

ECONOMIC COSTS OF THE KARABAKH CONFLICT:

1992 - 2023

John Luke Daubenmire

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APPROVED

Sarvar Gurbanov, Academic Supervisor

Orkhan Nadirov, Committee Member

Azer Babayev, Dean of the School of Public and International Affairs

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ABSTRACT

The true costs of engaging in war are far greater than just financial. Studies on the cost of war have been conducted for various global conflicts, but no summative economic costing exists from the Azerbaijani perspective for the totality of the Karabakh Conflict with Armenia between 1992-2023. This paper examines some of the methodological challenges of wartime accounting and applies costing strategies to determine not only the direct expenses of engaging in this particular armed conflict, but also the losses, indirect costs, and impacts on economic development. An evaluation of budgeted expenses and excess expenditure through defense spending, reconstruction, demining, and refugee and IDP support is included for the country of Azerbaijan. Economic costs and losses of economic potential are presented in terms of impact to investment, human capital, productivity, capital assets, natural resources, and international relations, with a special analysis to determine opportunity cost. Utilizing conservative assumptions, the financial expenditure necessary for Azerbaijan to restore its territorial integrity in the Karabakh region far exceeds \$50 billion dollars with a much higher cost to future generations and the economic potential of the country as a whole.

Keywords: Karabakh, Azerbaijan, Armenia, conflict, economic cost, Nagorno-Karabakh

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INTRODUCTION

A country that has been less well known to the Western world throughout the 20th century, Azerbaijan has surged to international recognition lately as it proves its standing and legitimacy as a major power in the Caucasus and Central Asia. With a population of over just over 10 million, the relatively small country is resource-rich and strategically located on the western coast of the Caspian Sea. It shares borders with Russia, Georgia, Turkey, Iran, and Armenia. Azerbaijan's colorful history, massive oil and natural gas reserves, and geopolitical positioning have ensured its continued relevancy not just as a participant, but as a leading power among the Caucasus and former Soviet states.

FIGURE 1: AZERBAIJAN



Originally founded in 1918 after the collapse of the Russian Empire, The Azerbaijan Democratic Republic was recognized as an independent nation with the capital of

Baku at the Paris Peace Conference of 1920. The independence was short lived as the Soviet army invaded within a few months, essentially reconquering the country and forming the Azerbaijan Soviet Socialist Republic (SSR). Azerbaijan's oil and natural gas resources ensured it would have a key role in the Soviet war machine and the future growth of the Soviet Union.

As time progressed, increasing unrest within the country grew, largely fueled by ethnic tensions between Azerbaijan and its western neighbor Armenia over the Karabakh region, specifically the Azerbaijani lands captured by Armenia in a series of bloody conflicts between 1918 – 1920 immediately prior to the Sovietization of both countries in 1920. This disputed territory gained recognition as the Nagorno-Karabakh Autonomous Oblast (NKAO) within the Azerbaijan SSR in 1923; however, this did little to resolve the territorial conflict. While the unrest was largely suppressed during Soviet times, the dissolution of the Soviet Union in the late 1980s and early 1990s brought the original tensions around the sovereignty of the NKAO and the right of Armenian occupancy of Azerbaijani lands from 1920 to a new boiling point. The predominantly ethnically Armenian territory declared its right to unification with Armenia in a 1988 referendum. While calls to reunite the NKAO with Armenia were initially peaceful, heightened tensions and accusations of ethnic cleansing by both countries eventually gave way to violent clashes and the mountainous skirmishes that marked the initiation of the First Nagorno-Karabakh War. When Azerbaijan declared its independence from Soviet rule in 1991 as The Republic of Azerbaijan, the Soviet barriers were removed to allow the violent clashes to break into full warfare. While free from Soviet rule, Azerbaijan was just at the beginning of an agonizing 33+ year conflict with Armenia over the Nagorno-Karabakh region.

FIGURE 2: NAGORNO-KARABAKH



The fighting dragged on through the early 1990s, increasing in intensity with the Armenian forces decidedly taking the upper hand in the region and expanding the territories under their occupation to cities and towns within the seven regions surrounding Nagorno – Karabakh. Azerbaijan achieved a major diplomatic victory in 1993 when the United Nations Security Council (UNSC) passed Resolutions 822, 853, 874, and 884 (*UN Security Council resolutions on Nagorno-Karabakh, 1993*), recognizing Nagorno-Karabakh as Azerbaijan and calling for an immediate ceasefire and withdraw of occupying forces from the territory. Despite the international recognition of Nagorno-Karabakh as Azerbaijani with the UNSC resolutions, fighting continued until a ceasefire was instituted in 1994. While the ceasefire achieved a relative break in hostilities, it achieved very little progress in true resolution as Armenian armies continued to occupy the former NKAO lands and several adjacent Azerbaijani districts. This temporary freeze in hostilities led to the labeling of the

territory as the “Republic of Artsakh,” a breakaway state that was ethnically and functionally Armenian despite lacking any international recognition from UN member states,¹ while the territory was internationally recognized as part of the Republic of Azerbaijan. A resolution adopted by the United Nations General Assembly in April of 2008 (UN General Assembly, 2008) clearly reiterated Azerbaijan’s territorial integrity over the Karabakh region and demanded the immediate, complete, and unconditional withdraw of Armenian forces from occupied territories of Azerbaijan. While this reaffirming resolution sent a clear message to Armenia and the international community, intermittent skirmishes continued to occur without any significant territorial change (the most significant being the Four Day War in April 2016), until the Second Nagorno-Karabakh War² in 2020.

Beginning in September of 2020, Azerbaijan, to great effect, mounted an offensive against Armenia and recaptured several territories. The resulting conflict claimed as many as 7000 lives (Broers, 2021) and Armenia agreed to withdraw from the remaining occupied territories surrounding Nagorno-Karabakh (henceforth referred to as Karabakh) on November 10th, 2020. Nearly 2,000 Russian peacekeepers were installed for a planned period of five years to prevent the resumption of hostilities. After a period of blockade with multiple ceasefire violations and skirmishes, Azerbaijan launched another military offensive, the 2023 Azerbaijan Counter-Terrorist Operation, to gain control of the remaining occupied city Khankendi³, effectively

¹ Including Armenia and Russia

² Also known as The Forty-Four Day War or The Patriotic War

³ The capital of Karabakh, known in Armenia as Stepanakert

defeating the Armenian occupiers and reestablishing Azerbaijan's territorial integrity over the entire region.

Signed on the 20th of November 2023, the latest ceasefire agreement reached between Armenia and Azerbaijan marked the final turning point in the 35-year Karabakh Conflict that left thousands dead, millions displaced, and untold destruction to Azerbaijan's physical lands, mental wellbeing of its citizens, and emotional perceptions of the international community. With the announcement of the departure of Russian Peacekeepers on April 17th, one year ahead of schedule (*Departure of Russian peacekeepers*, 2024), and the handover of four border settlements previously occupied by Armenia in other areas of Azerbaijan, the conflict appears to be all but over and securely marching towards complete border delineation and normalization of relations free from foreign interferences.

As seen from the complicated modern history of Azerbaijan, wars are not just measured in battles won and lives lost. Generational territorial disputes that persist through multiple freeze-thaw cycles rarely have a politically viable solution outside of continued armed conflict. Despite monikers as individual wars, the Karabakh War in its entirety represents a series of armed conflict that makes up a long-standing territorial dispute: one that could have been resolved prior to 2023. War is extremely costly, not just for a country's geopolitical standing, but also financially and socially for the economic potential of the country and its citizens. The Armenian refusal to conform to the UN declarations of 1993 deeply rooted damage to Azerbaijan's economic growth over the following three decades as they fought to reclaim their lands. How much did the country of Azerbaijan give economically to restore its territorial integrity and what were the direct and indirect costs to its citizens? A true

economic accounting of the decades-long Karabakh Conflict from the Azerbaijani perspective does not exist at present. It is important to note that over the last 30+ years of conflict Azerbaijan has maintained a considerable degree of economic success even through wartime. A large contributor to this is the strategic management of the oil and gas industry through production sharing agreements and investment management through the State Oil Fund (SOFAZ), with over a \$56 billion dollar asset footprint as of the close of 2023. In line with its standing as a regional economic leader and force of change, Azerbaijan was selected to host the 2024 UN Climate Change Conference (COP29) in Baku, an achievement that was unthinkable just a few years ago during active warfare.

LITERATURE REVIEW

Many economic costing models that seek to quantify the costs of war exist. *The Economic Cost of the War in Sri Lanka* by Arunatilake, Jayasuriya, and Kelegama in through the Sri Lankan Institute of Policy Studies in 2000 examines the cost of this particular conflict from 1982-1996. By providing examination of the direct military expenditure and damage to physical and social infrastructure utilizing a bottom-up cost estimation technique, they capture the direct and indirect costs in terms of short- and long-term impacts. The direct losses are partially quantified through the defense budget as a percentage of gross domestic product and assess the impact of military expenditures on growth potential due to crowding out; additionally, the direct losses due to destruction and damage of capital assets to the net present value (NPV) of the stream of capital services that would have otherwise been generated. This study also addresses the limitations (such as quantifying mental agony, impact of increased ethnic tensions, and inaccuracies related to applying available reporting) and provides estimates of the indirect costs of war due to foregone investment, reduced tourist arrivals, foregone foreign investment, lost human capital, displacement of human capital, and forgone output of the specific region. This study provides one of the closest approximations to the following for purposes of quantifying the economic costs of war and addressing the limitations presented by the unquantifiable costs created by conflict due to its comprehensive nature and quantification of known direct costs while still giving heed to the indirect and unknown costs. The relevant portions of this framework were adopted and modified to suit this study on the Karabakh Conflict.

In a series of studies from 2019-2021, Mohammad Reza Farzanegan examines the Iranian economy and the cost of the Islamic revolution and the war against Iraq. In his

main study, *The Opportunity Cost of the Islamic Revolution and the War for Iran*, he does this by comparing Iran's GDP and real income per capita of Iranian citizens from 1978-1988 using a synthetic control model. Farzanegan's usage of this model is to generate a synthetic Iranian economy, supported by economic data from before 1978 and extrapolated with the economic performance of a weighted average of similar countries during the same period. The countries he selects are similar in characteristics to Iran's production capabilities with weighting for each country adjusted to account for any conflicts the synthetic base countries may have encountered. By doing so, he is able to approximate the economic performance of a warless Iran during this same time period. Large assumptions must be made in the generation of the synthetic model, but the end result shows a large loss in income per capita over the 10-year period and effectively highlights the economic losses the individuals of the country suffered as a result of the conflict.

In a corollary to the previous study, Farzanegan's *Years of Life Lost to Revolution and War in Iran* compared the effects of the revolution and war on Iranian's average life expectancy to approximate the cost of conflict. This 2021 study also utilized the synthetic control model using a weighted average of comparable counties with shared characteristics that did not engage in conflict to the same degree as Iran and yielded similar results. Post-revolution synthetic Iranian life expectancy decreased considerably compared to the pre-conflict life expectancy.

Limitations in applying a synthetic control model to the chosen topic would lie in the availability of appropriately comparable countries. Given that the Karabakh Conflict spans nearly 35 years with the country of Azerbaijan gaining its independence during this time (along with an immeasurable number of variables that would be unique to a

new nation), it would be difficult to apply a synthetic control model to the Azerbaijani economy. This is compounded when considering the political turmoil experienced in earlier years and the recent growth in oil revenues and geopolitical power; establishing appropriate control countries with similar characteristic over a similar period with such hot and cold cycles of war would yield a very rough estimation at best.

Overall, the topic of economic costs of war has been studied to a great extent on large-scale conflicts such as the World Wars, US involvement in the Middle East, and to a lesser degree but with a variety of studies available, smaller regional conflicts. One large study of the cost of the recent US wars, *The US Budgetary Costs of the Post 9/11 Wars* by Neta Crawford in 2021, examines the costs associated with conflict both in terms of defense budgets and post-war veteran care and continued counter-terrorism support. This study breaks down the costs into categorized military expenditures and post-war human capital expenditures which results in a simply quantified model in terms of war costs and post-war costs, but with an emphasis on the ongoing costs and budgetary expenditures that continue even after the fighting stops. Crawford's model examines five main categories of expenditure for this series of major conflicts: war appropriations, estimated interest on borrowing for war spending, war related increases to departmental base budgets due to the wars, medical and disability care for veterans and associated cost of increasing capacity to manage this care, and homeland security spending for preventing potential terrorist attacks and preparations for responding to attacks if they occur.

While the ultimate result of the study provides a figure of the overall economic cost of the war, it admits the challenges and limitations of quantifying certain expenses, even in the face of what is seemingly certain data. The data does not account for spending

by US allies, nor money from state and local budgets that have had to provide continuing veteran support and anti-terrorism measures. It also does not include further interest payments on borrowing to pay for these conflicts. Additionally, it fails to account for changes in military spending that would have been planned. This study accepts the limitations of the increased use of contractors both domestically and abroad for war purposes and the inflation of base budgets, where it is difficult to distinguish what is directly an economic cost of the war. Stiglitz and Bilmes provided methodologically groundwork of these difficulties in their 2012 analysis, *Estimating the Costs of War: Methodological Issues, with Applications to Iraq and Afghanistan*. This study was conducted while the war was still very much in progress which added further complexity. Because the subject matter of these two studies included separate conflicts in Afghanistan and Iraq, additional complexity is introduced when seeking economic costs of a singular conflict when considering assets or support that served purposes in both wars but were not necessarily differentiated.

The nuances of these two studies are particularly relevant to the intended study in recognizing the limitations of the accuracy of the provided data and discerning between costs directly attributable to wartime conflict and inflated costs, versus otherwise planned costs to bolster national security, fight terrorism domestically (whether due to increased risk due to the war or other shifting global factors), modernize military forces, or increase veteran care capacities. Quantifying these costs to an acceptable degree of accuracy can be nearly impossible when considering emergency supplemental acts, blanket wartime budget allocations, movements from one budget to another inside of the same department or spending that lacks transparency. Considering the other regional and international conflicts Azerbaijan

engaged in over the past 35-year period it will be difficult to distinguish and quantify money spent on each engagement or conflict and its proportional effect on budgetary increases. For example, Azerbaijan's 'N' Unit or the Azerbaijani Peacekeeping Battalion have been engaged in deployments of various lengths to Kosovo, Iraq, and Afghanistan beginning in the late 90s and as recently as South Sudan in 2019 (Ministry of Defense, 2019).

In a first of its kind study titled *The True Cost of War* by World Bank Development Research Group in 2022, migration patterns for pre- and post-conflict times are utilized to determine the impacts of the war on welfare as it relates to the Russo-Ukrainian War. The research presented here defines the difficulty of intangible effects of war such as institutional degradation, erosion of social trust, and psychosocial trauma, but also admits the measurable factors such as prices, employment, and trade may not be recorded accurately in times of conflict. To counter this, research instead relies on a migration model that accounts for what it calls 'economic agents' choosing other areas that are likely not in conflict. First, the model estimates migrations patterns before the conflict then assesses the impact of the conflict by comparing to post-conflict migration patterns. This model attempts to capture individual well-being expressed through inter-regional migration. Then, it addresses income loss due to welfare costs and the effect it has on individual economic agents. These agents are able to act independently based on welfare and future supposed income. Once the conflict variables are added, the results are examined in terms of migration patterns, as economic agents will seek migration to regions (domestic and abroad) with a greater expected welfare. Data referenced for this study assesses the previous five years of economic data as a control point to the current wartime period. By examining migrant

outflows from conflict-stricken regions, namely two main cities of Donetsk and Luhansk, and migrant inflows to other regions, the conclusions point towards an overall negative impact on wellbeing created by the war and expressed through lost income. A big limitation is referenced in this study in that Ukraine faced major data constraints after the onset of the conflict and a complete record of migration flows among the regions is not available post-conflict. Instead, they employ the usage of internally displaced persons' (IDP) registration information to approximate. Azerbaijan faces a similar challenge in that data around the time of the collapse of the Soviet Union and in the formative years of the Republic of Azerbaijan is speculative or loosely verifiable at best. This study is relevant to the chosen topic in the usage of migration patterns to analyze loss of welfare and refugee volume as a point of quantification. Ultimately, the conclusions drawn from this study of migration patterns seeks to quantify income loss and equate it to a wellbeing impact.

Additionally, studies have been conducted that attempt to quantify loss of productivity due to war, displacement, and death. Another example by Farzanegan examines the impact of a large-scale natural disaster on local economic activity, which supports quantification of some of the relevant costs, especially economic impacts caused from loss of productivity and destruction of capital assets. Impact to economic activity and loss of productivity due to destruction of capital assets is valuable to this study but may be more negligible in the Karabakh region compared to the other expenses such as defensive spending and refugee and IDP support.

Fewer studies are available that specifically focus on the gain or loss of international relations and the resulting geopolitical cost. Some research is available such as Nobuhiro Hosoe's 2023 study of the impact of sanctions on Russia following the

invasion of Ukraine by using a general equilibrium model to estimate changes in Russia's GDP in response to economic sanctions. Berlin Economics' *The economic effect of a resolution of the Nagorno-Karabakh conflict on Armenia and Azerbaijan* provides a look into the geopolitical impacts of war and the anticipated benefits of abstaining from armed conflict and is among the few studies that specifically addresses the economic impacts of the Karabakh War, albeit only a small window of time using 2017 as a baseline. The areas of examination include public finance, trade in goods and services, energy and water, and financial markets and investment from both the Azerbaijani and Armenian perspectives.

The literature gap in available data and reported expenses, casualties, and other consequences of war complicates the precise creation of a comprehensive cost calculation. Data limitations mandate the usage of time-aggregated data in the absence of specific annual reporting. To balance complexity and uncertainty, specific factors and influences that would apply an over or understating pressure on cost calculations are noted with an overall likelihood that reported costs are highly underestimated.

Lastly, to close out the literature review, it is notable that, as mentioned previously, no summative accounting exists for the totality of the Karabakh Wars or through the history of modern-day Azerbaijan. Analysis has largely been limited to the costs of singular named events and only in terms of financial costs or human losses. Large literature gaps exist both within existing research and available data for the creation of a comprehensive cost calculation. This study seeks to delineate costs and losses and provide a summative economic accounting of the costs of the Karabakh Conflict from 1992 – 2023 to the country of Azerbaijan, both in terms of money spent and economic productivity lost due to the war. According to Karabakh.org, an independent nonprofit

organization, primary data indicates that economic damages to Azerbaijan from the Karabakh Conflict are over \$60 billion dollars (*Refugees and IDPs in Azerbaijan*, 2020). The focus of this research paper will analyze these economic impacts with the expectation that \$60 billion dollars is an underestimation and actual economic damages to the Azerbaijani economy are in excess of \$60 billion.

RESEARCH METHODOLOGY

In consideration of research methodologies, a comprehensive approach that categorizes direct and indirect costs of war with grouping between the quantifiable categories with specific mentions for qualifiable factors with a general or estimated financial impact. The economic costing framework is designed around a bottom-up cost estimation technique, where individual components of expenditure are selected for research and analysis and aggregated to generate a total cost estimation. The individual components selected are costs that are directly influenced and attributable to the war. These are organized as follows. Chapter 1 covers expenditure directly related to the war. For this research study, data collection and analysis of costs are aimed at identifying and quantifying expenditure on four main categories: defense and military spending, reconstruction activities, demining, and refugee and internally displaced persons' support. Such military expenditure includes direct costs for the war effort such as military weapons and armaments, defense infrastructure, and human capital expenses (soldiers), including recruitment, training, and budgeted veteran support that is included in defense expenditures. Budgeted veteran support may not include the full scale of money required to cover payments to veterans, payments for death or disability to survivors' family members, and medical care and rehabilitation. It also

lacks full accounting for expenses related to infrastructure necessary to increase physical and mental healthcare capacity. Specific or estimated expenditure associated with veteran support⁴ has been excluded as a main cost analysis group due to the difficulty in discerning specific extrabudgetary veteran support expenditures. The categories selected for expense analysis are those that are most directly related to the war, i.e.: in the absence of war there would likely be greatly reduced expenditure on defense, and no expenditure necessary in areas of demining, reconstruction, and IDP support. Chapter 2 analyzes economic losses, or indirect economic costs.

Quantification of lost income was pointed towards factors of foregone investment (domestic and foreign), loss to human capital from dead and injured military and civilians, and the associated loss of economic productivity for soldiers while in military service or civilians awaiting military service. Economic productivity losses include the displacement of people due to the war and the destruction caused to capital assets and natural resources within Karabakh and the seven occupied districts. The impact of the war on natural resources such as gold, water, hydroelectric power, and land are detailed as well. Whether consumed during the war effort, plundered by occupiers, destroyed by acts of war or military presence, polluted, foregone through an inability to capitalize on natural resource assets or hardship from poor wartime relations, the impact to natural resources highlights a material loss to the region and the production capacities of the country as a whole. Finally, analysis is extended to provide insight into the geopolitical impact the war had on Azerbaijan's relationships with other nations and lost opportunities arising from such. Chapter 3 discusses these

⁴ Outside of what is allocated within the main defense budget

aforementioned expenses and lost income opportunities presented in terms of opportunity cost, with a gesture towards net present value of such military expenditure and costs of war from 1992-2023. Chapter 4 provides a summarization of results and discussion regarding the overall findings in the context of available literature, while Chapter 5 provides a concluding word. A major assumption on time basis is made such that the current ceasefire state of the Karabakh Conflict represents its final state, as such estimations and calculations are not forward looking to include future costs of armed conflict or increased defense spending as they would be in an ongoing conflict. Also excluded are any economic impact of the four villages in the Azerbaijani Qazax⁵ district that were ceded by Armenia during the 2024 border delineation agreement (Stratfor, 2024). While analysis and data points may reference or reflect upon time periods pre-1992 and post-2023, the general availability of data and timeline of events focuses the study on the time between 1992, Azerbaijan's first full year of independent statehood, and the end of 2023, the closure of the war following the 2023 Nagorno-Karabakh ceasefire agreement and the surrender of occupying military forces in September. Expenses from the years before 1992 and expenses incurred after 2023 that are not expressly stated in the course of analysis are not included and will produce an understating effect. Accordingly, it is important to understand that calculations and analysis are executed conservatively with an overall bias towards underestimation of the full scale of economic impact, with the goal of being as objective as possible. All figures and reported costs are expressed in terms of US dollars (\$) unless stated otherwise, converted from Azerbaijani manat as needed at the prevailing exchange rate

⁵ Also known as Gazakh

provided by the International Monetary Fund and International Financial Statistics.⁶

DATA METHODOLOGY

The key dataset for defense expenditure and gross domestic product calculations are drawn from the Stockholm International Peace Research Institute and The World Bank. While budget data is provided by Azerbaijan's Ministry of Finance and is generally within 1% of the SIPRI and World Bank published data for defense expenditure, discrepancies exist for some years due to currency fluctuations, end of year presidential budget amendments, non-public information, and extrabudgetary allocations and those spread across multiple internal budgets. Published data from the MoF is not available before 2006 and contains data gaps for several years between 2006-2022. Considering these limitations, officially calculated and published statistics from independent outside sources are preferred for consistency. As SIPRI, The World Bank, and other officially verified independent figures are unavailable, the other cost centers of reconstruction, demining, and refugee and IDP support rely on published figures from the Ministry of Finance and The State Statistical Committee. Azerbaijan's Ministry of Finance budget data and The State Statistical Committee's GDP data are used for drawing comparisons and all reported 2023 expenditures utilize the Republic of Azerbaijan's published numbers.

⁶ Official exchange rate refers to the exchange rate determined by national authorities or to the rate determined in the legally sanctioned exchange market. It is calculated as an annual average based on monthly averages (local currency units relative to the U.S. dollar). See Appendix A.

The following organizations of the Republic of Azerbaijan contributed direct and relevant quantified data on the topic: The State Statistical Committee of Azerbaijan; The Ministry of Finance (MoF); The Ministry of Defense (MoD); The State Committee for Affairs of Refugees and Internally Displaced Persons of the Republic of Azerbaijan; The Ministry of Economics (MoE); The Central Bank of the Republic of Azerbaijan (CBAR), and the Mine Action Agency (ANAMA).

Additional data resources that are critical to defining impacts include the Stratfor Situation Reports; Cost of War Project at Brown University; The World Bank; The International Monetary Fund; The Stockholm International Peace Research Institute (SIPRI); The United Nations High Commissioner for Refugees (UNHCR); and the Internal Displacement Monitoring Centre. Reporting by third party media is also crucial to understanding economic contributions or impacts attributable to the Karabakh War from an outside perspective.

While defense expenditure and other reported figures are generally presented in current (nominal) dollar values, to ensure understanding over time, the inflation-adjusted real purchasing power in dollars as of December 2023 is also provided, calculated through the US Bureau of Labor Statistics CPI calculator.

CHAPTER 1: EXPENDITURE

Expenditures of war are generally the direct costs of engaging in armed conflict. This study examines four main cost centers: military and defense expenditure, reconstruction expenses, expenditure related to demining the reclaimed territory, and expenses associated with refugee and internally displaced persons. As described in Stiglitz' *Estimating the Costs of War: Methodological Issues* and Crawford's *The U.S. Budgetary Costs of the Post 9/11 Wars*, military expenditure is often difficult to define in terms of what is offensive in nature and what would have otherwise been necessary to ensure the security of the country in peacetime or to renew, replace, or expand as part of an anticipated military refresh or overhaul.⁷ An example highlighting the difficulty in separating expenses for Azerbaijan would be increased counter-terrorism spending. This was a necessity while at war considering the 1994 Baku Metro terrorist attacks by 2 Armenian perpetrators which killed and injured over 100 people on two separate days, but could be considered necessary counter-terrorism measures even in peacetime. To overcome this challenge in expense discernment, an accounting of budgeted expenditures is used to calculate defense spending with adjustments made to discern excess defense spending attributable to war.

⁷ Also referred to as a reset, when military equipment that has been destroyed, damaged, or used up is replaced with more expensive equipment (Crawford, *The U.S. Budgetary Costs of the Post-9/11 Wars*)

SECTION 1: MILITARY AND DEFENSE EXPENDITURE

While Azerbaijan inherited stockpiles of military equipment, weapons, and ammunition during the collapse of the Soviet Union, data on such acquisition and the condition and useable value of such materiel is disregarded for the purposes of this study in favor of official statistics published by the Republic of Azerbaijan or verified independent parties. Additionally, substantial military aid was provided by Turkey, Israel, and Belarus (Wezeman, et al. 2021) over the span of the conflict period and is also not included in the analysis. Little data is available to determine the cost or strength of the Azerbaijani army during the initial years of the Karabakh Conflict; what is clear is that military expenditure increased rapidly in the years following Azerbaijan's establishment as an independent state in 1991. The primary sources for military expenditure and economic data are the Stockholm International Peace Research Institute and World Bank. SIPRI is an independent international institute dedicated to research into conflict, armaments, arms control, and disarmament. In 1992, the first year of available published statistics on defense expenditure,⁸ Azerbaijan spent over \$11 million dollars, nearly 2.5% of GDP⁹ building an army of

⁸ Military expenditures data from SIPRI are derived from the NATO definition, which includes all current and capital expenditures on the armed forces, including peacekeeping forces; defense ministries and other government agencies engaged in defense projects; paramilitary forces, if these are judged to be trained and equipped for military operations; and military space activities. Such expenditures include military and civil personnel, including retirement pensions of military personnel and social services for personnel; operation and maintenance; procurement; military research and development; and military aid (in the military expenditures of the donor country). Excluded are civil defense and current expenditures for previous military activities, such as for veterans' benefits, demobilization, conversion, and destruction of weapons.

⁹ GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in current U.S. dollars. Dollar figures for GDP are converted from domestic currencies using single year official exchange rates. For a few

43,000 personnel. In the years following military expenditure grew rapidly. Only six years later in 1998, military expenditure was over \$100 million dollars and \$1.6 billion in 2008. 2014 showed the highest real spend at nearly \$4.5 billion, while 2015 showed the highest ratio of defense spending to GDP at 4.5%, with the defense budget hitting its all-time nominal high in 2023 at nearly \$3.5 billion dollars. In total, over \$40 billion was spent on defense between 1992-2023. It is important to note that these figures are not the sole contributors to the cost of army building or national defense. Foreign investment and outlays from other government budgets with national security interests are described later.

TABLE 1: DEFENSE EXPENDITURE

Year	Nominal GDP	Real GDP	Nominal Defense Expenditure	Real Defense Expenditure	Defense Expenditure as a percentage of GDP¹⁰
1992	\$444,658,672	\$961,221,770	\$11,070,111	\$23,930,320	2.49%
1993	\$1,570,392,598	\$3,303,921,610	\$77,519,380	\$163,091,630	4.94%
1994	\$1,193,141,110	\$2,444,831,190	\$43,942,747	\$90,041,840	3.68%
1995	\$2,417,331,193	\$4,830,661,990	\$66,159,969	\$132,210,460	2.74%
1996	\$3,176,507,376	\$6,143,636,920	\$71,606,841	\$138,493,770	2.25%
1997	\$3,962,362,387	\$7,535,267,790	\$92,086,692	\$175,122,280	2.32%
1998	\$4,446,368,571	\$8,321,573,550	\$107,262,859	\$200,747,120	2.41%
1999	\$4,581,248,567	\$8,349,850,300	\$120,262,174	\$219,191,560	2.63%
2000	\$5,272,615,723	\$9,295,137,170	\$119,575,652	\$210,800,880	2.27%
2001	\$5,707,616,204	\$9,908,253,410	\$131,963,660	\$229,085,030	2.31%
2002	\$6,236,087,738	\$10,574,323,100	\$139,894,092	\$237,213,670	2.24%
2003	\$7,276,413,079	\$12,110,746,510	\$176,552,162	\$293,850,620	2.43%
2004	\$8,680,405,741	\$13,992,011,660	\$228,249,632	\$367,917,290	2.63%
2005	\$13,245,421,881	\$20,645,221,600	\$304,521,478	\$474,648,100	2.30%
2006	\$20,981,929,498	\$31,893,573,300	\$717,111,854	\$1,090,045,550	3.42%

countries where the official exchange rate does not reflect the rate effectively applied to actual foreign exchange transactions, an alternative conversion factor is used.

¹⁰ Nominal or real, defense expenditure as a percentage of GDP is the same regardless of calculation method

2007	\$33,049,419,431	\$48,266,856,100	\$946,599,792	\$1,382,456,810	2.86%
2008	\$48,851,293,785	\$71,279,457,600	\$1,607,799,226	\$2,345,957,640	3.29%
2009	\$44,292,427,185	\$62,915,437,100	\$1,472,909,977	\$2,092,203,460	3.33%
2010	\$52,909,294,792	\$74,047,755,800	\$1,476,608,734	\$2,066,547,530	2.79%
2011	\$65,952,796,428	\$89,646,733,300	\$3,080,084,996	\$4,186,623,740	4.67%
2012	\$69,679,944,504	\$93,092,115,800	\$3,246,122,613	\$4,336,806,570	4.66%
2013	\$74,160,560,124	\$97,612,326,800	\$3,367,574,161	\$4,432,500,900	4.54%
2014	\$75,239,785,452	\$98,289,289,400	\$3,427,179,917	\$4,477,086,910	4.56%
2015	\$53,076,235,355	\$68,833,841,300	\$2,900,551,382	\$3,761,684,950	5.46%
2016	\$37,866,996,883	\$48,111,065,600	\$1,396,969,108	\$1,774,887,700	3.69%
2017	\$40,866,627,352	\$50,849,715,600	\$1,528,859,592	\$1,902,336,340	3.74%
2018	\$47,112,470,052	\$57,522,545,700	\$1,672,176,471	\$2,041,664,290	3.55%
2019	\$48,174,235,294	\$57,504,866,000	\$1,854,235,294	\$2,213,372,790	3.85%
2020	\$42,693,000,000	\$50,277,213,800	\$2,237,764,706	\$2,635,293,250	5.24%
2021	\$54,825,411,765	\$60,320,497,000	\$2,703,176,471	\$2,974,112,700	4.93%
2022	\$78,721,058,824	\$81,359,886,600	\$2,991,035,294	\$3,091,298,470	3.80%
2023	\$72,356,175,964	\$72,356,180,000	\$3,444,017,623	\$3,444,017,620	4.76%
Total	-	-	\$41,761,444,657	\$53,205,242	-

Source: *Stockholm International Peace Research Institute (SIPRI)*¹¹; *International Institute for Strategic Studies, The Military Balance; The Statistical Committee of the Republic of Azerbaijan*¹²; *US BLS CPI calculator; Self-Calculations*

In determining cumulative costs of military expense over the period from 1992-2023, the overall expense must first be scrutinized to determine normal defense spending in non-war times versus what can be directly attributed to the war. To determine such excess amount, a normalized baseline amount for defense spending must first be established.

In 2014, NATO Heads of State and Government agreed to contribute a minimum of 2% of their national GDP to defense spending, regardless of conflict risk likelihood to ensure military readiness in the event of a conflict (*Defence Expenditures and NATO's 2% guideline, 2024*)¹³. This pledge was renewed at the 2023 Vilnius Summit as NATO

¹¹ Yearbook: Armaments, Disarmament and International Security

¹² 2023 State Budget

leaders agreed on a new Defense Investment Pledge to expediently commit at least 2% of GDP annually in the wake of the Russian invasion of Ukraine. This defense expenditure observes the NATO definition¹⁴ and includes payments for Armed Forces and other forces financed through the budgets of other ministries beyond the Ministry of Defense. Also included are retirement pensions, stockpiling of war reserves, research and development, military operations and missions, and peacekeeping and humanitarian operations. By utilizing this 2% guideline regardless of war or peace as a baseline, a conservative estimate is established for the minimum amount of defense spending relative to GDP. Azerbaijan's actual rate of defense spending to GDP can be compared to this 2% figure to find excess military expenditure by Azerbaijan in the absence of the Karabakh war. Without the war, there would be no need to ensure ability to react to Armenian aggression nor execute offensive operations to reclaim occupied territory to determine the overall excess military cost incurred. This cumulative excess would constitute the unnecessary military expenditure and economic burden placed on Azerbaijan as a result of the Karabakh War.

Along with SIPRI defense expenditure data, GDP data was derived from World Bank National Accounts Data and OECD (Organisation for Economic Co-operation and Development) National Accounts data files. To determine the surplus defense spending relative to the 2% of GDP NATO guideline, the below formula is used for each year:

$$***DefEx\$ - NATO DefEx\$ = Excess Defense Spending***$$

$$***DefEx\$ = Defense Expenditure***$$

¹⁴ See footnote 5

NATO DefEx\$ = NATO 2% Defense Baseline (GDP * 2%)

TABLE 2: EXCESS DEFENSE SPENDING

Year	DefEx\$ Nominal USD	NATO DefEx\$ Nominal USD	Excess Defense Spending Nominal USD	Excess Defense Spending Real USD
1992	\$11,070,111	\$8,893,173	\$2,176,938	\$4,705,899
1993	\$77,519,380	\$31,407,852	\$46,111,528	\$97,013,215
1994	\$43,942,747	\$23,862,822	\$20,079,925	\$41,145,202
1995	\$66,159,969	\$48,346,624	\$17,813,345	\$35,597,214
1996	\$71,606,841	\$63,530,148	\$8,076,693	\$15,621,017
1997	\$92,086,692	\$79,247,248	\$12,839,444	\$24,416,913
1998	\$107,262,859	\$88,927,371	\$18,335,488	\$34,315,666
1999	\$120,262,174	\$91,624,971	\$28,637,203	\$52,194,578
2000	\$119,575,652	\$105,452,314	\$14,123,338	\$24,898,146
2001	\$131,963,660	\$114,152,324	\$17,811,336	\$30,919,955
2002	\$139,894,092	\$124,721,755	\$15,172,337	\$25,727,218
2003	\$176,552,162	\$145,528,262	\$31,023,900	\$51,635,688
2004	\$228,249,632	\$173,608,115	\$54,641,517	\$88,077,072
2005	\$304,521,478	\$264,908,438	\$39,613,040	\$61,743,606
2006	\$717,111,854	\$419,638,590	\$297,473,264	\$452,174,102
2007	\$946,599,792	\$660,988,389	\$285,611,403	\$417,119,710
2008	\$1,607,799,226	\$977,025,876	\$630,773,350	\$920,368,372
2009	\$1,472,909,977	\$885,848,544	\$587,061,433	\$833,894,791
2010	\$1,476,608,734	\$1,058,185,896	\$418,422,838	\$585,592,287
2011	\$3,080,084,996	\$1,319,055,929	\$1,761,029,067	\$2,393,689,170
2012	\$3,246,122,613	\$1,393,598,890	\$1,852,523,723	\$2,474,964,140
2013	\$3,367,574,161	\$1,483,211,202	\$1,884,362,959	\$2,480,254,370
2014	\$3,427,179,917	\$1,504,795,709	\$1,922,384,208	\$2,511,301,240
2015	\$2,900,551,382	\$1,061,524,707	\$1,839,026,675	\$2,385,008,260
2016	\$1,396,969,108	\$757,339,938	\$639,629,170	\$812,666,460
2017	\$1,528,859,592	\$817,332,547	\$711,527,045	\$885,342,100
2018	\$1,672,176,471	\$942,249,401	\$729,927,070	\$891,213,370
2019	\$1,854,235,294	\$963,484,706	\$890,750,588	\$1,063,275,590
2020	\$2,237,764,706	\$853,860,000	\$1,383,904,706	\$1,629,748,970
2021	\$2,703,176,471	\$1,096,508,235	\$1,606,668,236	\$1,767,702,730
2022	\$2,991,035,294	\$1,574,421,176	\$1,416,614,118	\$1,464,100,770
2023	\$3,444,017,623	\$1,447,123,519	\$1,996,894,104	\$1,996,894,100
Total	\$41,761,444,660	\$20,580,404,67	\$21,181,039,989	\$26,553,321,921

Source: *Stockholm International Peace Research Institute (SIPRI); World Bank national accounts data; OECD National Accounts data; Self-Calculations*

As the calculations show, utilizing NATO's 2% guideline for defense expenditure

yields excess Azerbaijani defense expenditure in every year from 1992-2023. In nominal dollars, total Azerbaijani defense expenditure from the analysis period is nearly \$42 billion dollars, with over \$21 billion of that considered to be excess military spending relative to the NATO baseline. To fully grasp the costs of war over time, purchasing power indicates the excess defense expenditure incurred by the country of Azerbaijan at the close of the 32-year analysis period at over \$26 billion real dollars. Still, this figure is understated for a variety of reasons; the unavailability of data pre-1992 means Azerbaijani defense expenditure from 1988-1991 is excluded from the cumulative total. Also, it was reported by the Seattle Times in 1994 (Gurdilek), that Azerbaijan relied in part on direct foreign investment to develop their military strength, obtaining \$10-15 million dollars of military training from a US based energy company as a condition of obtaining oil rights in the country.¹⁵ While there are few other references to similar actions, it must be assumed that a degree of outsourcing has occurred in defense and other expenditure throughout the history of the Azerbaijani Armed Forces, leading to an understated cost of military spending relative to the stated expenditure figures. Such investment offered by foreign entities could have also been used to greater effect in non-military or wartime circumstances. Yet another cause for an understated amount of total defense spending from SIPRI can be found in adjacent spending areas that would be influenced or necessitated by the war and the heightened risk of conflict, but not strictly operate from the defense budget. Such departments include cybersecurity, presidential protection, and lost,

¹⁵ Mega Oil USA of Atlanta was reported to have agreed to spend \$10 million to \$15 million on training Azerbaijani special forces as a condition of obtaining oil rights.

kidnapped, and hostage citizen support, among others.¹⁶ These three departments alone represented \$75 million dollars of spending in 2023 with over \$142 million slated for 2024, expenses that are necessary to national security without being directly budgeted as a defense expenditure. Furthermore, it is unlikely these departments would have experienced such budgetary inflation over the past year in the absence of war.

A mention is given here for an overlooked economic cost of a military campaign in the form of veteran support. The continuing financial support required to properly care for surviving veterans of armed conflict, death gratuities for those killed, and the surviving families of both groups may not be completely compensated by the defense budget.

Veteran support is not limited merely to pensions and provision of healthcare for veterans. Caring for veterans' physical and mental health in the wake of a war requires increased veteran care infrastructure so as not to overburden the health services available to the general population. Social support systems for mental healthcare, vocational rehabilitation, and financial payments for disabled veterans and surviving family members is a cost that can be quite substantial in comparison to the original military expenditure.¹⁷ The chief spokesperson for the Ministry of Labor and Social Protection reported in 2020 that those who gained a disability due to their injuries would receive compensation ranging from \$2,580 to 5,170 depending on the severity of their disability (OC Media, 2020). Utilizing reported costs of continued veteran care

¹⁶ Including Special State Security Service, Military Prosecutors Office, Diaspora Committee for the interests of Azerbaijanis in Karabakh, taken from the Approved State Budget provided by the Ministry of Finance

¹⁷ Per Crawford in *The U.S. Budgetary Costs of the Post-9/11 Wars* pp. 7, estimated future obligations for US veterans medical and disability from 2023 – 2050 is estimated at \$2.2 trillion for conflicts that received approximately \$5.8 trillion in war appropriations and war-related spending through 2022.

and support, it is known that \$41.7 million was spent¹⁸ (*Azerbaijan names amount of expenses, 2022*) across 2021 and 2022 for post-war veteran support. Additionally, costs from the state budget also include full tuition fees for named war veterans (*Tuition of Azerbaijani war veterans, 2023*) to cover the expense of higher education as a type of continuing support and rehabilitation for veterans in an initiative announced in 2023. Veterans also receive tax benefits. While it is difficult to quantify the forward-looking economic cost of such programs, these costs are not just limited to veterans of the most recent conflicts. Grants of the President of the Republic of Azerbaijan are available for affected veterans and martyr families of war-related causes from different conflicts stretching back to Soviet days in amounts from \$47 to \$1,176 per month depending on grant type and recipient's qualifications, with the base grant of \$47 per month guaranteed to war veterans of all types.¹⁹ Aside from these forms of financial veteran support, funds must be provided in the case of death or disability. The cost of insurance and the corresponding payouts, also known as death gratuities, can be as high as \$6,471 for the death of a serviceman. Monthly benefits are paid to families of military fatalities from the Second Karabakh War depending on their length of service, averaging \$235 per month (Mehralızadə, 2022). Moreover, these families also receive a corresponding military pension between \$123 and \$176 per month for their martyred family member (*Azerbaijan announces payouts for families of War Dead, 2020*). To give an idea of cost, *Baku Research Institute's* report on the 2023 state budget highlighted specific social protections to the tune of \$42.5 million USD in survivor's

¹⁸ For purposes of improving the living conditions of 2020 Karabakh War veterans and martyr families, education, training, and development of creative potential, debt obligations of the veterans and martyr families, and treatment and psychological support.

¹⁹ Grants of the President of the Republic of Azerbaijan, provided by the Agency for Sustainable and Operative Provision (dost.gov.az)

benefits and \$327 million USD in military pensions and scholarships to survivors.²⁰ A 2024 article from modern.az (Sadiyev) reported 180,476 people with the status of war veteran. A very conservative calculation assuming these ones only receive the minimum stipend (\$47.06) would place this expenditure figure around \$8.5 million dollars per month.²¹ Compiled over 25 years, the minimum military service requirement for retirement, this creates, at a minimum, a \$2.5 billion dollar burden on the country over the next 25 years. In light of these compensatory grants, rehabilitation programs, and increased infrastructure spending, it is clear that the economic costs of wartime human capital are not just limited to the expenses typically associated with army building or the figures reported within the defense budget. Due to the difficulty in accurately discerning the full economic impact of these payments specifically just for veterans or casualties of the Karabakh Conflict, the cost of veteran support beyond what is allocated in the general defense budget is not included in the expenditure calculation. This introduces an understating effect and creates an underestimated figure for the true economic expenditure of the war. This understating effect is compounded when considering future legislation that may increase eligibility criteria or amounts provided for veterans and those killed in duty to their country.

²⁰ Allowances to National Heroes, families of martyrs, as well as families of January 20 martyrs, individual scholarships, pensions to war veterans who took part in military operations for the territorial integrity of the country, to the families of servicemen killed in the course of international duty in the Soviet Army in Afghanistan, to persons with disabilities of the 1st group for injuries incurred in participation in the liquidation of the accident at the Chernobyl NPP, to participants of the Great Patriotic War of 1941-1945, to various persons who were under the siege of Leningrad during the Second World War, to persons with 81-100 percent impairment of body functions, to disabled persons under the age of 18, to persons with first-degree disabilities or persons caring for disabled children under the age of 18, as well as benefits to persons with disabilities of the 1st group due to general illness and illness during military service, injury and occupational disease, due to being in the zone of military operations.

²¹ 47.06 per month X 180,476 war veterans = \$8,493,201

SECTION 2: RECONSTRUCTION

When considering the expenses caused by the destruction of war, the most reliable empirical evidence can be found in the reconstruction costs. \$2.5 billion dollars were allocated in the 2022 state budget for reconstruction and restoration of the liberated territories. From the 2023 state budget, \$3.28 billion dollars were allotted to the reconstruction and rejuvenation of territories liberated from occupation, with over \$4.5 billion for 2024. Of this amount, 93% is allocated for infrastructure projects including roads, residential complexes, and hydropower plants, among other critical infrastructure assets (Abdul, 2024). While it is not methodologically sound to compare present day budget allocations to estimated losses in capital assets, it is almost certain that such expenditure would not have been necessary in the absence of the Armenian occupation; Azerbaijan would have been able to develop and grow these occupied territories organically over the past three decades rather than relying on multi-billion dollar catch-ups. It is also worth noting that these figures are understated for the reconstruction and rejuvenation of the entire occupied lands, as at the time of the 2022 and 2023 budget allocations were earmarked, the Armenian forces were still occupying Khankendi and would not have been under Azerbaijani control for planned reconstruction.

TABLE 3: RECONSTRUCTION EXPENDITURE

Year²²	Nominal USD	Real USD	Reconstruction Expense as a percentage of GDP
2002	\$26,105,159	\$44,265,703	0.42%

²² No data is available from the State Statistical Committee before 2002

2003	\$18,708,420	\$31,137,965	0.26%
2004	\$12,283,764	\$19,800,350	0.14%
2005	\$55,099,263	\$85,881,554	0.42%
2006	\$70,844,316	\$107,686,847	0.34%
2007	\$175,790,718	\$256,732,627	0.53%
2008	\$213,754,765	\$311,891,993	0.44%
2009	\$48,929,728	\$69,502,474	0.11%
2010	\$166,701,800	\$233,302,964	0.32%
2011	\$248,668,589	\$338,004,264	0.38%
2012	\$217,383,073	\$290,422,935	0.31%
2013	\$302,469,823	\$398,119,714	0.41%
2014	\$239,175,748	\$312,446,507	0.32%
2015	\$120,733,036	\$156,576,957	0.23%
2016	\$144,105,403	\$183,089,876	0.38%
2017	\$282,288,438	\$351,247,090	0.69%
2018	\$223,156,577	\$272,465,776	0.47%
2019	\$164,224,647	\$196,032,436	0.34%
2020	\$165,313,882	\$194,681,149	0.39%
2021	\$1,296,624,471	\$1,426,583,110	2.37%
2022	\$2,415,687,706	\$2,496,664,830	3.07%
2023	\$3,280,000,000	\$3,280,000,000	4.53%
Total	\$6,608,049,324	\$11,056,537,121	-
<i>Source: The Statistical Committee of the Republic of Azerbaijan; US BLS CPI calculator; Self-Calculations</i>			

To further understand the sheer amount of money Azerbaijan has dedicated to restoring the occupied territories, government capital expenditure towards reconstruction for these lands between 2002-2023 totaled \$6.6 billion nominal US dollars, or a staggering \$11 billion in real dollars. The total result is likely understated; aside from the aforementioned reason, lack of data from before 2002 and non-specific expenditure would increase the true total cost of reconstruction. An example of non-specific expenditure is found in budgets allotted to a country-wide initiative but with clear involvement in the restoration of the liberated territories, such as the authority responsible for gasification of the regions (Azerigaz) or the work of the Ministry of Ecology and Natural Resources. Additionally, it is unknown to what degree these budgeted amounts will cover complete reconstruction; future budgetary outlays for

reconstruction of this region are likely. To provide another point of reference, a 2010 report from the Caucasus Institute of Strategic Studies (MÜZƏFFƏRLİ & İSMAYILOV) calculated total costs for reconstruction and resettlement of the refugee population at \$19 billion nominal dollars, or over \$28 billion in real dollars. For purposes of determining excess expenditure, reported budgeted expenditure for reconstruction is taken at face value as reconstruction would be unnecessary in the absence of war.

SECTION 3: DEMINING

After the war was over and territorial integrity restored to Azerbaijan, the extent of the Azerbaijani renewal of lands was not just limited to infrastructure and capital assets. In the first round of oral arguments in the International Court of Justice, Barrister Sean Aughey described the landmines Armenia left in the wake of their withdrawal from Azerbaijani lands. Armenia shared minefield records²³ of over 1,000 minefields containing around 390,000 landmines placed in Nagorno-Karabakh; however, it is clear this barely scratches the surface of the massive demining effort to truly recover the territories (X, 2024). In a letter to the UN Secretary General on August 24th, 2022, Azerbaijan alleged that provided maps lacked accuracy and utility and described only 25% of potential minefields, as over 55% of post-war explosions in 2023 occurred outside the areas of provided maps that encompassed the former line of contact. The Azerbaijan National Agency for Mine Action (ANAMA) reported 65 deaths and 287

²³ Also known as maps

injuries²⁴ since the November 2020 ceasefire, of which a majority occurred in civilian and agricultural areas outside of the former line of contact. With the unreliability of the provided minefield maps, ANAMA cleared 74,644 hectares of over 100,000 mines between November 10th, 2020, and March 31st, 2023, representing only 9.06% of the total contaminated areas. This leaves an estimated 823,588 hectares of potential mine fields, with nearly 22% still designated as highly contaminated (Torelli, 2023). As reported by Shiryev and the International Crisis Group's 2023 analysis, it is estimated that over a million mines have actually been placed in the recovered territories. Azerbaijani President Ilham Aliyev declared in 2022 that clearing all impacted areas to allow for repopulation and resumption of civilian economic activities to cost \$25 billion dollars. To quantify a figure, NATO's Strategic Warfare Development Command estimates the cost to remove one landmine at \$300 to \$1,000. When considered with the Kyiv School of Economics Center for Food and Land Use Research cost to demine at \$1,781 per hectare, a modest calculation yields an estimate of the cost of demining the 1,000,000+ mines across 800,000+ hectares of recaptured lands in the region of \$2 billion dollars.²⁵

Available MoF budget documents are lacking in reported expenditure for demining activity. Despite establishment in 1998, operating budgets for ANAMA are not listed in released budgets before 2011, nor for 2022. Available information is summarized

²⁴ Of which 50 deaths and 150 injuries were to civilians

²⁵ \$2.1 billion, assuming 1,000,000 mines at a cost to demine of \$650 (the average of the NATO estimated cost per mine high and low figures), combined with Kyiv School of Economics cost of \$1,781 per hectare across all 823,588 hectares of light, medium, and heavily contaminated areas costing \$1,466,756,798.

below. A sharp increase in demining expenditure is observed for 2023, with nearly \$50 million budgeted for demining in 2024.

TABLE 4: DEMINING EXPENDITURE

Year	Current USD	Real USD	Demining Expense as a percentage of GDP
2011	\$9,370,809	\$12,737,327	0.01%
2012	\$10,410,295	\$13,908,112	0.01%
2013	\$10,427,242	\$13,724,645	0.01%
2014	\$11,704,602	\$15,290,274	0.02%
2015	\$8,960,374	\$11,620,585	0.02%
2016	\$5,752,883	\$7,309,196	0.02%
2017	\$3,921,786	\$4,879,817	0.01%
2018	\$3,999,961	\$4,883,801	0.01%
2019	\$4,000,000	\$4,774,740	0.01%
2020	\$4,588,235	\$5,403,314	0.01%
2021	\$4,823,529	\$5,306,986	0.01%
2022	-	-	-
2023	\$46,427,183	\$46,427,183	0.06%
Total	\$124,386,899	\$146,265,981	-
Source: Ministry of Finance Budget Data; US BLS CPI Calculator; Self-Calculations			

It was reported that \$59 million dollars was allotted from the state budget in 2023 for mine clearance (*The mammoth task*, 2023), indicating that the budgeted figures are likely understated. Data discrepancies aside, this amount barely scratches the surface of the true scale of effort required to demine Azerbaijan in the wake of the war. While foreign aid has been provided for demining purposes²⁶, such amounts contributed after

²⁶ Including The UK's \$2 million since 2020, The US' \$2.5 million since Nov. 2021 (and over \$35 million since 1994), and over \$8 million from EU member states. The estimate of foreign aid for demining does not include the financial aid, programmatic assistance, and technical expertise provided by all supporting countries.

the 44-Day War in 2020 are relatively negligible, representing less than 1% of the overall cost to demine²⁷. While this represents a shadow of the amount to demine the conflict areas in Karabakh, this foreign aid could have contributed to other purposes beyond Azerbaijan: just another example of the unquantifiable economic costs of war both to the involved countries and the seemingly far-removed ones.

In order to calculate the excess expenditure related to demining, it is necessary to determine the total cost to demine. Given an estimated 898,232 total hectares of contaminated land with over 1,000,000 mines planted, total excess expenditure has been calculated to be \$2.2 billion dollars²⁸. This number is taken at face value without any adjustments to determine excess cost as demining would be unnecessary in the absence of war.

SECTION 4: IDP SUPPORT

An estimated 750,000 Azerbaijani's were displaced from their homes in Azerbaijan and Armenia in the wake of the First Karabakh War.²⁹ Of this, over 500,000³⁰ were from Karabakh and the seven bordering regions, with a 1995 report from the Parliamentary Assembly of the Council of Europe listing at least 630,000 total (*REPORT*, 1995). A 2009 UNHRC report asserted over one million IDPs with a majority resulting from the Karabakh Conflict, making Azerbaijan one of the highest

²⁷ Assuming a cost of \$2 billion to demine

²⁸ \$2,249,751,192 utilizing the above calculation methodology averaging \$650 per mine and \$1,781 per hectare.

²⁹ Thomas De Waal's *Black Garden*, pp. 285

³⁰ *Refugees and IDPs in Azerbaijan, 2020* references over 600,000 displaced from Nagorno-Karabakh and adjacent regions

per capita concentrations of IDPs in the world. The State Committee for Affairs of Refugees and Internally Displaced Persons of the Republic of Azerbaijan claims the number of refugees and IDPs resulting from the Nagorno-Karabakh Conflict number to be over 1.2 million. To date, very few have returned to their homelands, around 2,000 as of September 2023 (*President, 2023*), representing a crisis of internally displaced persons within Azerbaijan. The Refugee Committee reports spending \$6.5 billion dollars on social protections for refugees and IDPs between 1995 and 2015. The Baku Research Institute(BRI)'s report on the 2022 State Budget noted \$415.9 million towards the Committee, with the majority of expenditure planned in areas of social protection for IDPs and environmental improvement³¹. The same report for 2023 described \$215.7 million dollars for the social protection of refugees and IDPs,³² with an additional \$6.5 million provided specifically for refugee and IDP support in reclaimed territories through road and wastewater projects. These BRI figures differ from the reported Refugee Committee budget shown in figure 7 as BRI reporting is inclusive of Refugee/IDP funds that were provided to other budgets, such as road projects or general financial aid. No BRI analysis for budgets prior to 2022 are available, which provides a strong understating effect on the total expenditure when solely considering MoF budgeted figures.

The Asian Development Bank defines social protection in five major elements:³³

- *labor market policies and programs designed to generate employment, improve working conditions and promote the efficient operations;*
- *social insurance programs to cushion the risks associated with unemployment, ill health, disability, work-related injury and old age;*

³¹ Baku Research Institute State Budget for 2022, pp. 16, pp. 19

³² Baku Research Institute 2023 State Budget, pp. 21, pp. 24

³³ *Social Protection*, pp. iii

- *social assistance and welfare service programs for the vulnerable groups with inadequate means of support, including single mothers, the homeless, or physically or mentally challenged people;*
- *micro and area-based schemes to address vulnerability at the community level, including microinsurance, agricultural insurance, social funds and programs to manage natural disasters; and*
- *child protection to ensure the healthy and productive development of children.*

Azerbaijan’s stated social protections include monthly allowances of \$35, funds to cover utilities, and additional measures such as free or low-cost education and healthcare (*Azerbaijan, World Bank Mulls Cooperation, 2024*). Budgeted refugee and IDP expenditure figures are to be understood as understated from the true cost of financial support for these groups, as some expenditure is allocated to human rights ombudsman services or general financial aid and not directly to the Refugee Committee. An additional factor that may cause an understatement of real USD expenditure is the absence of specific refugee and IDP spend for the earlier years of the conflict. For the time period between 1994-2014, the amount reported by the State Committee for Affairs of Refugees and Internally Displaced Persons of the Republic of Azerbaijan is used as the cost basis, as Ministry of Finance budget data is intermittent between 2007 and 2014 and non-existent before 2007.

TABLE 5: REFUGEE AND IDP EXPENDITURE

Year	Nominal USD	Real USD	Refugee and IDP Expense as a percentage of GDP
1994 - 2014	\$6,500,000,000	\$8,491,256,840 ³⁴	-

³⁴ This result is understated from a nominal to real conversion perspective. Real expenditure is calculated on cumulative nominal figure as of December 2014, detailed expenditure per year from 1994 – 2014 is unavailable for annual real dollar calculation.

2015	\$225,179,130	\$292,031,698.00	0.55%
2016	\$143,565,769	\$182,404,260.00	0.48%
2017	\$116,618,090	\$145,106,086.00	0.36%
2018	\$147,824,613	\$180,488,267.00	0.38%
2019	\$159,322,485	\$190,180,855.00	0.39%
2020	\$224,553,794	\$264,444,736.00	0.62%
2021	\$223,729,039	\$246,153,140.00	0.45%
2022	\$224,250,503	\$231,767,655.00	0.29%
2023	\$225,838,101	\$225,838,101.00	0.31%
Total	\$8,190,881,522	\$10,449,671,638	-
Source: Ministry of Finance Budget Data; US BLS CPI Calculator; Self-Calculations			

This represents over \$8 billion nominal dollars or over \$10 billion real dollars of budget expenditure. In addition to budgeted state funds, the State Oil Fund of Azerbaijan (SOFAZ) has allocated nearly \$1.6 billion towards improvement of social condition of refugees and IDPs since 2001 (*Improving social conditions of refugees*). Foreign Aid has also poured into the country to assist with the IDP and refugee crisis. As of 2020, The World Bank has disbursed loans to Azerbaijan in the total amount of \$64.9 million for the IDP Living Standards and Livelihoods Project. The stated goals of the project were to “improve living condition and increase economic self-reliance of targeted IDPs” and “strengthen the social capital of IDPs”³⁵. Other humanitarian aid provided to Azerbaijan for IDPs includes food, supplies, legal assistance, and support for children. While there is evidence that the funding generated a positive impact for IDPs livelihood and outlook, it only represents a small repair in the large dent created by the expulsion of these Azerbaijanis from their native lands and continues to represent an opportunity cost of funding these social protections that could have been utilized elsewhere.

³⁵ Social Global Practice, 2020, pp. 8

In refining available figures for accuracy and to determine excess spend on refugees and internally displaced persons, little detail is available on annual spend occurring prior to 2015. Additionally, it is unknown exactly what proportion of refugees and IDPs are directly attributable to the Karabakh Conflict. By utilizing the assumption provided by the UNHRC, that the majority of refugees and IDPs are directly attributable to Karabakh, the reported budgeted amounts are taken at face value for the purposes of determining overall excess spend due to the war. While this has an overstating effect on the nominal figure, the lack of detailed annualized expenditure data pre-2014 provides an understating effect to the real amount. Additionally, the lack of pre-1994 expenditure data, extra-budgetary expenditure either from international aid or state oil fund contributions, non-refugee committee related expenditure, and any other future costs will also apply an understating effect to the total cost. When taken as a whole, it can be assumed that the provided figures are estimates of the minimal amount of excess expenditure for refugees and IDPs through 2023.

SECTION 5: CUMULATIVE EXPENDITURE ANALYSIS

An analysis of cumulative expenses provides an idea of the true costs of the Karabakh Conflict. Data is provided in both nominal and real dollar figures with notable deviations to calculation methodology provided as footnotes. It is important to note that nearly all expenses provided below are almost certainly understated from the true cost of each expense category for the reasons elaborated upon in their respective sections. Details behind the calculation of estimated excess expenditure in real dollars are described below.

- Expenses for military and defense are represented in terms of excess defense spending per the NATO 2% guideline as calculated previously.
- Demining expenses are calculated using available data with excess expenditure listed as \$2.2 billion, or the face value of estimated cost shown in the demining expenditure section. This is the only figure that relies upon a forward-looking cost to determine expenditure as reported budget expenditure alone is insufficient in determining total cost.
- Reconstruction excess expenditure is taken at full face value from available data covering 2002-2023.
- Refugee and IDP expenses are taken at face value, ignoring any overstating or understating factors described previously.

TABLE 6: CUMULATIVE EXPENDITURE 1992 - 2023

Expense Type	Reported Spend Nominal USD	Reported Spend Real USD	Estimated Excess Expenditure Nominal USD	Estimated Excess Expenditure Real USD
Defense	\$41,761,444,657	\$53,205,241,790	\$21,181,039,989	\$26,553,321,921
Demining ³⁶	\$124,386,899	\$146,265,981	\$2,249,751,192	\$2,249,751,192
Reconstruction ³⁷	\$6,608,049,324	\$11,056,537,121	\$6,608,049,324	\$11,056,537,121
Refugee and IDP	\$8,190,881,522	\$10,449,671,638	\$8,190,881,522	\$10,449,671,638
Total Expenditure	\$56,684,762,402	\$74,857,716,530	\$38,229,722,027	\$50,309,281,872

In summary, total budgeted expenditure for the examined categories from 1992 – 2023 was \$56.7 billion or nearly \$75 billion in real 2023 dollars. This real dollar amount of expenditure exceeds Azerbaijan’s 2023 GDP. The calculated estimate of excess

³⁶ Reported spend figures are absent pre-2011 and for 2022

³⁷ Available Expenditure Data limited to 2002-2023

expenditure over the same period that is directly attributable to the war is calculated to be in excess of \$50 billion real US dollars. It must be noted that this is almost certainly a heavily understated representation of costs for the reasons elaborated upon in the expenses' respective sections.

CHAPTER 2: LOSSES

Calculating losses is much less straight-forward than summing expenses. Losses are costs that are not directly attributable to the war. For this examination of indirect costs, analysis of losses will generally focus on lost economic productivity and social cost. The study presented is less concerned with defining and executing the best fitting methodology with precise adjustments for external variables on each level of lost income calculations and will instead examine the war from an economic loss and social cost perspective with descriptive analysis as to the types, causes, and impacts to economic productivity resulting from the war. Analysis of lost income is structured through foregone investment from both foreign and domestic entities, loss of human capital due to both military and civilian casualties and disabilities, loss of productivity to both military and civilian citizens, loss of capital assets, loss of natural resources in the recovered territories, and loss of geopolitical relations. Citizens (whether civilian or military) that are displaced, killed, and disabled suffer losses of their homelands, their livelihoods, and sense of stability, creating a great negative impact to economic potential not just for the heads of household but also the dependents (or lack thereof) of such households. These dependents will face reduced access to education and limitations for integration to society creating a loss of economic potential at a massive indirect economic and social cost for the coming generation.

SECTION 1: FOREGONE INVESTMENT

When considering the economic impacts of war from a loss perspective, one of the largest impacts to economic productivity comes in the form of foregone investment.

This cost represents investments of time, money, and human capital that are delayed or outright abandoned due to the uncertainty and increased risk that comes along with wartimes. Whether the conflict is active or frozen, foregone investment takes many forms and its negative impact on the economy is evident. Domestic companies unsure of the future of their country and market outlook for their operating environment may hold back on expansion plans or reduce spending to prepare for the unknown. Foreign companies may choose to invest in a safer alternative rather than a country at war. Citizens of the warring nation may put off investment in themselves by reducing the growth of their personal human capital through avoidance or delay of education, skills attainment, vocational training, or job experience. This is particularly significant when coupled with the fact that a reduction of foreign and domestic investment means a reduction in jobs and readiness of the workforce. Less access to jobs for the head of a household leads to lower standards of living for the entire household, dependents young and old notwithstanding. A higher level of unemployment also generates less economic growth in the form of spending, higher crime, mental and physical health challenges, and reduced tax revenue, among other drawbacks. A clear example of the foregone domestic investment can be found with NEQSOL Holding's 2024 announcement to invest up to \$120 million dollars in the liberated territories: an investment that was not feasible during the war.

Additional loss of investment from foreign entities can be found in a 2018 report by Berlin Economics, financed by the European Union. This report finds that capital flows to Azerbaijan have been reduced due to elevated country risk as a consequence of ongoing conflict. This would likely have a strong effect on ratings, risk premiums, loans and equity, and investment, creating a significant harmful effect on economic

growth. Absence of war would reduce risk ratings and increase creditworthiness, which would lead to fiscal savings on interest payments and increases in foreign direct investment (FDI). Berlin Economics' report estimated annual interest savings to Azerbaijan from cessation of hostilities to be greater than \$12 million dollars. To further illustrate the effects of war on foreign investment, the Central Bank of Azerbaijan reported a \$1.5 billion dollar, or 31% increase,³⁸ in FDI from 2021 to 2022, compared to 5.9% growth for both 2020 and 2021. While a portion of this striking increase in FDI is likely attributable to global economic recovery from the COVID-19 pandemic and shifting supply chains in the wake of the Russo-Ukrainian War, it is certain that this level of foreign investment would not have occurred while the country was actively involved in armed conflict. There is a high likelihood that investment by foreign entities was deferred due to the Second Karabakh War in 2020. Additional examples of foregone investment in global trade routes are highlighted in the geopolitical and international trade section.

The burden of these losses is carried as a social cost to the citizens with supplemental aid through heavy government spending. Such government spending frequently reduces, or crowds out, private sector spending and investment. This type of reduced investment is exacerbated during war times as the government's own military and defense spending crowds out critical infrastructure spending in areas such as healthcare and education. A 2023 study of 116 countries by Ikegam and Wang revealed that military expenditure has a significant negative impact on domestic government health spending, with Elish's 2023 study revealing evidence of negative impacts to

³⁸ From \$4.8 billion in 2021 to \$6.3 billion in 2022

education and overall economic development in Egypt between 1980 and 2021 due to increased defense spending. This crowding out effect causes an overall reduction in economic activity with reduced growth in areas of social welfare, yet another cost of war.

SECTION 2: HUMAN CAPITAL

Examination of the loss of human capital includes both military and civilian deaths and injuries, referred to as casualties. While a look at the expenses associated with military action is provided above, an overlooked cost of war is the toll that death and disability have on society and the effect on economic productivity that results. Generally, the combat mortality toll on civilians during the selected named conflicts was rather limited compared to other conflict like Syria, Yemen, or Ukraine; however, for a country with only 10 million people, the military losses were extraordinarily high. The numbers are still rising however, due to the landmines. A 2019 Red Cross mission to Nagorno-Karabakh reported 747 known casualties from landmines since the early 1990s. Combined with the 352 landmine casualties reported after the 2020 ceasefire, over 1,000 deaths and non-fatal injuries have occurred even in peace time, with many civilians caught in the crossfire.

The scope of available information on civilian deaths to Azerbaijan as a result of the Karabakh Conflict is very limited, with independent accounts either aggregating Armenian and Azerbaijani civilian population deaths or aggregating the total loss of life per side with no distinguishment between military and civilian, such as Karlinsky and Torrisi's 2023 *The Casualties of War: An Excess Mortality Estimate of the Lives Lost in the 2020 Nagorno-Karabakh Conflict*. To that end, no specific accounting of

civilian death toll is provided here; however, the Khojaly massacre must not be forgotten, an event in February 1992 where Armenian forces killed at least 161³⁹ retreating civilians, with Azerbaijani Ministry of Defense estimates placing the total civilian death toll of this singular bloody day at over 600 people.

Analysis continues with examination of the scope of military casualties. The bulk of military casualties are generated from the named episodes of violence during the span of the territorial conflict: The First Nagorno-Karabakh War, The Four-Day War, The Second Nagorno-Karabakh War, and the 2023 Azerbaijani Anti-Terrorist Operation. Data may not be fully representative as governments in wartimes have an incentive to overstate gains (enemy combatants killed) and minimize losses (deaths). Azerbaijan does not publish specific military and wartime statistics, leading to reliance on independent reporting and occasional state publications. Data published by partisan news outlets may lack credibility. The military fatality numbers provided below are likely conservative figures as independent sources report higher numbers of dead than official government reports. Official figures are used as the primary data source when available, in the absence of such independent estimates and reporting are used. Discrepancies between official figures and third-party reporting are noted where necessary.

³⁹ Per Human Rights Watch World Report 1993

TABLE 7: AZERBAIJANI MILITARY FATALITIES

Time Period	Events	Reported Deaths	Reported Missing
1991–1994 ⁴⁰	First Nagorno-Karabakh War	11,557 ⁴¹	4,210
1994 – 2016	The Four Day War (Apr 2016)	1,044 ⁴²	
2016 – 2020	Ceasefire Violations, 2020 Second Nagorno-Karabakh War (Oct – Nov 2020)	2,908 ^{43,44}	6 ⁴⁵
2021	Ceasefire Violations	9	
2022	Ceasefire Violations	80	
2023	2023 Azerbaijani Anti-Terrorist Operation (Sept 2023)	192	
Total	-	15,790	4,216

Sources:
1991-1994: Apa.az, Названо число азербайджанских, 2014 (11,557 fatalities); BBC, *Investigation: Karabakh: Missing in Action – Alive or Dead?*, 2005 (4,210 missing)
1994-2016: Commonsplace.eu, *CDSI: Azerbaijan lost 4000 troops since 1994*, 2017 (1,044 killed between 2003-2016, military fatalities between 1994-2003 unknown); Institute for War and Peace Reporting,
2016-2020: Azerbaijan Ministry of Defense, *List of servicemen who became Shehids in the Patriotic War*, 2021
2021: Azerbaijan Ministry of Foreign Affairs, *Information of the Press Service Department...*, July 2021(1 fatality); Radio Free Europe, *Armenia Azerbaijan Report Casualties...*, 2021 (7 fatalities); Arab News, *Azerbaijan says soldier killed...*, December 2021 (1 fatality)
2022: Crisis Group, *Upholding the ceasefire between Azerbaijan and Armenia*, 2022
2023: Apa.az, *192 Azerbaijani servicemen martyred during local anti-terrorist measures...*, 2023

A report by the President of Azerbaijan on the Armenia-Azerbaijan Conflict reports as of December 2020, nearly 4,000 Azerbaijani’s are still missing from the First

⁴⁰ 1991 is included in this total figure as available data aggregates fatality data from 1991 - 1994

⁴¹ Officially stated figure from Azerbaijan, Western and Russian sources have estimated 25,000 – 30,000 total fatalities on both sides.

⁴² The casualties from the Four-Day War were initially reported as 93 with six missing but this was later corrected in a Ministry of Defense report to only 31. The Caspian Defense Studies Institute reported 147 military fatalities in 2016.

⁴³ Annual casualties for both Armenia and Azerbaijan between 2016 – 2020 are around 30 per year, specific information on losses per side over this period is not available.

⁴⁴ A degree of the reported deaths may be non-combat fatalities attributable to COVID-19; however, due to the average age of military casualties it is unlikely that COVID-19 significantly contributed to excess mortality, as asserted by Karlinsky, 2023.

⁴⁵ According to Azerbaijan’s Ministry of Defense, dead and missing numbers may rise following DNA analysis and additional information regarding missing person

Karabakh War. While it is unclear what proportion of these were military combatants and which were civilians, this is a staggering figure that leads to an understanding that reported casualties are likely grossly understated. Another understating influence lies within the reliability of published figures: a statement to the Institute of War and Peace Reporting (IWPR) in 2005 from Azerbaijan claimed that between 1993-1999 the Armenian side consistently claimed no more than 50-60 captives, while between 1992-2000 over 1000 Azerbaijanis were released (*Investigation: Karabakh: Missing in action - alive or dead?*, 2005). In any case, at least 20,000 servicemen were killed or unaccounted for over the span of the Karabakh Conflict, with an unknown number of civilian casualties. A 2014 study by Fazal suggests that for every death, three to ten combatants are wounded. A general estimate using the above total fatality number and an average of estimated wounded based on 15,790 reported deaths would place total wounded as a result of the war around 100,000.⁴⁶ Considering that more than 25% of Azerbaijani military casualties were males between the ages of 20-24 and virtually all were under the age of 49, there is a disproportional impact to disability adjusted life years and years of life lost as premature mortality largely impacted young adult males, many of whom were entering their most fruitful years as contributing members of society. These young adult males that were killed or wounded would have provided economic contribution to society by working and contributing to population growth through offspring over the next 30-40 years. Instead, the dead and disabled reduce the capital available in the labor market, while those that survived are burdened with lifelong physical and mental health trauma, and require social protections to ensure

⁴⁶ Utilizing a 3-10x wounded multiplier, 15,790 killed Azerbaijani servicemen would result in between 47,370 – 157,900 wounded. This calculation does not account for missing servicemen.

their future wellbeing, ultimately representing a long term social and economic cost. Thus, a large and clear negative impact to economic potential through the loss of the full potential of the killed and wounded is realized.

SECTION 3: MILITARY PRODUCTIVITY

Azerbaijan operates under a conscript model for armed forces; compulsory military service is required for all able-bodied males between the age of 18-35 for a term of 12-18 months depending on education level. While it considerably increases the speed and reduces the cost of army building, it does not come without drawbacks for the productivity of the civilian population, the main one being an up-to-18-month removal from the workforce. Another main drawback of the conscription model stated by Keller in *Military Draft and Economic Growth in OECD Countries report* from 2006 is opportunity cost. During this time removed from the workforce, military conscripts are earning reduced wages which in turn impacts economic contributions to society with reduced spending. Conscripted soldiers' productivity differences and comparative advantages are largely ignored in the military system, which creates inefficiency between people and jobs and an overall output loss. The impacts are not just limited to the months spent in service; citizens planning for military service will put off entrepreneurial endeavors and reduce other forms of personal and financial investment and spending in preparation for a pause on civilian life. This impacts young men the most, especially during years they would otherwise utilize for building human capital: acquiring skills, education, and job training.⁴⁷ This human capital accumulation will

⁴⁷ *Military Draft and Economic Growth in OECD Countries report*, pp. 3

either be delayed until after military service or presently available quantities will depreciate during the 18-month military service. Additionally, there is evidence of reduced satisfaction among those serving in the army, especially those with higher socio-economic status in civilian life. This may generate resentment among conscripts or conscript-eligible citizens which creates a loss of professionalism in the work force upon return from military service (Görner, 2015). Keller continues by highlighting the true economic cost of war on the non-service years by pointing out that the reduction in the economy's human capital stock causes the human and physical capital stock in a conscript army to be smaller than an otherwise identical economy with a professional army. To that end, it can be assumed that the additional economic costs of war carry large implications for the productivity of society at large beyond just removal from the workforce for a set period of time. The following table contains the number of reported active-duty armed forces personnel by year. It is important to understand that these self-reported figures have remained essentially static since 2003,⁴⁸ with no publicly available detailed reporting on armed forces composition or soldier demographics. It is also unclear to what degree these reported figures include conscripted soldiers undergoing mandatory military service and the strength of reserve units;⁴⁹ the total number of citizens impacted per year by military service is likely to be higher than the total personnel numbers provided.

⁴⁸ 81,500 +/- 500

⁴⁹ Estimated to be at least 300,000

TABLE 8: AZERBAIJANI ARMED FORCES STRENGTH

Year	Total Armed Forces Personnel	Armed Forces as a percentage of Total Labor Force
1992	43,000	1.15%
1993	45,000	1.21%
1994	50,000	1.37%
1995	126,700	3.48%
1996	110,700	2.98%
1997	106,700	2.86%
1998	87,150	2.33%
1999	84,900	1.96%
2000	87,100	1.99%
2001	87,100	1.99%
2002	87,100	1.99%
2003	81,500	1.86%
2004	81,000	1.86%
2005	82,000	1.87%
2006	82,000	1.86%
2007	82,000	1.85%
2008	82,000	1.83%
2009	81,940	1.81%
2010	81,940	1.79%
2011	81,950	1.77%
2012	81,950	1.75%
2013	81,950	1.72%
2014	81,950	1.69%
2015	81,950	1.67%
2016	81,950	1.63%
2017	82,000	1.62%
2018	81,950	1.60%
2019	82,000	1.63%
2020	82,000	1.61%
2021	82,000	1.59%
2022	82,000	1.58%
2023	82,000	⁵⁰

Sources: *Stockholm International Peace Research Institute (SIPRI); CIA The World Factbook; International Institute for Strategic Studies; The Military Balance; The Statistical Committee of the Republic of Azerbaijan*

Examining reported figures shows the number of active armed forces personnel is

⁵⁰ Total Labor Force Data unavailable for 2023

consistently greater than 1.5% of the total labor force, and it is unlikely that the number of armed forces personnel peaked at 126,700 (3.5%) in 1995 and declined to 82,000 in 2005, where it has stayed until now. As the true number of armed forces personnel is likely greater than reported and the impact to the labor force much greater than presented above, these figures provide an understated view of the loss of economic productivity experienced by the hundreds of thousands, likely millions of soldiers who have served since 1992. These losses to economic productivity examine just a facet of the cost and do not begin to account for lost productivity stemming from the health repercussions of military service on veterans, including PTSD, depression, physical trauma, and disability.

SECTION 4: CIVILIAN PRODUCTIVITY

Civilian productivity can be greatly influenced by military conscription as seen. Additionally, the lost economic productivity experienced by military or military-eligible servicemen impacts civilians in the same way. Overall health, birthrates, and education levels are all negatively impacted by war; this impact is most obvious among refugee and IDP populations.

A 2002 World Psychiatry Journal report on the mental health of refugees and IDPs in Azerbaijan revealed major social problems and loss of productivity. These problems include unemployment, lower rates of education, insufficient medical care, and deteriorated mental health. This report estimated that 260,000⁵¹ adult persons with

⁵¹ A very small number of these 260,000 are foreign refugees and IDPs not caused by the Nagorno-Karabakh Conflict.

work capacity were unable to find work. As these displaced persons evacuated their homelands, lived (and presently live) in substandard conditions, and faced major challenges with reintegration as productive members of society, there were severe consequences to future productivity. A UNICEF Azerbaijan report from 2019 stated that 210,000 school children were unable to continue their education after displacement and less than 10% of five-year-old children attended preschool, compared to 36% among the general population. Additionally, in the period from 1989 to 1998 the fertility rate dropped around 20% for refugees and IDPs, with a newborn mortality rate that was six to eight times higher than the general population.⁵² This effect is not just limited to refugees and IDPs. Non-refugee citizens may delay childbearing due to military service, or a general sense of instability caused by wartimes. These impacts to the current generation have long-lasting negative future effects on the next generation as they struggle to overcome their circumstances and will in turn cause reduced economic contribution and development with a smaller, less healthy workforce: one that requires advanced levels of aid to restore the vitality of the affected population and overcome the mental toll that displacement and war cause.

SECTION 5: CAPITAL ASSETS

In consideration of loss of economic potential, loss of capital assets represents one of the largest tangible impacts of war for both the present and the upcoming generation. War-torn areas may have complete destruction of all human and even natural infrastructure and require complete rebuilding. This requires years if not decades of

⁵² 150-200 deaths per 1000, vs. 25/1000 for the general population

planning, funding, and construction to resettle and restore these areas to their pre-war economic contribution. Per a report from the President of Azerbaijan: 900 settlements, 150,000 houses, 7,000 public buildings, 693 schools, 855 kindergartens, 927 libraries, 44 temples, nine mosques, 473 historical sites, palaces, and museums, 40,000 museum exhibits, 6,000 industrial and agricultural enterprises, and 160 bridges and other infrastructure facilities were destroyed in Karabakh between 1988 and 1993. It is unknown what toll the war had on other capital assets in the years that followed. In the occupied areas, it is estimated about 700 medical institutions⁵³ were destroyed, representing about \$1.2 billion dollars of damage to healthcare infrastructure (Ismayilov, 2002). While it is difficult to quantify the exact economic impact caused by the loss of such capital assets and infrastructure beyond the cost to rebuild, it is a certainty that the economic impact to society is far greater than the simple cost of rebuilding. It is impossible to apply a price to the loss of cultural heritage, so it must be acknowledged that the societal toll of the destruction of such sites has contributed greatly to reduced moral among the citizens. Per Stephen Stenning at The British Council, destroying cultural heritage is more than just material damage. Destruction of museums, mosques, palaces, and other sites represents the destruction of an entire society and way of life. This destruction of cultural heritage sites causes permanent impacts and represents all that is gone forever, destroying generations of history and damaging societal moral. The loss of such cultural heritage also contributes to reduced tourism, creating a tangible economic loss from the destruction of an intangible asset. To provide an idea of the cost of reclamation of lost cultural heritage, the 2024

⁵³ Clinics, maternity hospitals, children's hospitals, primary care centers, drugstores, etc.

Azerbaijani budget includes over \$5.5 million dollars for the protection of natural resources for just the reclaimed district of Shusha alone.⁵⁴

SECTION 6: NATURAL RESOURCES

A seldom considered economic cost of war must be examined in the form of loss and destruction of natural resources. War has massive destructive effects on the environment. One manner of destruction is through pollution stemming from military equipment and munitions, waste dumping, and the presence of soldiers. This pollution can cause contamination to waterways and soil, severely limiting the utility of the land and quality of life for those living there in the future. The full extent of the loss of natural resources that occurred while under Armenian occupation is detailed in a 2020 report from the Department of Economic and Social Geography of BSU. Deforestation from illegal farming, logging, arson, and clearance for military operations destroyed forest cover and caused untold ecological damage to the environment with loss of habitat for plant and animal species. Illegal mining destroyed ecosystems and stripped the lands of their valuable mineral deposits including gold, copper, zinc and mercury. Ecological habitats that are destroyed through deforestation endanger valuable plant and animal species that are endemic to the region, meaning they do not naturally exist elsewhere. A 2019 report from Azercosmos and the Ministry of Foreign Affairs utilized satellite imagery to show the extent of destruction to the occupied lands. This satellite imagery reveals thorough exploitation of land and water resources and burning of

⁵⁴ Taken from the 2024 approved budget document under “Şuşa Şəhəri Dövlət Qoruğu İdarəsi” publik hüquqi şəxs

lands for no apparent reason: impacts of war that the natural environment may never recover from.

The destruction that this 35-year conflict has caused to the natural environment is not just limited to pollution and loss of environmental and ecological resources.

Environmental impacts from aggressive geopolitical actions by Armenia have far reaching impacts with the largest effect seen in water resources. Armenian construction and/or control of hydropower dams, reservoirs, and canals have limited Azerbaijan's access to such water resources as the Tartar and Aras Rivers, deliberately reducing waterflows to levels insufficient for farming during the summer and releasing water in the winter when it is least useful, causing flooding to downstream Azerbaijani lands.

The extent of losses due to abuse of water resources is examined later in the geopolitical and international relations section.

It must be noted that the toll of the Karabakh War on Azerbaijan's natural resources is not just limited to active wartimes. Poor relations with Armenia due to the war can likely be blamed for the selected location of the Yeraskh metal smelting plant, a high pollution smelting plant currently under construction in Armenia near the Azerbaijani border. In a 2023 policy brief from the Institute of Development and Diplomacy (IDD), Baghirova and Nadirov point out that the location of the metal smelting plant planned for construction in Armenia is only 800 meters away from the Azerbaijani border. The environmental damage to Azerbaijan, calculated as the social cost of carbon emissions from production at this primarily coal powered plant, is estimated to be \$0.11 per \$1 of production. This major contamination of air, water, and food chains in Azerbaijan further illustrates the damage to natural resources caused by the Karabakh Conflict, even after the cessation of hostilities.

SECTION 7: GEOPOLITICAL AND INTERNATIONAL RELATIONS

Wartimes can also damage geopolitical and international relations which stunt or altogether block the growth of economically beneficial partnerships and global trade opportunities. Geopolitical relations and trade partnerships with Armenia and Iran were significantly impacted in a negative way by the war, with an already complex relationship with Russia made even more complicated. One such example is the complete cessation in economic relations between Azerbaijan and Armenia. In the absence of war, trade of goods and services with and through Armenia could have resulted in an economic boom for Azerbaijan. The current logistical development known as the Middle Corridor or the Trans-Caspian International Transport Route (TITR), historically part of the Silk Road and geographically the shortest route between Asia and Europe via Kazakhstan and Azerbaijan, could have been developed and utilized to great economic benefit at least a decade ago.

FIGURE 3: TRANS-CASPIAN INTERNATIONAL TRANSPORT ROUTE



Beginning in 2014, the Russo-Ukrainian War instituted demand for alternative trade routes to the then dominant Russian-based Northern Corridor. This effect was enormously intensified by the trade sanctions imposed on Russia in 2022, causing a significant shift in global cargo trade to the TITR with Azerbaijan as a core participant. To understand the significance of the TITR, a 2023 World Bank report stated that with appropriate policy management the TITR could triple East-West trade volumes while halving travel time. This express connection between the East and the West, which flows straight through Azerbaijan with few viable alternatives, could have continued the most direct route to Europe through Armenia via the ‘Zangezur Corridor’⁵⁵. This would also give Azerbaijan access to their landlocked exclave of Nakhchivan and from there to their strong ally Turkey and onward to Europe, rather than its present routing

⁵⁵ A concept for a transport route that would go through Armenia, directly connecting the mainland to Nakhchivan and Turkey and linking the East to the West

north into Georgia and south to Turkey or west across the Black Sea.

FIGURE 4: ZANGEZUR CORRIDOR



In a 2021 Compass Policy Brief, Fariz Ismailzade describes the strategic importance of the Zangezur Corridor as Azerbaijan’s geographical positioning on the TITR is pivotal to both East-West and North-South transport corridors and of huge significance to trade between Europe and Asia. In the absence of war, Azerbaijan’s positioning on the TITR, especially with a direct route through Armenia, could have been leveraged to provide significant growth and investment opportunities much earlier.

A possible alternative to the Zangezur Corridor, the ‘Aras Corridor’, was also significantly hindered due to poor geopolitical and international relations with Iran; the reasons for such are clarified later. After the final ceasefire in 2023, it was announced that construction began on the Aras Corridor, a railway and highway connecting Azerbaijan to Nakhchivan and Turkey through northern Iran. Once completed, it will

serve as a viable alternative to the Zangezur corridor and provide massive utility, financial returns, and strengthening of geopolitical position for Azerbaijan in global trade and directly contribute to Azerbaijan's key role in the TITR. Neither of these two trade routes was viable during war times. Now that peace has been achieved can Azerbaijan begin to realize the economic potential of these logistically efficient trade routes. Further research is recommended to understand the strategic and economic importance of the Zangezur and Aras Corridors to uniting Azerbaijan, the Turkic speaking world, and regional and global trade flows.

As stated, removal of the wartime trade barriers and access to Armenia would have provided a new customer for Azerbaijan's energy exports and new pathways to foreign markets. Instead, it resulted in decades of economic loss, however the loss was not purely financial or geopolitical. Damaged relations with Armenia has had large negative impacts to economically beneficial cooperation opportunities related to water resources. Notable examples include the Sarsang Reservoir and Tartar Hydrocomplex, projects completed by Azerbaijan during the Soviet era but occupied and utilized by Armenia for irrigation, electricity generation, and as an instrument to deprive Azerbaijan of water. This highly politicized abuse of water resources was confirmed in the Council of Europe's 2016 Resolution 2085, demanding the Armenian authorities "cease using water resources as tools of political influence or an instrument of pressure benefiting only one of the parties to the conflict." While this represented a major resource loss to the country during Armenian occupation, this is just another example of the irreparable and material damage to the economic potential of the occupied territories and Azerbaijan as a whole.

Another significant loss of international relations to Azerbaijan was with its southern neighbor, Iran. While the two countries have had historical tensions and somewhat of a hot and cold relationship, Azerbaijan has long accused Iran of supporting Armenia in the First Karabakh War which intensified anti-Azerbaijani sentiment within Iran and forged a strategic partnership between Iran and Armenia, limiting partnership opportunities with Azerbaijan. Tensions between these two countries heightened to new levels in 2020 when video footage revealed Iranian trucks supplying fuel to Armenian occupied Karabakh (Kucera, 2020). This further deteriorated Azerbaijani relations with their southern neighbor which stalled development of cooperative opportunities until recently. In 2023, cargo rail transit between Azerbaijan and Iran recorded 47% growth with over 33% growth occurring in non-oil trade between the two counties (Bayramli, 2024). In addition to the development of the Aras Corridor, these developments highlight the large potential for economic cooperation between these neighboring countries that was not feasible during war times.

Additional research is recommended to fully understand the context of Russo-Azerbaijani relations and the scope of economic impacts caused by the war. Much of the established geopolitical and international trade landscape of the region was shaken up by the Russo-Ukrainian War and resulting international sanctions imposed on Russia. It is also suggested that significant foreign investment and international trade partnership opportunities with other European and Asian nations were foregone or greatly delayed due to the war, as evidenced by the growth of foreign investment in Azerbaijan and the TITR since the end of the conflict. It is apparent that the effect of the Karabakh Conflict on geopolitical and international relations has caused substantial harm to the economic potential of the country during wartimes.

CHAPTER 3: OPPORTUNITY COST

In economics, opportunity cost is defined as the cost of the loss of other alternatives when one alternative is chosen. In simple terms for the Karabakh Conflict, the opportunity cost for Azerbaijan are the alternatives that existed aside from engaging in war. It is arguable, even agreeable, that Azerbaijan's choice to develop its military, engage in military conquest, and reclaim its occupied territories was not a choice but a necessity. While the economic benefits from the prolonged conflict are difficult to financially justify on paper relative to the costs and losses, the intangible and incalculable benefits of establishing territorial integrity and achieving independence from foreign entities cannot be overstated. Credence must be given to the idea that emerging victorious in this conflict was a prerequisite to future independent functioning and maximized long-term economic potential. On the other hand, the argument could be made that Azerbaijan would have experienced greater economic benefits over the past 30 years⁵⁶ by abstaining from future conflict and permitting diplomatic or non-martial means to prevail over the territorial dispute while choosing alternative internal investment and growth strategies. Regardless of the assessment of the conflict as a necessity or a choice, there were still major alternatives that were foregone due to the heavy investment in militarization and lingering impacts from the conflict. The most economically profitable but politically illogical option would be peace with Armenia and the establishment of an independently governed and recognized region within Nagorno-Karabakh. Even if Azerbaijan was willing to make

⁵⁶ Time elapsed since the 1993 United Nations Security Council Resolution 884 calling for cessation of hostilities.

this major concession of their territory, it would have required Armenian cooperation on all fronts to make it a reality.

Aside from the previously mentioned economic and geopolitical benefits of making peace with Armenia, another substantial economic benefit of peace exists in avoiding the humanitarian catastrophe of IDP's and refugees fleeing Armenia, Karabakh, and the surrounding warzones. The occupied lands, or the areas around the occupied lands, could have provided a settlement location to build a community for these displaced persons who would have generated a relatively immediate positive economic contribution through farming, mining, and other primary production in the region rather than resettlement in refugee camps for decades while awaiting an unclear future.

The financial opportunity cost of continued military action is enormous. To provide a structured method of quantification, if all the excess defense spending, costs of reconstruction, demining, IDP support, and other areas of spending from 1992-2023 were invested over the same period, these 32 years of excess expenditure would have generated compounded returns over the same time. That is to say that Azerbaijan could have enriched its financial position since 1992 by well over the \$50.3 billion real dollars it spent on the war by investing in other areas in the absence of the territorial dispute. To provide a simplified illustration of this opportunity cost, an investment of \$50.3 billion dollars at a 10% annual rate of return would be worth over \$130 billion dollars in ten years and over \$1 trillion dollars in 32 years⁵⁷. This purely financial compound interest calculation ignores all other variables and grossly understates the

⁵⁷ Compounded annually utilizing the compound interest formula: $A = P(1+r)^n$, where A = final amount, P = initial balance, r = interest rate, n = number of compounding periods. $50,309,281,872 * (1 + 0.10)^{10} = 130,489,320,529$ for 10 years, or $1,062,218,945,664$ for 32 years.

overall opportunity cost of war as the indirect costs and losses to economic potential are excluded. The true excess expenditure attributable to war pales in comparison to the incalculable economic damage and social cost borne by the nation, detriment that will be felt for generations. To be clear, lasting peace with Armenia after the 1994 ceasefire is a highly speculative scenario used to illustrate opportunity cost and one that would require much greater analysis to fully understand the complexities and likelihood of being a possibility, but nonetheless it must be understood as a legitimate ‘what-if’ to further understand the scope of economic impacts of armed conflict.

CHAPTER 4: FINDINGS AND DISCUSSION

Summarization of the key findings of this research study enumerates the economic cost of the Karabakh War, delivered in terms of excess expenditure, to be \$50.3 billion in real US dollars. As a function of bottom-up cost estimation and the overall research methodology, this cost estimate was intentionally calculated to be an understated figure. In reference to the main research question: how much did the country of Azerbaijan give economically to restore its territorial integrity and what were the direct and indirect costs to its citizens? \$74.8 billion real dollars were spent on defense and war adjected areas since 1992, while over 20,000 Azerbaijani military servicemen were killed or remain unaccounted for and at least three times as many were wounded. Additionally, around one million Azerbaijani's remain internally displaced with over 25% of this group possessing work capability but unable to find work. These findings suggest that true cost in economic spend and loss of economic potential is far greater than the \$60 billion offered by Karabakh.org.

In reflection of cost, estimation of excess expenditure due to the Karabakh Conflict was heavily understated across all categories. Accounting for defense spending does not report all payments required for veteran support or death gratuities, nor veteran benefits into the future. It does not account for losses to human capital from death or disability and losses of productivity due to military service or the challenges associated with a conscript army. It also fails to consider additional spending required to boost healthcare and social support infrastructure for those impacted by the war, either directly in service or indirectly as a citizen of a nation at war. Budget allocations wrapped into other budgets and inflation of adjacent spending areas not directly attributable to the examined budget contribute greatly to this understatement. In view

of recovery, stated budget allocations could not have covered the full extent of reconstruction. Financial allocations budgeted to adjacent spending areas and the loss of places and artifacts of historical and cultural significance support this deduction. Demining may allow human occupancy in war-torn lands once again, but it cannot resolve the lost productivity from the hundreds of thousands of people that were displaced from those lands, the broken families, and the lost ways of living. Reconstruction cannot recover the permanent loss of natural resources: destroyed lands, stolen resources, and extinct ecosystems. Heavy government spending may speed recovery, but it comes with notable downsides.

The indirect costs of the incalculable societal and economic damage of war reaches far beyond what can be recovered with financial payments. Loss of life, especially to heads of households and young men in their prime, creates a multiplier effect across the labor force and human capital stock of the nation. Lower levels of education and a less healthy population within a significant refugee population further underscore the instability created by war. The perception of a nation at war and the destruction of relationships with neighboring countries destroys mutually beneficial prospects and causes missed opportunities. Across the board, the opportunity cost of war has lasting effects on those at war and those outside of the immediate warring parties. Funds spent on the war effort are not available for use elsewhere, either for internal growth or external investment. Foreign aid designated to counter the horrors of war is no longer available for other purposes, people, or nations in need.

Much research has been focused on historical analysis of the war, the Armenian perspective, or the joint costs of specific aspects of the Karabakh War, including Thomas de Waal's *Black Garden* and John Antal's *7 Seconds to Die: A Military*

Analysis of the Second Nagorno-Karabakh War and the Future of Warfighting. These perspectives are valuable in the larger context of understanding the causes, evolution, and impacts of the Karabakh Conflict, but existing research lacks attention towards economic cost from a comprehensive standpoint. This research study provides a novel look at Azerbaijan's wartime expenditure on the Karabakh Conflict and contributes to the overall research conducted on the Karabakh War by highlighting economic cost from the Azerbaijani perspective in an objective way without partisan views.

CHAPTER 5: CONCLUSION

To quote a famous general, “War is Hell.” This is no less true today than it was when spoken in 1879.⁵⁸ The actual sacrifice of a nation engaged in war cannot be overstated. In the case of Azerbaijan and the Karabakh Conflict, over 30 years of costs incurred, losses endured, and economic potential frozen while engaged in a war to restore territorial integrity. This is immediately apparent from the direct costs – billions of dollars spent on defense, reconstruction, demining, and refugee and IDP support. However, too often the indirect costs are insufficiently considered. In this case, the direct costs of war totaled nearly \$75 billion real dollars with \$50 billion estimated to be excess expenditure that would be unnecessary in the absence of war, while the true price of the Karabakh Conflict lies in the undeniable damage to economic potential experienced through the losses of foregone investment, human capital, military and civilian productivity, capital assets, natural resources, and geopolitical and international relations.

Tackling the challenges of recovery from the affliction of war is not a one-size-fits-all economic approach and requires a compound plan to resolve the immediate and long-term impacts. Exploration and pursuit of diplomatic solutions with expedient conflict resolution may not be politically popular, especially for the aggrieved nation, but may be the soundest strategy for reestablishing economic stability and unlocking future potential. On the other hand, for Azerbaijan, freeing the country from foreign interferences and reestablishing territorial integrity by force may have been the only path forward to allow unconstrained realization of full economic potential.

⁵⁸ By William Tecumseh Sherman, a leader of the Union Army in the US Civil War.

LIMITATIONS

No research study affords boundless highly accurate data sets and concisely quantifiable analysis. This study of economic costs is no exception, and such limitations are described here. The disorder and chaos that war creates tends to disrupt systems of data collection and reporting. Moreover, availability and reliability of data from the beginning of the Karabakh Conflict until early years of the formation of the Republic of Azerbaijan are tenuous at best. Official statistics from before 1992 are virtually non-existent with the data from the years immediately following the formation of the Republic of Azerbaijan to be considered with a certain degree of skepticism. In precursory interviews, Ministry of Economics and ANAMA Agency employees commented that specific budgetary and expenditure information at present day was non-public and likely not aligned with officially published Ministry of Finance or other government figures. The reliability of self-reported casualty or destruction figures on both the Armenian and Azerbaijani sides is also called into question as some statistics may lack evidence and/or are presented with ulterior motives in mind. As mentioned previously, the Government of Azerbaijan does not publish specific military and wartime statistics en masse, while reporting from partisan news outlets may lack credibility. For data lacking independent third-party validation certain assumptions had to be made for the sake of drawing conclusions. Variables and data that were considered too immeasurable or unreliable to grossly adjust to form a reliable estimation of economic cost were provided descriptive analysis in terms of general economic impact. As a whole, these limitations were taken into consideration and accounted for with the use of conservative calculations and heavily understated estimations.

APPENDIX

APPENDIX A: EXCHANGE RATE (Annual Average)

Year	Exchange Rate (USD/AZN)
1992	0.01084
1993	0.019995
1994	0.314045
1995	0.8827085
1996	0.86025283
1997	0.797075
1998	0.77379969
1999	0.82403333
2000	0.89483075
2001	0.93131667
2002	0.97216417
2003	0.982146
2004	0.9826955
2005	0.945421
2006	0.893445
2007	0.85812381
2008	0.82161958
2009	0.80378333
2010	0.80265
2011	0.78968639
2012	0.78564535
2013	0.78454108
2014	0.7843475
2015	1.02456382
2016	1.59572157
2017	1.7211548
2018	1.70001667
2019	1.7
2020	1.7
2021	1.7
2022	1.7
2023	1.7

Source: *International Monetary Fund*

APPENDIX B: TOTAL LABOR FORCE

Year	Total Labor Force
1992	3,728,400
1993	3,734,100
1994	3,654,900
1995	3,641,300
1996	3,718,600
1997	3,732,400
1998	3,743,800
1999	4,335,400
2000	4,370,200
2001	4,368,100
2002	4,369,700
2003	4,373,500
2004	4,365,600
2005	4,380,100
2006	4,402,000
2007	4,443,300
2008	4,477,700
2009	4,531,900
2010	4,587,400
2011	4,626,100
2012	4,688,400
2013	4,757,800
2014	4,840,700
2015	4,915,300
2016	5,012,700
2017	5,073,800
2018	5,133,100
2019	5,037,700
2020	5,089,900
2021	5,141,600
2022	5,194,400
2023	-

Source: *The Statistical Committee of the Republic of Azerbaijan*

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