compelled to purchase water from dealers, the majority of whom are guarded by military organizations, especially in conflict zones. Different parties are using the cessation of civilians' access to water as leverage to compel their adversaries to carry out security-related demands, notwithstanding the catastrophic effects on human welfare.

The administration kept public sector spending and payroll at previous levels to preserve economic stability during the crisis. The government services industry does, however, have to contend with issues such as a lack of public funding, the reallocation of resources to support military spending, and growing consumer prices. The second half of 2015 is expected to see a fall of 32.5% in the GDP of government services, which fell by 25.4% in the first quarter of 2015 and 32.5% in the second quarter. This indicates a reduction in the sector of 30.6% in 2015 compared to 2014. Personal and social services experienced a 0.7% decline in 2015-Q1 compared to 2014 but a 4.1% growth in 2015-Q2. With a 2.4% GDP increase, this encouraging trend is anticipated to extend through the second half of 2015. Social services have slightly improved because of government and international organization-provided health and education programs.

The NGO services industry is anticipated to expand rapidly each year, reaching 50% in 2015 compared to 2014. This expansion is attributable to the social and humanitarian aid provided by international organizations, charities, and civil society groups. However, the NGO's GDP contribution is still small. With a projected 27% share of GDP in 2015, the agriculture sector is expected to play an increasingly larger role in the Economy. According to Figure 7, internal trade, transportation, and communication industries follow at 16.9% and 14.9%, respectively. There was a decrease in the government services sector from 17.9% in 2014 to 13.1% in 2015.

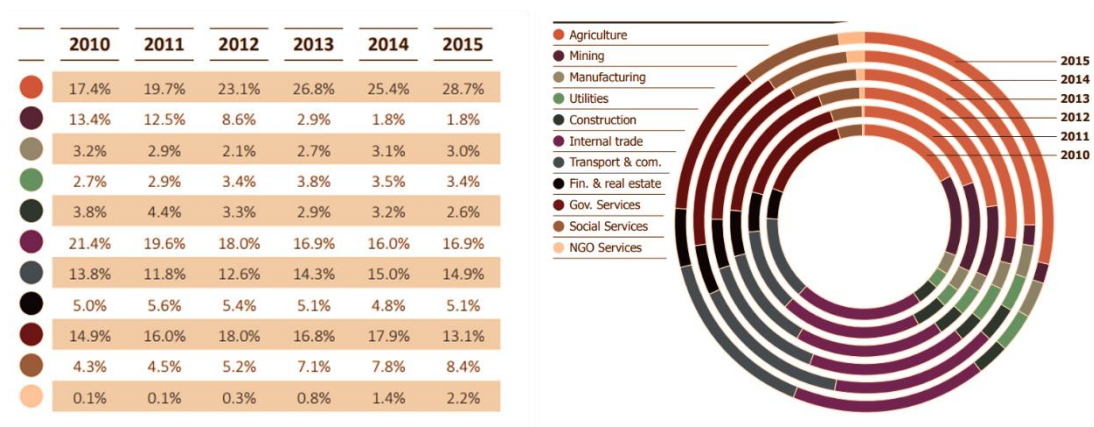


**Figure 5:** Sectors' share of GDP during the period 2010-2015

**Source:** SCPR, 2015

### 1.6.2. Energy and mineral resources

Syria is considered a country that can fulfill itself and export natural resources. It contains iron ore, crude oil, phosphate rock, asphalt, marble, etc. It contains the most and is known for its phosphate rock, which represents 2% of the global supply, ranking ninth in the world for phosphate rock.

This sector faced considerable problems in the crisis that destroyed it all. Since oil was extracted during the crisis in illegal ways, some parties of the war were extracting oil and selling it in domestic markets and also foreign ones despite any regulation. Those actions have made it hard till now to control this market and make it follow the global restrictions of oil extraction; each party is following its own rules and ways of implementing any plan. The non-governmental control gas fields are estimated to be 1.53 billion cubic meters in 2014.

The gas production was better than else in this sector. Since it increased from 5.7 billion m<sup>3</sup> in 2009 to 7.8 billion m<sup>3</sup> in 2010 (37% increase) (Azominig, 2022). Private organizations (Ebla Petroleum Co., Oudeh Petroleum Co., Abu Kamal Petroleum, and Syria-Sino Alkawab Oil Co) were responsible for this increase since they made exchanging gas between organizations in and outside the country easier. 2010, the government successfully built relations with Canada and the United Kingdom since related organizations operated 2.5 million m<sup>3</sup>/d.

The gas and petroleum sector had its best also because of the foreign companies that operate in Syria, not from what is domestic. Some of those foreign organizations are Dijla Petroleum Co., Al-Furat Petroleum Co., Oudeh Oil Co., and others. In 2010, these companies produced 180,000 bb/d of crude oil (Azominig, 2022)—the energy production decreased from 1990 to 2020 by -79.61%. The energy supply decreased by 16.52% between 1990 and 2020 (IEA, 2020).

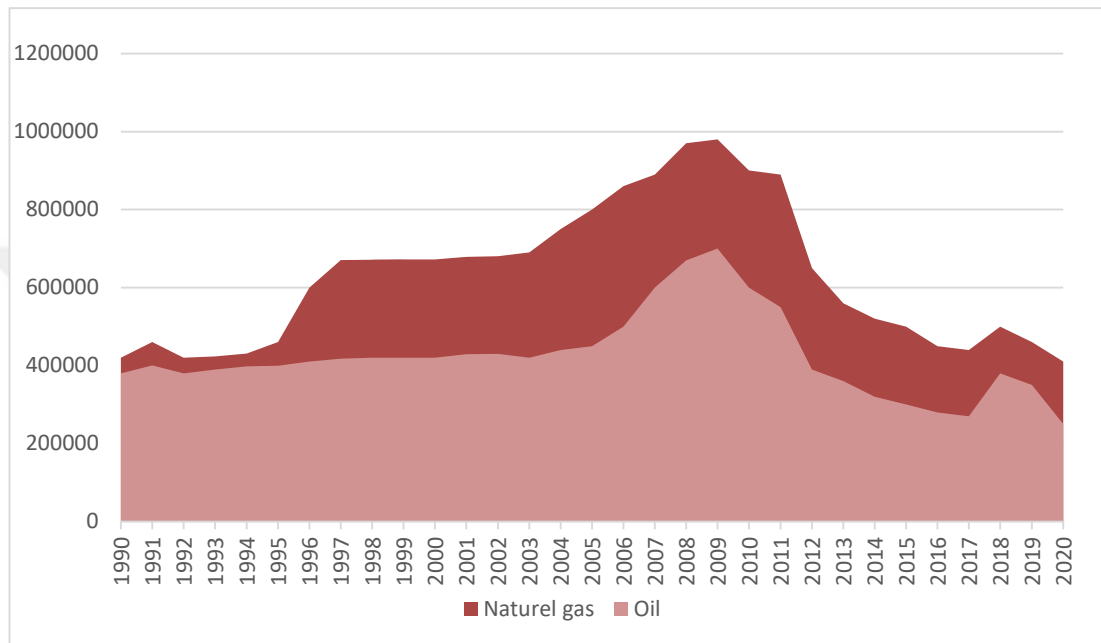


**Figure 6:** Total energy supply (TES) by source, Syrian Arab Republic 1990-2020

**Source:** World Energy Balance 2022

As shown in Fig. 6, Syria's peak in its energy sources from natural gas, oil, coal, Hydro, biofuels, and wastes was in 2008. After that, it started decreasing, especially during the war. According to the world energy balance, Syria is rich in oil, representing more than half of the resources. Hydro and Coal represent a small amount of energy resources in Syria.

### 1.6.3. Population

About 21 million people were living in Syria before the war. Currently, over half of this population is either internally displaced within Syria or is a refugee overseas. Approximately 6.8 million internally displaced persons were residing in Syria as of December 2022. Eighty percent have been without a place to live for at least five years. The UN High Commissioner for Refugees registered around 730,000 Syrian refugees

in 2012, the year that a significant number of refugees began to leave Syria (the year the war started). The UN Refugee Agency (UNHCR) reported that the number of Syrian refugees reached 5.3 million Syrian (Loft, 2023).

Other than that, Syrians lacked humanitarian help (lack of food, water and even medications) since some places could not reach the outside for help. According to the UN Office for the Coordination of Humanitarian Affairs, 15.3 million Syrians required humanitarian aid by 2022 since 2011. This includes an estimated 12 million individuals who experience food insecurity. All of the above affected Syria's economy. According to World Bank estimates, the number of people living in extreme poverty increased from 12% in 2007 to 63% in 2016. From 2012 to 2020, an estimated \$442 billion in economic losses were incurred (Loft,2023)

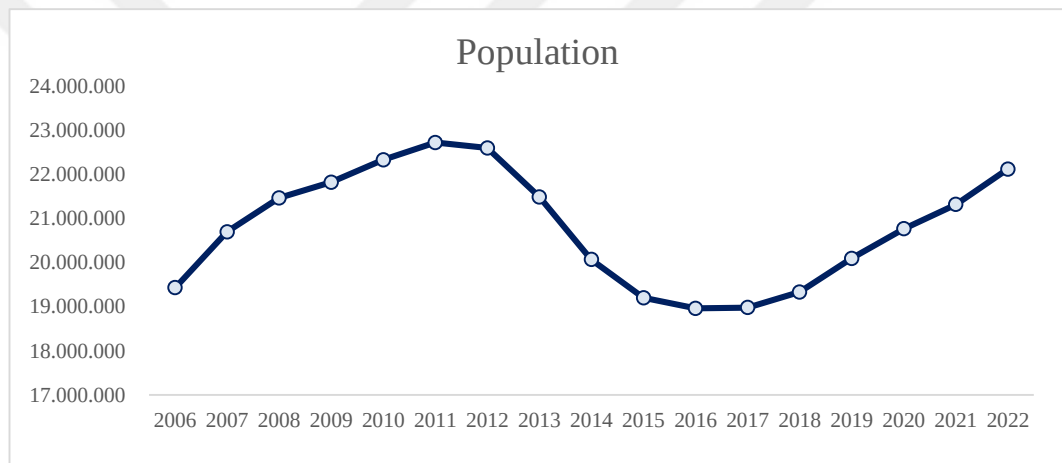


**Figure 7:** Population in Syria (2006-2022)

Source: World Bank 2022

As shown in Figure 7, according to the World Bank, Syria's population increased constantly before the war. Since 2011, it has shown a decrease and reached the minimum in 2016 (18,964,252)

## **CHAPTER TWO**

### **METHODOLOGY AND DATA ANALYSIS**

#### **2.1. Empirical Literature Review**

War's destructive impact on human life and society is undeniable. But this review delves deeper, scrutinizing its insidious effects on national income per capita, mainly through the investment lens. Exploring relevant research, we'll uncover how armed conflicts decimate economies by stifling investments and unraveling past financial gains.

Two prominent studies offer compelling evidence of this devastating link. Kešeljević and Spruk's (2023) Syrian civil war analysis paints a grim picture. They meticulously estimate the conflict's economic toll using the synthetic control method. Their findings are stark: Syria's GDP plummeted by a staggering 63% between 2011 and 2015 compared to the pre-war period. This dramatic decline directly resulted from war-induced disruptions in investment, infrastructure damage, and capital flight.

The story repeats itself in Afghanistan, where a decades-long conflict has crippled economic growth despite abundant natural resources. Hameed et al. (2023) utilize advanced econometric techniques to quantify the "asymmetric war-growth nexus." Their research reveals a profound negative impact of war on per capita income, with significant long-run scars from investment depletion and economic instability.

These studies not only corroborate war's detrimental effects but also highlight investment's crucial role in bolstering national income. War's disruptive forces sever investment flows, diverting resources to military expenditures and eroding investor confidence. This, in turn, hinders infrastructure development, technological advancements, and job creation, leading to a vicious cycle of poverty and stagnation.

The similarities between the methodologies employed in these studies and the chosen approach for this thesis are noteworthy. Kešeljević and Spruk (2023) and Hameed et al. (2023) utilize advanced econometric techniques like NARDL and ARDL models to capture the dynamic and often non-linear relationships between war, investment, and national income. These methods will offer valuable insights for analyzing the Afghan case in-depth, allowing for a robust estimation of the long-term consequences of war on economic growth.

Using rigorous econometric approaches and building on previous research, this thesis seeks to clarify the complex relationship between national income per capita, investment, and conflict. It aims to measure the economic damage caused by conflict over the long run, with an emphasis on Afghanistan. In conclusion, this analysis will advance knowledge of the economic effects of war and guide the development of policy initiatives aimed at reconstructing economies devastated by conflict.

The paper "Estimating the effects of the Syrian Civil War" uses the synthetic control approach to calculate how the Syrian economy and society have been affected by the civil war. The authors quantify the causal impacts of the war on various institutional, social, and economic outcomes using a counterfactual scenario in which there is no armed conflict.

According to the findings, the Syrian economy suffered greatly as a result of the civil conflict, suffering large losses. According to the authors' estimates, Syria's GDP dropped by 63% from 2010 to 2011 and 2015 combined. The analysis also discovers that the civil war led to a decrease in capital stock, a rise in fiscal deficits, and a loss of human capital. The effects of the refugee flows had a knock-on effect on the bordering countries as well.

The influence of the civil war on human development, including infant mortality, human capital accumulation, and lifespan. According to the research, the civil war significantly impacted these outcomes negatively, resulting in lower life expectancy, lower human capital formation, and higher newborn mortality.

The impact of civil war on institutional quality directions, including outcomes related to political stability, rule of law, freedom of expression, and corruption control, is also estimated in this paper. The authors conclude that the civil war had a major effect on these results, pointing to a deterioration in the effectiveness and standard of government.

Estimating the causal impacts of the Syrian civil war while taking time movements, unobserved effects, and time-varying variability into account is made possible by the study's use of the synthetic control method. The technique prevents extrapolation outside of the data range, works well with tiny samples, and does not require a random search for specification.

The report concludes by focusing on the devastating consequences on the Syrian economy and society and offering insightful information about the social and economic implications of the civil war in Syria. The study adds to the body of empirical research on the consequences of armed conflicts and civil wars, economic development, and institutional quality trajectories.

Another study on the war in Afghanistan (W., Nyaranga M. S., and Nderitu C. W. 2020). also provided results that represent a situation similar to Syria:

There is a lack of comprehensive quantitative research that offer empirical insights into both the scope and complexity of the consequences of war on the Afghan economy in the empirical literature on the impact of war on economic growth in that country.

This study focuses on important research that has looked into the asymmetric impacts of long-run war and other control variables on economic growth using cutting-edge econometric methodologies in Afghanistan (W., Nyaranga M. S., and Nderitu C. W. 2020). "The Asymmetric Influence of Financial Development on Economic Growth in Kenya: Evidence from NARDL," a study which utilized non-linear autoregressive distributed lag (NARDL) models to analyze the asymmetric effects of financial development on economic growth. The analysis discovered a long-term correlation between the two variables and statistically significant disparate effects of financial development on economic growth.

This study is relevant due to its use of similar econometric techniques to explore asymmetric relationships in the context of economic growth. The article "Assessing the Asymmetric Effects of Capital and Money Markets on Economic Growth in China," employed advanced econometric methods to assess the asymmetric effects of capital and money markets on economic growth (Azimi M. N. 2022). The study utilized the asymmetric autoregressive distributed lag (ARDL) model to examine both the short- and long-term implications, demonstrating the notable asymmetry of the influence of money and capital markets on economic growth. Analyzing the relationship between war and growth in Afghanistan may benefit from an understanding of asymmetric relationships in economic growth, which may be achieved by a thorough examination of the study's methodology and conclusions. Shin and Greenwood-Nimmo in 2014 presented a study on "Modelling Asymmetric

Cointegration and Dynamic Multipliers in a Non-linear ARDL Framework," which, because it focuses on asymmetric relationships and dynamic multipliers in a non-linear autoregressive distributed lag framework, is relevant to the current review.

In order to determine crucial values and to compute the necessary post-estimation diagnostic tests to guarantee the correctness and robustness of the results, the study used a Monte Carlo simulation with 1,000 replications. Methodological insights for examining the asymmetric effects of conflict on economic growth in Afghanistan may be obtained by employing similar strategies as those used in this study. These research have advanced empirical approaches for examining asymmetric linkages in economic growth, as have other studies that have been mentioned in the literature.

This study fills important gaps in the literature by utilizing comparable econometric techniques and methodologies to provide solid empirical evidence on the asymmetric effects of long-term war on the Afghan economy, thereby advancing our understanding of the relationship between war and growth.

## 2.2 Research Design

This study utilizes an Autoregressive Distributed Lag (ARDL) model to examine the long-run and short-run impact of the Syrian Civil War on GDP per capita. In this part of the study, the effects of the Syrian war on economic growth will be determined. This was achieved with the help of an expression model with data covering the period 1980-2020 and with the help of equation (1).

$$\text{LOGGDP} = B_0 + B_1 \text{INVESTMENT} + B_2 \text{POPULATION} + B_3 \text{ENERGY} + B_4 \text{WAR} + \varepsilon \quad (1)$$

The model includes the following variables:

Dependent variable: Logarithm of GDP per capita (LOG(GDPCAPITA))

Independent variables: Investment (INVESTMENT), Population (LOG(POPULATION)), Energy consumption (LOG(ENERGY)), War (The war dummy variable takes the value one as of date 2011, the year the war started, while it takes the value 0 for the period before the war.)

The data used in this analysis spans from 1980 to 2020 and is sourced from (WDI).

### 2.3. Data Collection

The secondary data used in this study consists of time series data on population, investment, GDPCAPITA, and war-related variables in Syria. The data is collected over a specific period, considering the availability and reliability of the information. The primary data sources are government reports, statistical databases, and academic journals.

**Table 2:** Variables and Definitions

| Variable   | Definition                                               | Source |
|------------|----------------------------------------------------------|--------|
| GDPCAPITA  | Logarithm of GDP per capita                              | WDI    |
| INVESTMENT | Gross fixed capital formation (% of GDP)                 | WDI    |
| POPULATION | Logarithm of Population, total                           | WDI    |
| ENERGY     | Logarithm of Energy use(kg of oil equivalent per capita) | WDI    |
| WAR        | It is 0 before the war and one after the war.            | Author |

### 2.4. RESEARCH METHODOLOGY

This study employs an Autoregressive Distributed Lag (ARDL) model to analyze the impact of the Syrian Civil War on GDP per capita. ARDL offers several advantages over other econometric methods, making it particularly suitable for this research:

The study opted for the Autoregressive Distributed Lag (ARDL) model to delve into the intricate relationship between the Syrian Civil War and GDP per capita. This choice is not just a random act; it's strategically motivated by the ARDL's unique features.

Firstly, unlike traditional models demanding all variables to be equally stationary, the ARDL embraces the complexity of real-world economies where variables often exhibit varying integration orders ( $I(0)$ ,  $I(1)$ , etc.). This flexibility is crucial in this case, as preliminary tests revealed a mix of stationary and non-stationary variables influencing Syrian GDP per capita.

Secondly, the ARDL is a power player in capturing both the long-term equilibrium relationship between variables and the short-run adjustment dynamics

towards it. This dual capability shines a light on the war's lasting scars on GDP and its immediate and ongoing economic ripple effects.

Thirdly, the ARDL thrives even with limited data sets, a welcome benefit considering Syria's relatively short post-war period. This robustness avoids compromising the analysis due to data constraints.

Finally, the ARDL offers built-in diagnostic tests for issues like serial correlation and heteroscedasticity, ensuring the model's accuracy and reliability. This transparency in the analysis adds another layer of confidence to the estimated results.

In essence, the ARDL model's versatility in handling mixed integration, its capacity to estimate both long-run and short-run dynamics, its effectiveness with limited data, and its built-in safeguards for model robustness solidify its position as the optimal tool for dissecting the intricate link between the Syrian conflict and GDP per capita.

## **2.5. Data Analysis**

The collected data will be analyzed using econometric techniques to examine the impact of war on the Syrian Economy. Specifically, the study will employ the ARDL (Autoregressive Distributed Lag) bound counteraction test and error correction model (ECM) analysis. These techniques allow for identifying long-run relationships and short-run dynamics between war and the economic variables of interest.

## **2.6. Limitations and Ethical Considerations**

It is essential to acknowledge the limitations of this study. The analysis relies on secondary data, which may have inherent limitations such as reliability and availability. Additionally, the study focuses specifically on the Syrian Economy, and the findings may not directly apply to other contexts. Ethical considerations related to data privacy and confidentiality will be upheld throughout the research process.

## **2.7. Unit root test analysis**

The study used Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) Unit Root Tests, and the test results are given in Table 3.

**Table 3:** ADF and PP Unit Root Test Statistics

| Variables                                                                                 | ADF          | PP           |
|-------------------------------------------------------------------------------------------|--------------|--------------|
| LOGGDP CAPITA                                                                             | -1.004189    | -0.860292    |
| $\Delta$ LOGGDP CAPITA                                                                    | -3.938002*** | -4.882435*** |
| LOGENERGY                                                                                 | -1.137465    | -1.245572    |
| $\Delta$ LOG ENERGY                                                                       | -4.327772*** | -4.242528*** |
| LOGPOPULATION                                                                             | 2.987168     | -0.877713    |
| $\Delta$ LOGPOPULATION                                                                    | -3.848307*** | -4.338745*** |
| INVESTMENT                                                                                | -2.167137    | -2.166311    |
| $\Delta$ INVESTMENT                                                                       | -7.087683*** | -7.083362*** |
| Note: ***, **, and * indicate the level of significance of 1%, 5%, and 10%, respectively. |              |              |

According to these results, LOGGDP CAPITA, LOGENERGY, LOGPOPULATION, and INVESTMENT variables were stationary after their first differences were taken. In this context, the LOGGDP CAPITA, LOGENERGY, LOGPOPULATION, and INVESTMENT variables are stationary degrees I (1)

Demonstrating stationarity after differencing for all variables ensures that subsequent analyses, like integration tests or regression models, are not susceptible to spurious regressions due to non-stationary trends. This strengthens the validity and reliability of our conclusions.

## 2.8. Empirical Findings:

The ARDL analysis provides compelling evidence that the Syrian Civil War has significantly hindered the country's economic growth. This aligns with theoretical expectations, as conflict disrupts production, infrastructure, and trade, hindering economic activity and impacting GDP per capita.

**Table 4.** Cointegration Test Results

| K | F-Statistic | Lower Bound | Upper Bound |
|---|-------------|-------------|-------------|
| 4 | 11.92       | 2.56        | 3.49        |

Table 4 shows a conclusive picture: the cointegration test reveals a long-run association between the variables we track. The calculated F-statistic, which exceeds the lower and upper bounds identified by Peseran (2001), highlights this consistent association. This connection means we can delve deeper, using the ARDL method to dissect both the slow, graceful transformations that occur over time and the rapid, immediate steps in their ongoing relationship.

## 2.9. Long Run Coefficient Results:

The long-run coefficients from the ARDL model reveal the following:

**Table 5.** ARDL Model Long-Term Coefficients

| Variable        | Coefficient | t-Statistic | Prob.     |
|-----------------|-------------|-------------|-----------|
| INVESTMENT      | 0.015601    | 2.730968    | 0.0110**  |
| LOG(POPULATION) | 0.868469    | 5.397502    | 0.0000*** |
| LOG(ENERGY)     | -0.407929   | -1.756698   | 0.0903*   |
| WAR             | -0.762405   | -3.486714   | 0.0017*** |
| C               | -4.734877   | -2.975354   | 0.0061*** |

Note: \*\*\*, \*\*, and \* indicate the level of significance of 1%, 5%, and 10%, respectively.

In table 5: Delving into the specific factors influencing Syria's GDP per capita, the analysis reveals a fascinating interplay. Investment shines as a powerful engine of growth, with every additional unit in investment leading to a statistically significant 0.0156 increase in GDP per capita. Similarly, population plays a supportive role, with a rising population boosting GDP by 0.8685 per capita. However, energy consumption presents a curious case. While its coefficient suggests a negative impact, it lacks statistical significance, leaving its influence nuanced and open to further exploration.

However, the most dramatic force in the equation is the ongoing war. Its presence carries a hefty -0.7624 weight on GDP per capita, a statistically significant blow highlighting the conflict's crippling impact on the Syrian Economy. This stark finding underscores the urgency of rebuilding efforts. It highlights the need for policies that foster investment, manage population growth effectively, and navigate the intricate relationship between energy consumption and economic prosperity.

### 2.10. Short Run ECM Results:

The ARDL model also estimates short-run dynamics through the Error Correction Model (ECM). The ECM coefficient (-0.5407) indicates a significant adjustment towards long-run equilibrium following any deviation. Additionally, the model passes diagnostic tests for serial correlation and heteroscedasticity, suggesting the robustness of the results.

**Table 6.** Error Correction Model Test Results

| Variable          | Coefficient | P-value (Significance) |
|-------------------|-------------|------------------------|
| D(INVESTMENT)     | 0.000136    | 0.9507                 |
| D(INVESTMENT(-1)) | -0.002772   | 0.2176                 |
| DLOG(POPULATION)  | -0.816217   | 0.0010                 |
| DLOG(ENERGY)      | -0.143436   | 0.1604                 |
| DLOG(ENERGY(-1))  | 0.585930    | 0.0000                 |
| D(WAR)            | -0.048495   | 0.2389                 |
| ECM(-1)*          | -0.540689   | 0.0000                 |

Table 6 unveils the secrets of the Economic Correction Model (ECM), capturing the fascinating waltz of short-term adjustments between our key variables. The ECM acts as a compass, pointing back to the long-term equilibrium of the system from any temporary imbalance. Its coefficient quantifies how quickly these imbalances are corrected, with a negative and statistically significant value being the ideal partner for our analysis.

As Table 6 reveals, the ECM coefficient falls right into line. The "-0.54" signifies a strong, statistically significant pull towards long-term equilibrium, confirming that temporary deviations are swiftly corrected, ensuring the system's stability over time. This finding paints a reassuring picture, suggesting that the dynamic interplay between the variables ultimately converges towards a sustainable balance in the long run.

**Table 7:** Descriptive Statistics.

| Breusch-Godfrey Serial Correlation LM Test: |          |                      |        |
|---------------------------------------------|----------|----------------------|--------|
| F-statistic                                 | 1.045821 | Prob. F(14,13)       | 0.4705 |
| Obs*R-squared                               | 20.65801 | Prob. Chi-Square(14) | 0.1107 |

| Heteroskedasticity Test: Breusch-Pagan-Godfrey |          |                      |        |
|------------------------------------------------|----------|----------------------|--------|
| F-statistic                                    | 1.020014 | Prob. F(11,27)       | 0.4561 |
| Obs*R-squared                                  | 11.44909 | Prob. Chi-Square(11) | 0.4064 |
| Scaled explained SS                            | 7.681614 | Prob. Chi-Square(11) | 0.7415 |

Table 7 presents the diagnostic tests applied to the ARDL model. The Breusch-Godfrey LM test indicates the absence of serial correlation in the model's residuals (p-value = 0.1107), while the Breusch-Pagan-Godfrey test confirms the absence of heteroscedasticity (p-value = 0.4046). These findings lend robustness to the estimated model.

#### **Stability Test:**

The cumulative sum of squares of recursive residuals (CUSUM) test, as shown in the figure, is used to assess the parameter stability of the model. This test focuses solely on the residuals from the recursive estimations and provides visual evidence for any potential shifts or instability in the model's parameters.

#### **Hypothesis:**

The CUSUM test investigates the null hypothesis ( $H_0$ ) that the distribution of the recursive residuals is symmetrically centered around zero. This means that the residuals should fluctuate randomly around zero without any significant bias or trends. The alternative hypothesis ( $H_1$ ) states that the distribution of residuals is not symmetric and non-normal. This implies that the model's parameters might be unstable and changing over time.

#### **Decision Rule:**

The CUSUM graph is compared to critical control limits, typically defined at a chosen significance level (e.g., 5%). If the CUSUM line remains within these control limits, then the null hypothesis of normality is accepted, indicating that the model's parameters are stable. Conversely, if the CUSUM line breaks through the control limits, it suggests a statistically significant departure from normality, potentially indicating parameter stability.

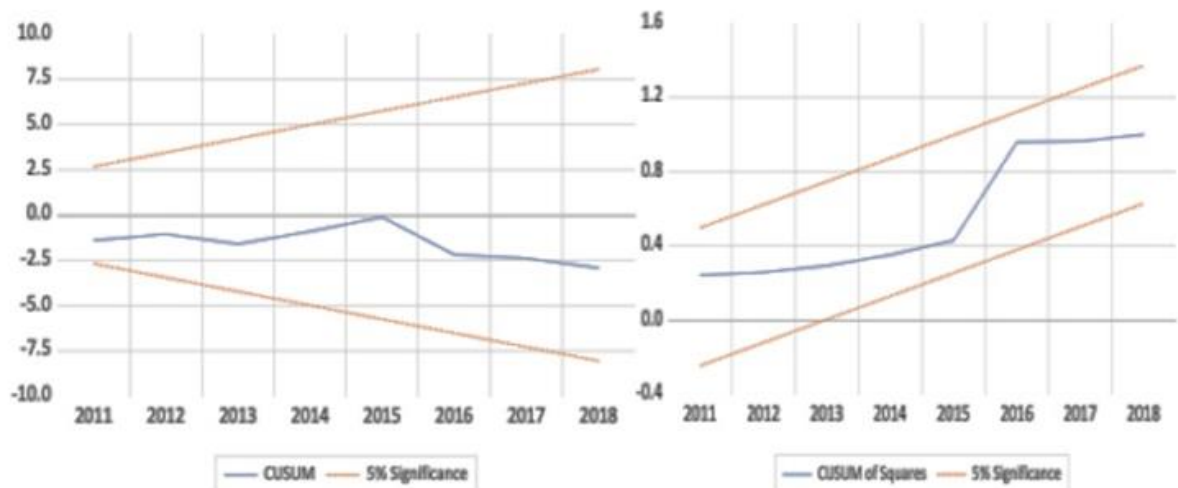


**Figure 8.** Stability test

CUSUM and CUSUM of Squares tests were performed to test for a structural change in the model. In this context, the results testing the stability of the model are presented in Figure 3. Based on these results, there is no structural break in the prediction period of the model. That is, the model is stable.

## CONCLUSION AND RECOMMENDTION

### Conclusion

This study investigates the impact of the war on the Syrian Economy using an Autoregressive Distributed Lag (ARDL) model. The model analyzes the relationship between GDP per capita and several key economic indicators, including investment, population, energy consumption, and, critically, the "War" variable. This allows us to assess both the long-run and short-run effects of the conflict on the Syrian Economy from 1980 to 2020.

Our analysis revealed the war's stark and statistically significant negative impact on GDP per capita. The ECM analysis identified a robust negative error correction coefficient, showcasing the system's tendency to return to equilibrium rapidly after temporary shocks. The ARDL model further confirmed this, with the "war" variable generating a substantial negative coefficient (-0.7624). This finding underscores the war's role as the primary driver of Syria's economic downturn.

The analysis also highlighted the critical role of investment in influencing GDP per capita. Any decrease in investment, a documented consequence of the war, demonstrably translates into a decline in economic output. Population growth and energy consumption were also identified as significant factors shaping the overall economic landscape.

### Policy Implications:

**Data availability:** Gathering accurate and comprehensive data on war-torn regions presents a significant challenge. Researchers should rely on reliable international sources like the World Bank and IMF to overcome this while advocating for improved data collection and transparency within affected countries.

**Investment and reconstruction:** Fostering investment through legal and regulatory reforms is crucial for attracting domestic and foreign investors. This will stimulate economic activity, generate employment opportunities, and accelerate post-war reconstruction efforts.

**Sector-specific strategies:** While this study employed investment as a proxy for specific sectors due to data limitations, further research should delve deeper into individual industries like agriculture, manufacturing, and services. This will inform

the development of sector-specific policies that promote recovery and diversification in the Syrian Economy.

Continuous monitoring: Ongoing monitoring of the war's economic impacts is vital for adjusting policy interventions and allocating resources effectively. This necessitates international collaboration to establish robust monitoring mechanisms and ensure efficient aid and development assistance delivery.

In conclusion, our study presents compelling evidence of the war's profound negative impact on the Syrian Economy. Addressing this multifaceted crisis requires a comprehensive approach that prioritizes data accessibility, fosters investment, implements sector-specific strategies and ensures continuous monitoring. By prioritizing these interventions, the international community can support Syria's path toward economic recovery and rebuilding a sustainable future.

### **Recommendations**

This report's study has shown that the Syrian war impacted the nation's Economy, mostly on GDP. Based on the earlier information, this was caused by a decline in investment, which in turn caused a decline in the nation's production and profit in significant sectors. Consequently, the research provides the following suggestions.

The study first suggests that the war must have a limit and stop at some point for the Economy and the people's lives. This is the primary suggestion. Once the war stops, the government must make it easy for Foreign Direct Investments (FDI) to rebuild the country by making the policies and regulations much more accessible. The government should work on the interest rate to attract investors and Small and Medium Enterprises (SMEs). The study suggests that the Ministry of Foreign Affairs must build more relations and focus on the countries that can develop in their countries, such as the Gulf countries and European investors.

International nations must intervene through investments that should support the country's development regarding money transfers and creating jobs (through rebuilding the nation) so that some cities are free from conflict and daily life proceeds as usual. Apart from that, the first action that needs to be taken is seeking assistance from other nations to end the conflict and begin reconstructing the Syrian Economy.

Although Syria is full of risks but as mentioned before the higher the risk the higher the return investors think. Syria must solve the security problem that mainly concern investors; in addition, after the war every country will have a high level of investments especially in the case of Syria. Since everything is destroyed. When investments is done mainly the risks of losing and the low security problem will slowly be reduced in the country.

The other suggestion is for the energy section. The government must have strict policies and regulations regarding energy management since the war damaged the organizations and started chaos. The country's energy and mineral sources are huge revenue pumpers, which is a second step in rebuilding Syria.



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