Motivated by the invasion of Ukraine, this chapter provides an overview of the impact of wars and post-war recoveries over the last two centuries. The most damaging wars see GDP per capita decline by 40 to 70 per cent, while post-war recoveries vary widely. In 29 per cent of cases GDP per capita returns to the trend levels observed in comparator countries without wars within five years, but in almost half of all instances it remains below those levels 25 years after the conflict. Reconstruction is particularly difficult if peace is fragile. Furthermore, even if GDP does recover, there may still be lasting scars affecting labour and capital.

Introduction

This chapter provides an overview of the impact of wars and post-war recoveries over the last two centuries. This analysis is motivated by the invasion of Ukraine, which has led to the largest displacement of people in Europe since the Second World War (see Chapter 2). However, the analysis presented here adopts a broader perspective, looking at the history of armed conflicts – both within states (civil wars) and interstate – and highlighting a number of common trends in the data.

The chapter starts by looking at how common wars have been over time and presenting key stylised facts on what a "typical" war looks like. It then considers the characteristics of economies in wartime, looking at short-term disruptions, examining what happens to economies during such periods, and considering the question of how countries finance wars, looking at the evolution of fiscal balances and government debt. The analysis finds that while wars have become less common overall since the 1990s, civil wars now account for a larger share of total armed conflicts. The economic effects of wars and post-war recovery paths both vary widely. While a typical war sees gross domestic product (GDP) per capita drop by 9 per cent relative to its pre-war level, with inflation increasing by 8 percentage points, the most damaging wars see GDP per capita decline by between 40 and

1 THE ECONOMICS OF WAR AND PEACE

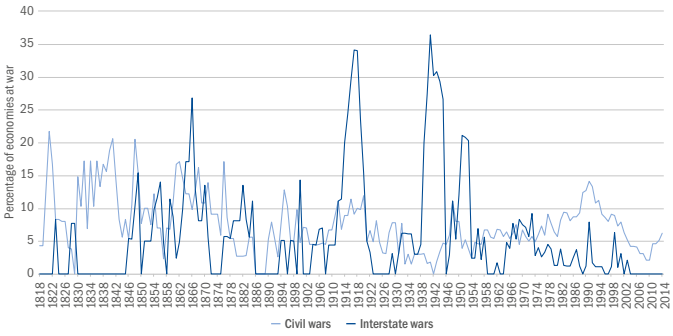
70 per cent. As most wars are financed via domestic borrowing, government debt-to-GDP ratios typically increase by around 47 percentage points. (For more information on trade flows in wartime economies, see Chapter 3.)

The next part of the chapter considers the lessons that can be learned from previous reconstruction episodes, looking at how long it takes for economies to recover and match the growth trends of similar economies that have not experienced wars, and seeing which country-level characteristics are associated with faster recoveries. It then seeks to apply those lessons to Ukraine. The analysis reveals that in 29 per cent of cases GDP per capita returns to the trend levels observed for comparator economies without wars within five years, but in almost half of all cases it remains below those trend levels 25 years after the conflict. Reconstruction is particularly difficult if peace is fragile. More than half of all civil wars are followed by another war in the next six years, and only a fifth of wars are followed by at least 25 years of peace.

The final part of the chapter looks at the lasting effects of wars and the "new normal", focusing on whether wars have a long-term impact on populations, capital stocks and productivity, and whether "wars make states" – that is to say, whether countries see significant improvements in their administrative and fiscal capacity or their institutions after wars. This section finds that a focus on flows – such as changes in the value added (GDP) which is generated each year – may significantly understate the lasting damage that is done by wars. Even 25 years on, the populations of such economies are often significantly smaller than those of similar economies that have not experienced armed conflict, reflecting casualties, outflows of refugees and declining birth rates. The loss of human capital also adds to the long-term cost of wars. On average, stocks of physical capital are still 12 per cent smaller five years after the end of the war (with the corresponding figure for the EBRD regions[1] standing at 23 per cent, as wars in those regions have often coincided with transition recessions). While wars do have the potential to support improvements in states' administrative and fiscal capacity, meaningful upgrading of economic and political institutions in the wake of an armed conflict is the exception rather than the rule.

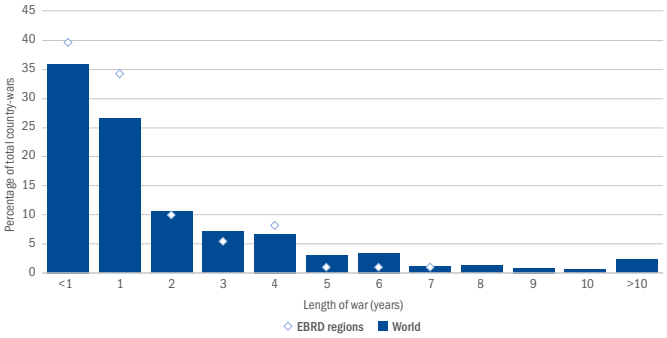
Wars do not only affect the economies that are actually engaged in armed conflict; they also have wider spillover effects – on those countries' neighbours and trading partners, for example. This chapter does not examine such spillover effects, nor does it look at the causes of wars.

CHART 1.1. Wars have become less common overall since the 1990s



SOURCE: Correlates of War and authors' calculations.
NOTE: Percentages are based on the Correlates of War database's definition of countries.

CHART 1.2. The median war in the dataset lasted one year



SOURCE: Correlates of War and authors' calculations.
NOTE: For definitions of the start and end dates of a war, see the Correlates of War database. Since an interstate war will, by definition, involve more than one country, the term "country-war" is used in this chapter to indicate that data describe a single war from the perspective of a single country. It should be noted, too, that the dataset includes territories that are no longer considered to be countries.

A novel dataset

This chapter constructs a novel database of conflict episodes by combining information from the Correlates of War database with data from several other sources. Data on the financing of wars are taken from the Confronting the Costs of War Project (CCWP), which covers the principal belligerents in all interstate wars lasting more than six months in the period 1823-2003. Socio-economic indicators such as GDP, inflation and fiscal variables are taken from the *World Economic Outlook* produced by the International Monetary Fund (IMF), Reinhart and Rogoff (2009) and the Maddison Project Database. Information on populations, investment, capital stocks and total factor productivity (TFP) comes from the Penn World Tables (which cover the period from 1950 onwards).

The dataset used in this chapter follows the Correlates of War database in defining a war as a sustained period of combat involving organised armed forces which results in a minimum of 1,000 battle-related deaths per year (excluding civilian fatalities). This database covers more than 700 wars over the period 1816-2014, providing information on the warring parties, the start and end dates of the war, whether the conflict was a civil or interstate war, which side is generally perceived to have won the war and whether the conflict has been resolved.[2]

[1] For a definition of the EBRD regions, see tr-ebrd.com.

[2] See Sarkees (2007).

This is complemented by a manually coded variable for each war indicating whether it took place on a country's own territory. All civil wars are regarded as taking place on a country's own territory; however, interstate wars are only given that classification if there were substantial battles within the country's own borders (excluding minor attacks, border disputes and attacks only targeting military infrastructure).

Wars have become less common overall since the 1990s

The percentage of economies that are involved in interstate wars spiked around the time of the First and Second World Wars and has fallen in recent decades (see Chart 1.1). Civil wars now account for a larger share of total wars, following a peak in the 1990s.[3]

The median war in the dataset lasted a year, while the average duration was 2.4 years (see Chart 1.2), driven by a few very long (mostly civil) wars, such as the conflicts in Angola (1976-91), Myanmar (1965-93) and Sudan (1983-2002). In the following charts, wars of varying duration are condensed into two symbolic years by computing average growth rates for the first and second halves of the war and treating them as the growth rates for the first and second years of a "typical" war.

The median country in the dataset was at war 3 per cent of the time (compared with an average of 6 per cent), although Sudan and Iraq, for example, were at war in 50 and 33 per cent of the years in the dataset, respectively. Some countries, such as China and the former Soviet Union, were involved in up to five wars in a single year. Approximately half of all conflicts in the dataset are civil wars – that is to say, wars waged between a state and a group within its borders. More than 72 per cent of observations are wars on a country's own territory.

Countries at war

This section considers the characteristics of economies in wartime, looking at disruptions to economic activity and examining the ways in which countries finance wars (including the implications for fiscal balances and government debt).

Economies can undergo significant structural shifts in wartime

Economies can undergo significant reorientation during wars. For instance, military spending reached 40 per cent of GDP in the United Kingdom and the United States of America during the First and Second World Wars, while military employment accounted for up to 10 per cent of the population.[4] While military production can boost GDP, wars – particularly those fought on a country's own territory – can also result in significant disruption to economic activity.

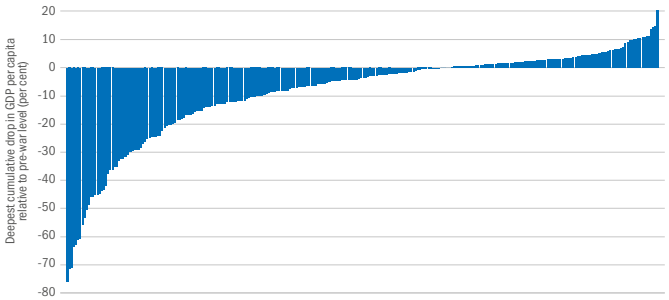
THE WARS IN THE DATASET HAVE AN AVERAGE DURATION OF
2.4
YEARS

AROUND **HALF** OF ALL CONFLICTS IN THE DATASET ARE CIVIL WARS

MORE THAN
72%
OF OBSERVATIONS ARE WARS ON A COUNTRY'S OWN TERRITORY

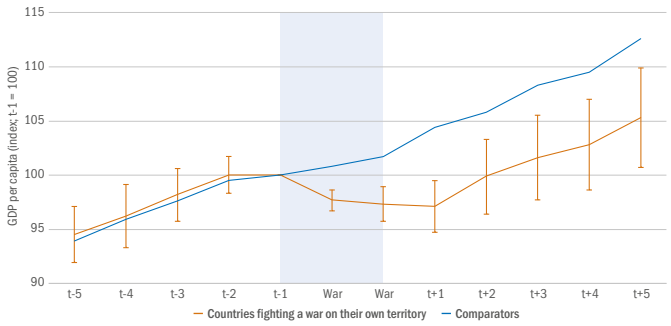
[3] See also Poast (2006) and Blattman and Miguel (2010).
[4] See the Correlates of War National Material Capabilities database.

CHART 1.3. There is very considerable variation in the economic impact of wars



SOURCE: Correlates of War, Maddison Project Database and authors' calculations.
NOTE: Includes only wars fought on a country's own territory. "Deepest cumulative drop in GDP per capita" refers to the difference between GDP per capita in the last year before the war and the lowest level of GDP per capita recorded during the war.

CHART 1.4. On average, countries fighting a war on their own territory see their GDP per capita fall 7 percentage points below that of comparator countries by the end of the war



SOURCE: Correlates of War, Maddison Project Database and authors' calculations.
NOTE: Includes only wars fought on a country's own territory that were not preceded by another war in the previous five years. Comparators are synthetic controls based on economies that were not at war in the five years before or after the war in question. "t-1" denotes the year before the start of the war. 90 per cent confidence intervals are shown.

THE
20
SHARPEST CONTRACTIONS IN THIS DATASET SEE GDP PER CAPITA DROP BY BETWEEN
40%
AND
70%

There is a very large degree of variation in the impact on GDP per capita, even when focusing solely on wars fought on a country's own territory (see Chart 1.3). On average, GDP per capita drops by 9 per cent relative to its pre-war level before starting to recover, while the median decline is 3 per cent. The 20 sharpest contractions in the dataset see GDP per capita drop by between 40 and 70 per cent relative to the pre-war level at some point during the war. These include several countries during the Second World War (France, Italy and Romania), as well as a number of wars in the Middle East (Iran, Iraq, Kuwait, Lebanon and Syria), in Africa (Angola, Liberia and Libya), and in transition economies in the 1990s (Azerbaijan, Bosnia and Herzegovina, Georgia, Moldova and Tajikistan).

While studies of conflicts have tended to focus on such highly devastating episodes, these are not representative of the "typical conflict".[5] Indeed, most wars are significantly shorter and less damaging. Projections as at September 2022 already suggest that the contraction in GDP per capita in Ukraine will be among the deepest 10 to 20 per cent of all declines resulting from wars in the last 200 years.

Drops in GDP per capita are larger for economies in the EBRD regions

The following analysis compares GDP per capita during a war with a path that could be expected in the absence of war on the basis of a weighted average of the experiences of similar economies that did not experience armed conflict during the relevant period (a "synthetic counterfactual growth path"). The economies that are used to construct this synthetic control are similar to the economy at war in terms of their pre-war GDP per capita at purchasing power parity (PPP), population size and growth.[6] Comparator economies are considered in the same year as the economy at war, so the methodology and standard errors take year effects into account.

On average, income per capita in the year after the war ends is 7 percentage points below the level observed for a synthetic comparator economy (see Chart 1.4). Drops are larger (up to 26 percentage points) for economies in the EBRD regions, owing to the fact that wars in those regions often coincided with deep recessions during the transition from central planning to market economies with liberalised prices. While estimates for the EBRD regions should be treated with caution given the small sample size, the figures recorded are broadly in line with those seen in earlier case studies.[7]

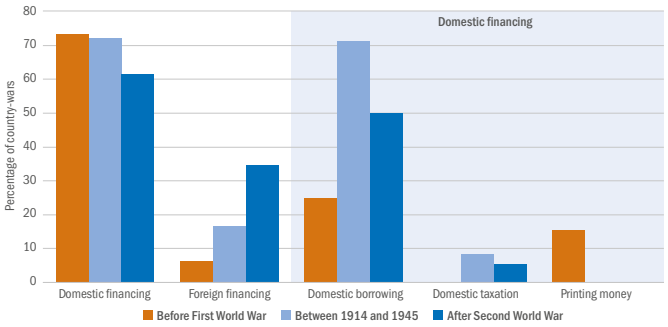
[5] See also Hendrix (2017).
[6] This analysis is based on Chupilkin and Koczan (2022).
[7] See, for instance, Cerra and Saxena (2008), Rodrik (1999) and Blattman and Miguel (2010).

Contractions in GDP per capita are larger for lost interstate wars and unresolved conflicts

There is no significant difference between a civil war and an interstate war fought on a country's own territory in terms of the drop in GDP per capita. However, civil wars are followed by more sluggish recoveries. Those wars are twice as long on average (three years), and the conflict is more likely to remain unresolved (29 per cent of cases, compared with 19 per cent for interstate wars). This may, in part, be due to the rapid formation and disintegration of alliances and fractionalisation within them. Evidence from 53 multi-party civil wars suggests that almost half of the original sides in those conflicts suffered some form of internal fractionalisation, and 85 per cent of those wars saw at least one change of alliance, with over half experiencing three or more changes.[8]

Contractions in GDP per capita are more severe for economies that lose an interstate war. This partly reflects the fact that countries with stronger economies are also more likely to win wars. (As Louis XIV of France supposedly said, "the last guinea will always win".)[9] GDP per capita also drops more during unresolved conflicts – conflicts that end in stalemate, where fighting ceases without a satisfactory agreement or morphs into continued low-intensity conflict – and that is particularly true of unresolved civil wars.

CHART 1.5. Most interstate wars are financed through domestic borrowing, though the role of foreign finance has increased



SOURCE: CCWP database and authors' calculations.
NOTE: For each form of financing, this chart indicates the percentage of interstate wars for which that financing method covered at least half of the cost of the conflict. It is based on country-years with a single war.

Public opinion, fear of inflation and administrative capacity can all affect how wars are financed

Economies can pay for wars in various ways. Domestic sources of financing can include borrowing (such as war bonds), taxation (through new war taxes, or increased rates for pre-existing taxes) or the printing of money. Foreign financing may take the form of external borrowing, grants or plunder.

The types of financing that a country uses will depend on various factors. For instance, low public support for a war will reduce a government's ability to raise taxes and increase its reliance on external borrowing, as will insufficient administrative capacity. For example, when Mexico's revenue administration was weakened by the Mexican-American War of 1846-48, the state resorted to borrowing from the church and the British, as well as plunder.

Foreigners may become more reluctant to lend as conflicts drag on. Longer wars are therefore more likely to be financed domestically.[10] Meanwhile, a general fear of inflation will result in a country favouring taxation over the printing of money or borrowing. Borrowing can, however, reduce the distortions that are associated with major increases in taxes or inflation, with debt repayments (and any associated tax rises) spread out over a longer period.[11]

Most interstate wars are financed via domestic borrowing

There is significant variation in the manner in which economies pay for wars, with several types of financing typically being used. For instance, while the United Kingdom and the United States of America used high levels of taxation to finance the First World War, France, Russia and the United Kingdom all borrowed both domestically and abroad, while Germany and Russia relied mainly on the printing of money.

While Russia relied on a combination of domestic borrowing, taxation, the printing of money and foreign finance during the Russo-Japanese War of 1904-05, most of Russia's military conflicts between 1914 and 1920 were financed predominantly through the printing of money, with some foreign borrowing.[12]

Most interstate wars are financed domestically through borrowing, though the role of foreign finance has increased over time (see Chart 1.5). The printing of money and plunder have become less common over time (with plunder not being shown in the chart, since there are no wars in the sample where it accounts for at least half of total financing).

[8] See Christia (2012).
[9] See Plender (2003).
[10] Based on the CCWP database.
[11] See North and Weingast (1989) and Broz (1998).
[12] See Cappella Zielinski (2016) and the CCWP database.

INFLATION TYPICALLY INCREASES BY 8 PERCENTAGE POINTS

Wars are typically inflationary

In the median interstate war on a country's own territory, inflation increases by 8 percentage points relative to its pre-war trend (see Chart 1.6). (The inflationary pressures that have been observed in Ukraine in 2022 – which are due in part to the disruption of production and logistics – are broadly in line with this median historical increase.) Meanwhile, average inflation spikes to stand at several hundred per cent, driven by episodes of hyperinflation in the dataset.

Increases in inflation have become shorter-lived over time as the printing of money has become less popular as a way of financing wars and monetary frameworks have improved.[13]

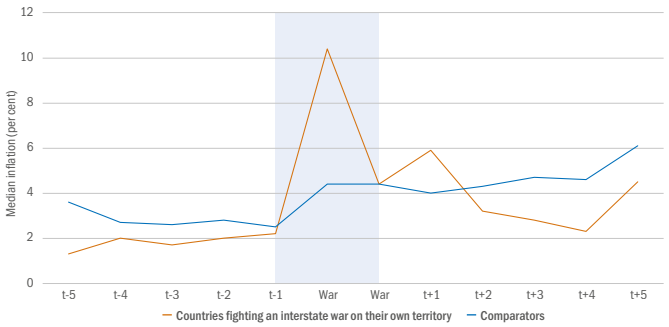
Countries with civil wars are different in many ways from economies which do not experience war, even in the years before the war.[14] For instance, they are, on average, characterised by higher inflation even in the run-up to the war, and inflationary episodes tend to persist for longer.

Wars result in a significant build-up of sovereign debt

Government revenue drops during wars as economic activity collapses, although in some cases it later recovers because of investment in fiscal capacity and the introduction of new taxes. Meanwhile, government expenditure rises and fiscal balances tend to worsen: on average, primary deficits increase by about 5 percentage points relative to before the war (see Chart 1.7). These patterns tend to be more muted for civil wars.

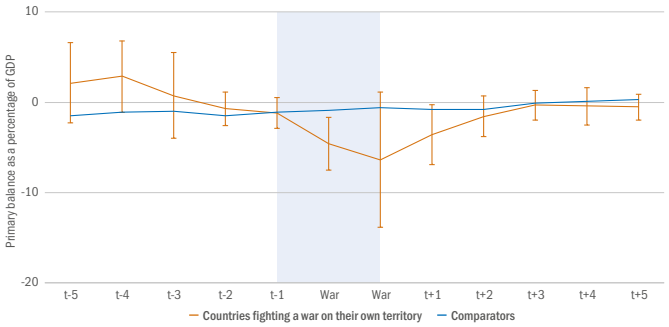
As borrowing rises and economic activity contracts, government debt-to-GDP ratios increase sharply, peaking at around 47 percentage points above their pre-war levels (see Chart 1.8). The current forecasts for Ukraine foresee an even larger increase. Increases are typically larger for interstate wars on a country's own territory than for civil wars and lost wars, although those differences are not statistically significant given the small sample sizes.

CHART 1.6. In a typical interstate war on a country's own territory, inflation rises by 8 percentage points relative to its pre-war level



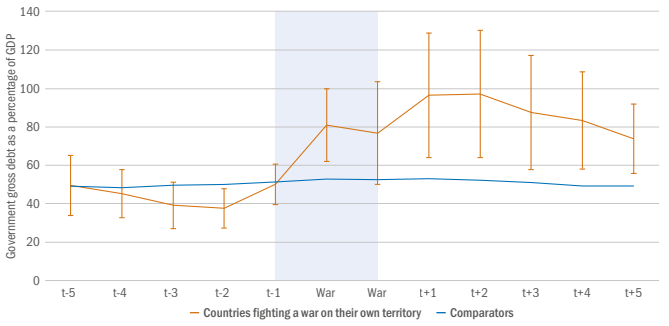
SOURCE: Correlates of War, IMF, Reinhart and Rogoff (2009) and authors' calculations.
NOTE: Includes only wars fought on a country's own territory that were not preceded by another war in the previous five years. Comparators are synthetic controls based on economies that were not at war in the five years before or after the war in question.

CHART 1.7. Fiscal balances worsen during wars



SOURCE: Correlates of War, IMF and authors' calculations.
NOTE: Includes only wars fought on a country's own territory that were not preceded by another war in the previous five years. Given the shorter time series available, comparators are a simple average of economies that were not at war in the five years before or after the war in question. 90 per cent confidence intervals are shown.

CHART 1.8. General government debt peaks at around 47 percentage points of GDP above its pre-war level



SOURCE: Correlates of War, IMF and authors' calculations.
NOTE: Includes only wars fought on a country's own territory that were not preceded by another war in the previous five years. Given the shorter time series available, comparators are a simple average of economies that were not at war in the five years before or after the war in question. 90 per cent confidence intervals are shown.

[13] See also Cappella Zielinski (2016).
[14] See also Poast (2006).

After a war, debt is often restructured or inflated away

Fiscal consolidation is seldom used to pay for past conflicts, as wars tend, on average, to be followed by primary fiscal deficits, which contribute to a further build-up of government debt. However, inflation often helps to erode the value of debt accumulated during wars. In around 60 per cent of cases, wars result in inflation rising above pre-war levels.

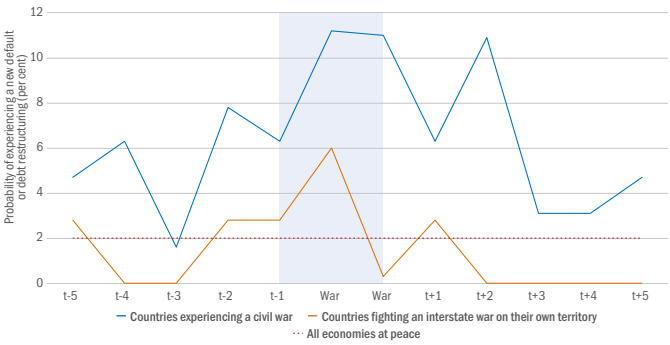
Debt restructuring and debt forgiveness are also common after wars. The following analysis looks at defaults since the 1800s using the database constructed by Reinhart and Rogoff (2009), as well as data on restructuring since the 1960s taken from the Bank of Canada-Bank of England Sovereign Default Database. (Before the Paris Club was established in 1956, restructuring was nearly always prompted by a default event.) The sample covers a total of 143 country-wars, for which conflict data are also available.

On average, an economy that is not at war (and is not already in default or having its debt restructured) has an unconditional probability of just under 2 per cent of defaulting or undergoing restructuring in a given year (see Chart 1.9).

In 32 per cent of cases a country fighting a war on its own territory experienced a *new* default or debt restructuring within five years. (As countries can remain in default for many years, the overall percentage of economies experiencing default – as opposed to experiencing a *new* default event – is much higher at around 57 per cent.) Examples of large-scale debt relief include a number of European economies in the 1930s, the 1953 London Agreement on German External Debts and Paris Club agreements after the Second Gulf War and the Yugoslav Wars. Restructuring typically reduced debt by 20 to 30 percentage points of GDP.

Economies that are experiencing civil war are up to six times more likely to default or experience restructuring during that war than economies which are at peace, and this difference is statistically significant. The likelihood of default/restructuring increases by 5 percentage points relative to the pre-conflict period. (Economies that experience civil wars are also more likely to default in some years preceding the conflict, although this difference is not statistically significant.)

CHART 1.9. Economies that experience wars are more likely to default during those wars than economies at peace



SOURCE: Bank of Canada-Bank of England Sovereign Default Database, Reinhart and Rogoff (2009) and authors' calculations.
NOTE: This chart shows the probability of a country experiencing default or restructuring in a given year (provided that it was not in default or experiencing restructuring in the previous year). The comparator group of economies at peace are economies that were not at war in the five years before or after the year in question.

In contrast, economies that fight an interstate war on their own territory are around 2 percentage points *less* likely to default during some pre-war years than the comparator group of economies at peace, and this difference is statistically significant. This probably reflects a selection effect: economies that are likely to default are unable to acquire the financing necessary to fight a war (and will therefore avoid paths to war).[15]

However, the probability of these economies defaulting or having their debt restructured also increases during the conflict (by 3 percentage points on average, implying a 6 per cent chance of experiencing default or restructuring in any given year), although the difference relative to economies at peace is not statistically significant, given the wide variety of default experiences in a relatively small sample.[16]

PRIMARY DEFICITS INCREASE BY ABOUT
5
PERCENTAGE POINTS ON AVERAGE

[15] See Shea and Poast (2018).
[16] Whether countries at war are more likely to default depends on the definition of default and the sample of wars that is used. Shea and Poast (2018), for instance, find that economies at war are no more likely to default, partly reflecting the strength of their finances in the pre-war years.

External imbalances widen during wars

Exports and imports both fall sharply as a share of GDP during wars (see also Chapter 3), before largely rebounding after the conflict has ended.[17] External deficits widen during interstate wars on a country's own territory, increasing by an average of 5 percentage points of GDP relative to pre-war levels on account of a collapse in exports (which is, in part, mitigated by a contraction in imports as aggregate demand collapses; see Chart 1.10).

Deficits remain larger for longer in the case of civil wars and where economies are subject to sanctions, as these tend to remain in place after the war. Economies that are subject to sanctions (including, for instance, Afghanistan, Kuwait and Libya) tend to have current account surpluses before the war (whereas comparators that are not at war tend, on average, to have small deficits).

Investment falls during wars and remains subdued after civil wars

Investment declines as a share of GDP during wars, falling by around 1 to 2.5 percentage points on average relative to its pre-war level, reflecting general economic disruption and increased uncertainty (see Chart 1.11). Capital flight can also reduce the savings that are available to fund investment.[18] Investment remains lower for longer after civil wars, probably reflecting higher levels of uncertainty, as these conflicts are more likely to remain unresolved or be followed by another war.[19]

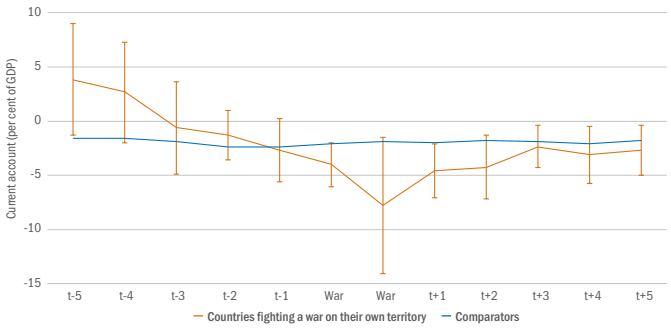
Foreign direct investment (FDI) also drops during wars and remains below the levels observed in comparator economies thereafter (see Chart 1.12). For instance, while net FDI was equivalent to 4.7 per cent of GDP in Ukraine over the period 2003-13, that figure fell to 0.6 per cent in 2014 (the year of the annexation of Crimea), with a net outflow being recorded in 2015. The associated uncertainty also weighed on future investment projects. For example, Chevron and Shell suspended their plans to develop the Olesska shale field in western Ukraine and the Yuzivska gas field in eastern Ukraine, respectively.[20] Wars may also scar firms and even lead young companies to cease trading prematurely (see Box 1.1).

EXTERNAL DEFICITS INCREASE BY AN AVERAGE OF

5

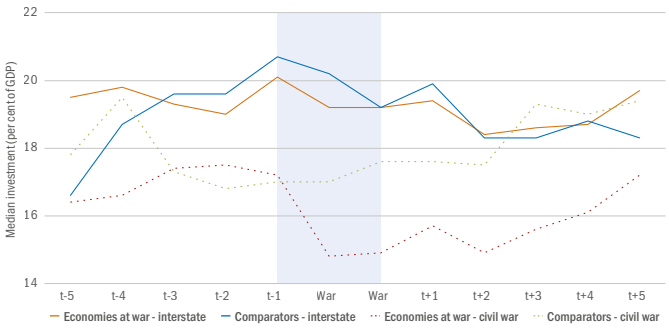
PERCENTAGE POINTS OF GDP

CHART 1.10. External deficits increase by an average of 5 percentage points of GDP during wars



SOURCE: Correlates of War, IMF and authors' calculations.
NOTE: Includes only wars fought on a country's own territory that were not preceded by another war in the previous five years. Given the shorter time series available, comparators are a simple average of economies that were not at war in the five years before or after the war in question. 90 per cent confidence intervals are shown.

CHART 1.11. Investment falls during wars and remains subdued after civil wars



SOURCE: Correlates of War, Penn World Tables and authors' calculations.
NOTE: Includes only wars fought on a country's own territory that were not preceded by another war in the previous five years. Comparators are synthetic controls based on economies that were not at war in the five years before or after the war in question.

[17] See also Chatagnier and Kavaklı (2017) and Copeland (2015) on the expected benefits of future trade, economic interdependence and wars.
[18] See Collier (1999).
[19] See also Collier (1999) and Hoeffler and Reynal-Querol (2003).
[20] See Gent and Crescenzi (2021).

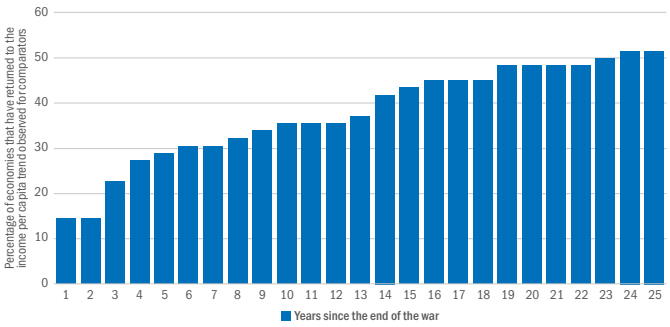
Post-war recovery and reconstruction: lessons from the past

This section looks at post-war recoveries, summarising key lessons from past reconstruction episodes.

Reconstruction episodes vary widely

Not only is there significant variation in patterns of economic activity during wars, recoveries also vary tremendously, even accounting for variation in economic damage. Sometimes (as in the case of Italy after the Second World War) growth accelerates significantly compared with the pre-war trend. In other instances (such as Egypt in the 1970s), the economy returns to its synthetic counterfactual growth path within a few years of the war ending. In many other cases, recoveries take decades. For instance, Japan's reconstruction after the Second World War, which is often held up as an example of successful rebuilding, saw the country take 15 years to return to the GDP per capita trend observed in comparator economies. In some cases, GDP per capita never returns to the trend levels observed in comparators (as seen, for example, in Iran after the Iran-Iraq War of the 1980s). Recoveries are particularly slow where they are interrupted by further wars (as in the case of Greece's recovery after the First World War, which was interrupted by the Second World War and a civil war).

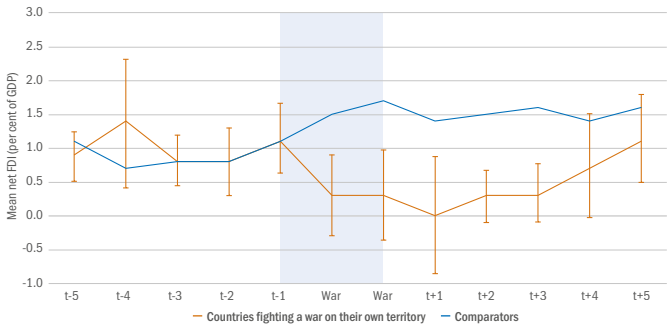
CHART 1.13. In almost half of all cases, GDP per capita remains below its counterfactual growth path 25 years later



SOURCE: Correlates of War, IMF, Maddison Project Database and authors' calculations.
NOTE: This chart indicates the cumulative percentage of economies that took t years or less to reach the level of GDP per capita that would be expected on the basis of the economic growth of their comparators (which are economies that were not at war in the five years before or after the war in question). Wars that are followed by less than 25 years of data are excluded.

This diversity can be seen in Chart 1.13, which is based on a large sample of wars with drops of at least 5 per cent in income per capita during the war or in the year after the war ended. (Again, wars that are preceded by another war in the previous five years are excluded.) In 29 per cent of those cases, GDP per capita returns to the trend levels observed for comparator economies within five years; however, in almost half of all cases income per capita remains below those trend levels 25 years later.

CHART 1.12. FDI falls during wars and is slow to recover



SOURCE: Correlates of War, World Bank and authors' calculations.
NOTE: Includes only wars fought on a country's own territory that were not preceded by another war in the previous five years. Given the shorter time series available, comparators are a simple average of economies that were not at war in the five years before or after the war in question. 90 per cent confidence intervals are shown.

IN
29%
OF CASES, GDP PER CAPITA RETURNS TO TREND LEVELS OBSERVED FOR COMPARATOR ECONOMIES WITHIN 5 YEARS OF A WAR

BUT IN ALMOST **HALF** OF ALL INSTANCES, IT REMAINS BELOW THOSE LEVELS 25 YEARS LATER

Recoveries are slower after civil wars and in economies with weaker pre-war growth

The following analysis looks at how the length of the post-war recovery is correlated with conditions before the war (the strength of economic growth and the quality of democratic institutions), the severity, length and nature of the war, and the reoccurrence of hostilities after the initial conflict ends.[21] The quality of democratic institutions is captured by indices taken from the Varieties of Democracy (V-Dem) database, which provides multi-dimensional measures of democracy for 202 economies (going as far back as 1789 in some cases).

A simple analysis comparing economies whose income per capita returned to the trend levels observed for comparators within 10 years (as seen in around one-third of all cases) with economies whose income per capita did not recover within 10 years suggests that such full recoveries are more likely to happen: (i) in economies with stronger GDP per capita growth and higher-quality democratic institutions before the war, (ii) after shorter wars, (iii) where wartime drops in GDP per capita are smaller and (iv) where there is no return to hostilities after the end of the war. Full recoveries are also observed less frequently after civil wars (see Chart 1.14).

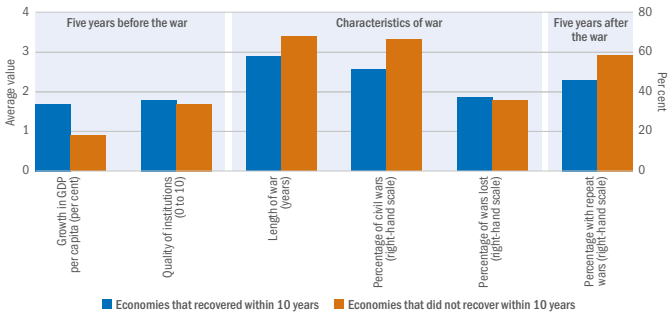
Hazard regressions confirm these findings. The effect of pre-war growth is both statistically significant at the 10 per cent level and economically large: a 1 percentage point increase in pre-war growth increases the likelihood of a recovery by 6 per cent. These findings are in line with those of previous studies of civil wars, which have also found that recoveries are faster after lost civil wars and in lower inflation environments.[22]

Reconstruction is more difficult if peace is fragile

Reconstruction is more difficult after protracted, unresolved conflicts and fragile settlements, as the threat of a return to conflict and continued security issues increase the cost of reconstruction (as seen, for instance, in Afghanistan and Iraq).[23]

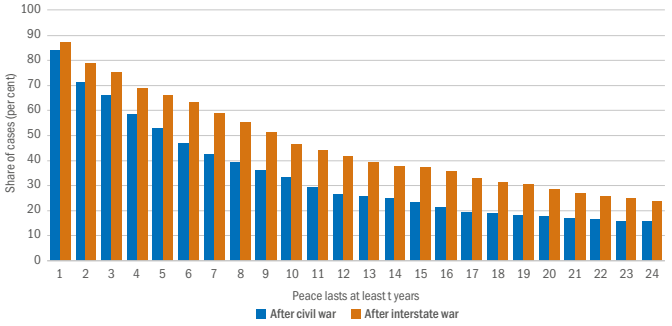
Wars frequently reoccur. Only around 20 per cent of wars are followed by at least 25 years of peace. Strikingly, 53 per cent of civil wars are followed by another war in the next six years (as also reflected in the higher probability of wars reoccurring after conflicts that take place on countries' own territory; see Chart 1.15). Repeat wars are also more likely in countries that have won a war (with 44 per cent of won wars being followed by another war in the next six years, compared with 35 per cent for lost wars; and just 17 per cent of won wars being followed by at least 25 years of peace, compared with 27 per cent for lost wars), probably reflecting the strength of those countries' economies.

CHART 1.14. Full recoveries are less likely in weaker economies and after civil wars



SOURCE: Correlates of War, IMF, V-Dem database and authors' calculations.
NOTE: This chart shows simple averages for (i) economies where GDP per capita returned within 10 years to the trend levels that could be expected on the basis of the experiences of comparator economies and (ii) economies where GDP per capita did not return to those levels within 10 years. A "repeat war" is another war taking place within five years of the end of the original conflict.

CHART 1.15. Only around 20 per cent of wars are followed by at least 25 years of peace



SOURCE: Correlates of War and authors' calculations.
NOTE: Wars that are followed by less than 25 years of data are excluded.

[21] See also Poast (2006).
[22] See Kang and Meernik (2005).
[23] See Special Inspector General for Afghanistan Reconstruction (2021), or Matsunaga (2019) on Iraq.

External aid can support reconstruction, provided there is sufficient administrative capacity

Damage to infrastructure and other assets can be extensive, equivalent to two or three times pre-conflict GDP, and external aid can play an important role in supporting reconstruction. The US government spent 2 per cent of the country's GDP on the Marshall Plan (equivalent to US$ 450 billion today) after the Second World War, which was widely credited with supporting post-war recovery and technological development in European economies (see Box 1.2). After the 1990-91 war in Kuwait, petroleum production and refinery capacity exceeded pre-war levels by 1994 thanks to extensive use of foreign contractors.[24]

However, differences in the amount of external aid received (if any) explain only 10 per cent of all variation in the number of years taken to recover (for economies that recovered fully within 25 years). Examples of countries that experienced both large amounts of investment and poor economic performance include Afghanistan (where the United States of America alone spent US$ 145 billion on reconstruction) and Iraq (where the international coalition spent US$ 220 billion).[25] In part, the breadth of outcomes reflects the fact that, alongside lasting peace, effective use of external aid requires sufficient local administrative capacity.

External aid may be more effective if it is front-loaded to provide support in the critical early years of the post-war period, when a recipient country's own resources may be limited.[26] The use of grants, rather than loans, can limit further increases in government debt.[27] Grants accounted for 90 per cent of Marshall Plan disbursements.

Aid can also be more effective with domestic ownership and when administered by a dedicated agency, in order to reduce bureaucracy and ensure coordination across different sources. The United States of America established an independent agency to administer the Marshall Plan, and recipient countries retained ownership of the reconstruction programme (see Box 1.2). Clear sunset provisions, such as a predetermined multi-year lifespan, can allow for efficient budgeting, clustering of complementary programmes and longer-term funding of infrastructure investment, while making the programme more politically palatable to donors and minimising "reconstruction fatigue".[28]

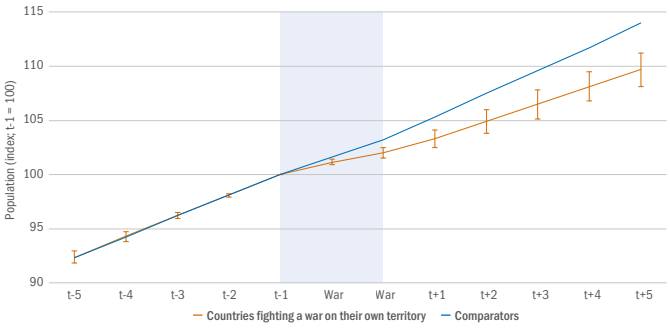
The "new normal"

This last part of the chapter uses a production-function approach to look at whether wars cause long lasting changes to the structure of economies. In contrast with previous sections, the focus here is not on flows (such as the value added that is produced each year) but on damage to the stocks of resources that are available to the economy in the long term, such as human and physical capital. This section also looks at whether wars result in meaningful improvements to economic and political institutions, as well as the administrative and fiscal capacity of the state.

The labour force tends to shrink after a war

Wars have long-lasting effects on countries' populations, reflecting casualties, outflows of refugees (see Chapter 2) and declining birth rates. Population growth typically drops by around 1.5 percentage points during wars (relative to comparator economies that are not at war) and remains 0.5 percentage point lower five years after the end of the war. Thus, populations remain permanently smaller (see Chart 1.16), with the impact of a war being visible as much as 25 years after the end of the conflict. For instance, 10 years after the end of the First World War, the populations of France, Germany and the United Kingdom were all still smaller than they had been in 1913, while the populations of neutral Denmark, The Netherlands and Spain were between 13 and 24 per cent higher than their pre-war levels.

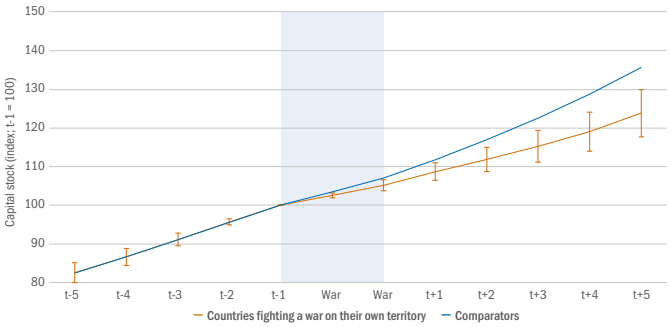
CHART 1.16. Populations remain permanently smaller than those of comparators after wars fought on a country's own territory



SOURCE: Correlates of War, Penn World Tables and authors' calculations.
NOTE: Includes only wars fought on a country's own territory that were not preceded by another war in the previous five years. Comparators are synthetic controls based on economies that were not at war in the five years before or after the war in question. 90 per cent confidence intervals are shown.

[24] See Barakat and Skelton (2014) and Shehabi (2020).
[25] See Becker et al. (2022b).
[26] See Becker et al. (2022b).
[27] See also Becker et al. (2022a).
[28] See Becker et al. (2022b).

CHART 1.17. Wars often result in lasting damage to capital stocks



SOURCE: Correlates of War, Penn World Tables and authors' calculations.
NOTE: Includes only wars fought on a country's own territory that were not preceded by another war in the previous five years. Comparators are synthetic controls based on economies that were not at war in the five years before or after the war in question. 90 per cent confidence intervals are shown.

War-related population declines have been even more pronounced in the EBRD regions. For instance, 10 years after the end of the Yugoslav Wars, Bosnia and Herzegovina's population was still 10 per cent below its pre-war level, while the populations of Montenegro and North Macedonia grew by 5 per cent over the same period.

An important additional component of the long-term cost of a war is the impact on the quality of human capital. Wars increase long-term health problems and disrupt schooling.[29] Years of schooling stagnate or decline during wars, while they continue to accumulate in comparator economies that are not at war.[30] For instance, a study of Austrian and German individuals who were 10 years old during the Second World War finds that they received less education than comparable individuals in countries that were not at war (such as Switzerland and Sweden). As a result, those individuals were still experiencing sizeable earnings losses some 40 years after the war, highlighting the long-lasting effects of such conflicts.[31]

The impact that wars have on employment rates varies (see also Box 1.3 on women's labour force participation), but hours worked often increase. For instance, in the United States of America hours per worker increased by 34 per cent during the Second World War, partly in order to make up for labour lost on account of conscription. In South Korea, the Vietnam War saw hours increase by 12 per cent relative to their pre-war level, peaking at almost 1.5 times the global average.[32]

Wars result in lasting damage to capital stocks

Wars also reduce capital stocks (including all capital involved in production, such as factories, equipment and agricultural land), as existing capital is destroyed during wars or taken out of the country, while investment in new capital may remain subdued, as discussed earlier (see also Box 1.4). For instance, Mozambique's railway network lost more than 90 per cent of its rolling stock during the country's 1977 civil war.[33] Capital stocks in the United States of America did not recover until 20 years after the 1861 civil war, with agricultural investment in affected areas remaining suppressed for almost 60 years.[34] At the end of the Second World War, the capital stocks of France, Germany and Italy were between 20 and 40 per cent lower than they had been in 1939, and they did not return to their pre-war trend levels for another 20 to 25 years.[35]

On average, a country that fights a war on its own territory will see a 12 per cent decline in its capital stocks five years after the end of that conflict relative to similar economies that do not experience a war (see Chart 1.17). Broadly speaking, historical experience suggests that it will take around 20 years for the capital stocks of advanced economies to return to levels consistent with the trends observed in comparator economies, while the capital stocks of lower-income economies tend to be permanently damaged by war.

Here, too, the effects are more pronounced in the EBRD regions and are not entirely explained by transition recessions: in those regions, the capital stocks of economies affected by war are, on average, 24 per cent smaller five years after the end of the war than those of economies which have not experienced a war. For instance, while the Kyrgyz Republic's capital stock fell by just 7 per cent between 1991 and 2000, neighbouring Tajikistan's fell by almost 20 per cent after its civil war.

Increases in productivity may offset some of the loss of labour and capital

Total factor productivity – a measure of how effectively capital and labour are combined to produce output – drops during wars fought on a country's own territory, compounding the loss of labour and damage to capital stocks (see Chart 1.18). The initial drop in productivity largely reflects widespread disruption to established production processes.

[29] See Justino (2011).
[30] Based on the Lee-Lee (2016), Barro-Lee (2013) and UNDP (2018) databases.
[31] See Ichino and Winter-Ebmer (2004).
[32] See McGrattan and Ohanian (1999).
[33] See Brück (2001), p. 64.
[34] See Feigenbaum et al. (2019).
[35] See Alvarez-Cuadrado (2008).

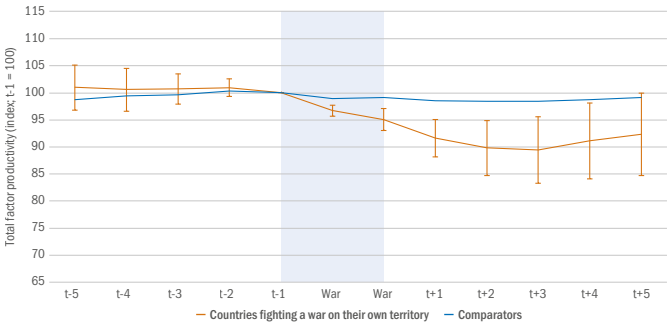
The subsequent pick-up in the rate of TFP growth partly reflects the successful conversion of military technology for civilian purposes (with prominent examples including the internet, nuclear power and aircraft manufacturing),[36] crowding-in of private investment through public investment in military research and development (R&D),[37] or "learning by necessity", where firms improve production methods to make up for declines in the availability of labour and capital. (For example, between 1941 and 1944 the number of man-hours required to produce a Liberty cargo ship in the United States of America fell by 55 per cent.)[38] In general, TFP increases tend to be more pronounced in advanced economies and countries that are fighting wars outside of their own territory (which do not form part of the sample underpinning Chart 1.18).[39]

However, it should be noted that spillovers from investment in military technology to the rest of the economy are far from automatic. For instance, spillovers from the US defence industry to civilian uses have become more limited over time, as military technology has become less applicable and too expensive (as in the case, for instance, of supersonic fighter planes or military satellites that focus on covert operations rather than signal strength), with the military starting, instead, to rely on technology developed by the private sector.[40] While such spillovers may boost productivity growth in specific sectors related to transport and defence, productivity growth may slow down in other industries that see resources diverted away from them.[41]

Can wars make states?

A number of studies have examined the question of whether "wars make states", as conflicts may accelerate the expansion of fiscal and administrative capacity. Max Weber famously defined a state as "a human community that (successfully) claims the monopoly of the legitimate use of physical force within a given territory". Indeed, archaeological evidence suggests that the essential functions of the state first emerged when an armed elite, often foreign, sought to collect taxes on output.[42] Conquest required administration. The creation of an armed force generated durable state structures, such as treasuries and mechanisms for conscription. Early attempts to broaden the tax base meant that economies started developing censuses and land registries to determine who was taxable, as well as keeping statistical accounts (with GDP becoming the primary economic indicator during the Second World War in order to monitor wartime production).[43] Wars in the 20th century were typically associated with sharp increases in the size of the state, in terms of both spending and employment, which were only partly reversed after the end of the conflict.[44]

CHART 1.18. TFP falls during wars, but rebounds afterwards



SOURCE: Correlates of War, Penn World Tables and authors' calculations.
NOTE: Includes only wars fought on a country's own territory that were not preceded by another war in the previous five years. Comparators are synthetic controls based on economies that were not at war in the five years before or after the war in question. 90 per cent confidence intervals are shown.

Wars may also act as "critical junctures" and promote institutional change. In normal times, institutions are often self-reinforcing via virtuous or vicious circles. In the event of a war, a confluence of factors, such as significant upheaval coupled with a broad coalition of parties pushing for reform, may help to dislodge the existing equilibrium and bring about change – for instance, a transition from extractive institutions to inclusive ones.[45]

Fiscal and administrative capacity can expand as a result of wars

Improvements in administrative and fiscal capacity are often needed to fund wars. For instance, during the US Civil War revenue from tariffs and customs duties dropped sharply as foreign trade collapsed. This prompted the introduction of the country's first income tax. Consequently, the percentage of war costs that were financed by taxation tripled during that war. Similarly, the United Kingdom introduced its first general income tax in 1799 to finance its war with France, and Prussia's tax agency was originally established as The General War Commissariat.[46] While Japan was able, in part, to finance the Russo-Japanese War of 1904-05 through taxation, reflecting reforms to its tax system and bureaucratic capacity before the war, low administrative capacity limited Russia's ability to rely on taxes, necessitating large-scale domestic – and later foreign – borrowing, at a rising cost.[47] When Chile went to war in 1865 with access to external finance, its debt-to-GDP ratio grew by 300 percentage points, while its tax ratio remained virtually unchanged. In contrast, when it waged war in 1879 *without* access to external credit, its tax ratio grew by 75 per cent, reflecting a new income tax and a sharp increase in the tax rate on nitrate exports.[48]

[36] See Ruttan (2006) and Gross and Sampat (2020).
[37] See Moretti et al. (2019) and Antolin-Diaz and Surico (2022); more generally, see also Deleidi and Mazzucato (2021).
[38] See Ilzetski (2020) and Rapping (1965).
[39] See, for instance, Ruttan (2006) and Gross and Sampat (2020).
[40] See Cowan and Foray (1995), Manyika et al. (2019) and Stowsky (2004).
[41] See Field (2008).
[42] See Tilly (1985).
[43] See Tilly (1990).
[44] See EBRD (2020).
[45] See Acemoğlu and Robinson (2012).
[46] See Tilly (1990).
[47] See Cappella Zielinski (2016) and the CCWP database.
[48] See Queralt (2018).

Early central banks were established as a result of wars

Prior to the use of taxation, borrowing was important for the financing of wars, and that helped to foster the creation of debt markets. For instance, Francis I started borrowing from Parisian businessmen in the 1520s to finance campaigns against the Habsburgs, offering the city's future revenues as security.[49] Similarly, in the first half of the 16th century, the States General of the Habsburg Netherlands took steps towards issuing state-backed annuities secured by specific new taxes, which significantly improved the terms of financing.[50]

The need for wartime borrowing also encouraged the development of early central banks. The first central banks were not established as lenders of last resort for the private sector, but as a way of helping their governments to issue debt in wartime. In fact, all central banks that were in existence before 1850 were established in the context of war. Some, such as Sweden's Riksbank, the Bank of England, the Banque de France, the Bank of Finland, De Nederlandsche Bank and the Banco de Portugal, were established in the middle of a war to facilitate borrowing in a situation where the government was seen as a poor credit risk. Others, such as the First and Second Banks of the United States and the central banks of Austria, Norway and Denmark, were set up in the immediate aftermath of a conflict, usually in the context of very high inflation as a result of the government printing money to meet wartime spending needs. Early central banks were required to invest their capital in government bonds, and governments came to rely on them to finance deficits generated by war or civil strife.[51]

Large institutional improvements are the exception, not the rule

However, quantitative evidence from almost two centuries of wars suggests that, overall, improvements in institutional quality have been rare occurrences. The following analysis examines institutional changes by comparing the quality of democratic institutions (as captured by V-Dem indices) in the five years before a war with the situation seen in the five years after that war. The results of this analysis suggest that large changes in the quality of political institutions (exceeding 1 standard deviation) were observed in less than 10 per cent of cases (with just over half of these being improvements).[52]

Meaningful changes to political institutions were more likely to occur after interstate wars than civil wars. Institutional changes – particularly improvements – were also more likely to occur after lost interstate wars, rather than victories. Large institutional improvements could be seen, for example, in Austria, Italy, Japan and West Germany after the Second World War, in Romania after 1989, in Indonesia after the war of 2004, and in South Africa after the end of apartheid in 1994. These appear to be the exception, rather than the rule, and may, in part, be driven by a confluence of other factors.[53]

Conclusion

Wars scar economies deeply and post-war recovery paths vary widely. While wars can present opportunities to improve technology or develop better institutions, instances of strong recoveries accompanied by institutional change are the exception rather than the rule. Securing lasting peace is crucial for successful rebuilding – in terms of both physical infrastructure and institutions. Recoveries also tend to be quicker where pre-war growth was stronger and wars are shorter. Past experience suggests that external aid may be more effective where local administrative capacity is strong, where it is front-loaded to provide support in the critical early years of the post-war period, and where grants are combined with lending to limit further increases in government debt. It may also be more effective with domestic ownership and when administered by a dedicated institution, in order to reduce bureaucracy and ensure coordination across different sources. Multi-year planning can allow for the clustering of complementary programmes and longer-term funding of infrastructure investment, while clear sunset provisions can make programmes more politically palatable for donors and minimise "reconstruction fatigue".

[49] See Hamilton (1950).
[50] See Parker (1972).
[51] See Timberlake (1993), Goodhart et al. (1994), Pohl (1994), Broz (1998) and Poast (2015).
[52] See also Fortna and Huang (2012).
[53] See Grimm (2008) and Hoeffler and Reynal-Querol (2003).

BOX 1.1.

The impact of armed conflict on firms' performance

Armed conflicts typically destroy physical infrastructure and human capital, with a devastating impact on individuals and firms.[54] Even if firms manage to escape damage to their premises, machinery and equipment, they may still be unable to reach their customers in line with their contractual obligations because of the destruction of infrastructure. They may also face reduced demand for their products as their customers lose income, or they may need to suspend their operations owing to disruption in the supply of intermediate inputs.[55] This may reduce expected returns on investment, as well as increasing uncertainty about future revenues, and may, in turn, affect aggregate productivity growth through the reallocation of resources across existing firms, as well as firm entry and exit.[56]

This box examines the short-term impact that the five-day armed conflict between Georgia and Russia in August 2008 had on the performance of Georgian firms. This armed conflict was unexpected from the point of view of those firms, and its impact was compounded by the global financial crisis. This analysis draws on the 2008 and 2009 rounds of the firm-level Business Environment and Enterprise Performance Survey (BEEPS) in Georgia. BEEPS covers a representative sample of the firms in Georgia's private sector, with the exception of agriculture and finance, with a focus on the manufacturing and service sectors. All respondents are registered firms with at least five employees, and the sample is stratified by geographical location. The survey provides information on firms in Georgia just before the conflict and about nine months after the conflict, capturing financial information for 2007 and 2008.

The analysis in this box exploits differences in the intensity of fighting across municipalities in order to identify the impact that the armed conflict had on firms' sales, employment and labour productivity. Firms in municipalities that were directly affected by the conflict are compared with other firms located in neighbouring municipalities that were affected only indirectly. The analysis takes into account firms' financial characteristics, which affect their exposure to the impact of the global financial crisis.

The results suggest that the events of 2008 had a negative impact on employment. However, in terms of labour productivity, firms in municipalities that were directly exposed to the conflict fared better, on average, than firms in neighbouring municipalities. This somewhat paradoxical finding may, in part, reflect a cleansing effect: as less productive firms exited their respective markets, labour shifted to more productive uses.

The conflict had a scarring effect on the labour productivity of young firms – those that were less than five years old at the time of the first survey. While the events of 2008 affected young and old firms in similar ways, young firms in directly exposed municipalities performed worse than their peers in neighbouring municipalities, with differences of more than 4 percentage points in sales growth and labour productivity growth.

Estimates from the following survey round, conducted in 2013 (in which some of the firms from the 2008 survey participated again), indicate that by 2011 firms in Georgia had mostly recovered from the events of 2008. While firms in municipalities that had been directly exposed to the conflict fared somewhat worse than firms in neighbouring municipalities, none of those differences in performance were statistically significant. However, firms that had been less than five years old in 2008 and were located in municipalities that had been directly impacted by the war were 9 percentage points more likely to have ceased trading by 2011 than their peers in neighbouring municipalities, pointing to a longer-term reallocation of resources in response to the armed conflict.

[54] This box draws on Schweiger (2022).
[55] See Klapper et al. (2015).
[56] See Camacho and Rodriguez (2013).

BOX 1.2.

Lessons from the Marshall Plan

The Marshall Plan is often held up as the gold standard for internationally funded post-conflict reconstruction programmes. While the amount of financial assistance was relatively limited, other features of the plan – such as its strong show of political support and its conditionality – played an important role in supporting reconstruction.

Officially known as the European Recovery Program, the Marshall Plan delivered more than US$ 13 billion worth of aid to western Europe between 1948 and 1951. This was equivalent to approximately 2 per cent of US GDP and roughly the same share of the collective GDP of the 18 recipient countries (with the United Kingdom, France and West Germany receiving the largest amounts of financing).[57]

The recipients mounted a strong recovery; however, that package provided only a small percentage of the total sum needed for reconstruction. The vast majority of the investment that was made during the Marshall Plan years was financed using Europe's own savings. Europe's reconstruction also benefited from favourable economic conditions and strong institutional capacity. By 1947, industrial production had returned to pre-war levels in most of Europe. One notable exception was Germany, where production was held back by occupation policies and production caps in order to limit the country's military potential.[58] These restrictions were lifted once trust had been restored through the establishment of instruments of European integration such as the European Coal and Steel Community, which was agreed in 1951 and gradually evolved into the European Union (EU).

The economic impact of the Marshall Plan stemmed mostly from the mitigation of short-term shortages, particularly shortages of foreign currencies needed to pay for imports. This eased bottlenecks in certain industries (such as the textile sector, which was reliant on imported cotton) and helped to prevent a – much-feared – scenario in which a lack of food and fuel caused further political upheaval in Europe.[59] It may also have helped smaller firms to invest in the adoption of technology and mechanisation, raising long-term productivity.[60]

The Marshall Plan represented a strong demonstration of political support. The establishment of the North Atlantic Treaty Organization (NATO) in April 1949 then gave further security guarantees to the members of that new organisation, which in turn supported investment. The plan also helped to liberalise markets and promote economic integration in Europe.

Much of the Marshall Plan's success is attributed to its governance and operational details, with particular emphasis on the following:

- the creation of a dedicated agency to administer the funds, in order to make the process less bureaucratic and prevent it from being overly politicised
- reliance on input from recipient countries, which retained agency over the reconstruction programme by putting forward projects for funding
- decentralisation of the administration and disbursement of funds
- tailored conditionality, with a focus on the balancing of budgets, the stabilisation of exchange rates and the liberalisation of prices where these remained under government control
- a clear sunset clause, as the plan was set up as a four-year programme implemented by a temporary government agency (which helped to speed up disbursement and reduce the risk of aid dependence in the long term).[61]

[57] See Eichengreen (2011).
[58] See Eichengreen (2011).
[59] See Eichengreen (2011).
[60] See Bianchi and Giorcelli (2021).
[61] See Becker et al. (2022b).

BOX 1.3.

Women, war and work: The creation of a "new normal"?

There are few images of war which are as evocative and influential as that of Rosie the Riveter. That familiar figure – a proud, blue-collared female labourer – now adorns everything from mugs to socks, a cultural icon representing all the women who worked in US factories and shipyards during the Second World War. More than 6.5 million women joined the US labour force during the Second World War, increasing female labour force participation by more than 50 per cent.[62] American women who filled vacancies created by the exodus of conscripted men were credited with transforming the structure of the country's labour market.

A recent study exploiting variation in the conscription rates of men across US states did indeed find that a 10 percentage point increase in the conscription rate for a given region was associated with women working an extra 1.1 weeks in 1950.[63] However, women who were working in 1950 were more likely to have entered the labour force *after* the war, rather than during it.[64] Other forces, such as the rise of clerical work and sales and service jobs, also played a role in increasing economic opportunities for women in the aftermath of the Second World War.[65]

A labour market shock that is caused by a war may influence an individual's decision to seek employment in two ways. The "added worker effect" may encourage individuals to enter the labour force in order to make up for the loss of another household member's job or income (on account of conscription, for example). At the same time, however, negative shocks to aggregate demand can reduce incentives for an individual to look for work, which is referred to as the "discouraged worker effect".

Most recent research on female labour force participation during conflicts suggests that the added worker effect is dominant. In Nepal, for example, it was found that women were more likely to be in employment if they lived in a region that was affected by conflict.[66] Similarly, a study looking at six sub-Saharan countries suggested that women were more likely to be employed in regions affected by conflict than in unaffected regions and that this trend could persist for long periods after the end of those conflicts. Five of those six countries saw a reduction in the labour force gender gap in the decade after the end of the conflict in question, with the gap closing by as much as 16 percentage points in Rwanda.[67] In Kosovo, meanwhile, it was found that female household heads living in former conflict zones were 9 percentage points more likely to be in employment than those living in areas not affected by war.[68] In Tajikistan, women living in former conflict zones were 7 percentage points more likely to have jobs than those in areas not affected by conflict, reflecting an increase of around 10 percentage points in women's labour force participation rate.[69]

Changing social norms in terms of the types of work that are considered acceptable for women may help to explain why shifts in employment that start in wartime have the potential to persist in the longer term, strengthening the economic independence of women.[70] Rosie the Riveter's enduring cultural legacy stems not from the fact that she is in employment, but from the *nature* of her work: a shift in gender norms has allowed her to enter a skilled manufacturing sector that has traditionally been the preserve of men.

At the same time, such changes are not always frictionless and can result in men becoming increasingly resentful of women's enhanced opportunities.[71] For example, various policies appear to have limited shifts towards a "new normal" in women's labour force participation. In the United States of America, for instance, "veterans' preference" policies after the Second World War favoured the rehiring of men, and wartime changes that facilitated women's employment, such as childcare facilities and takeaway food services, were scaled back.[72]

[62] See Rose (2018).
[63] See Acemoğlu et al. (2004).
[64] See Goldin (1991) and Rose (2018).
[65] See Goldin (1991) and Rose (2018).
[66] See Menon and Van der Meulen Rodgers (2015).
[67] See Klugman and Mukhtarova (2020).
[68] See Justino et al. (2012).
[69] See Justino et al. (2012).
[70] See Petesch (2012).
[71] See Petesch (2012).
[72] See Schweitzer (1980) and Rose (2018).

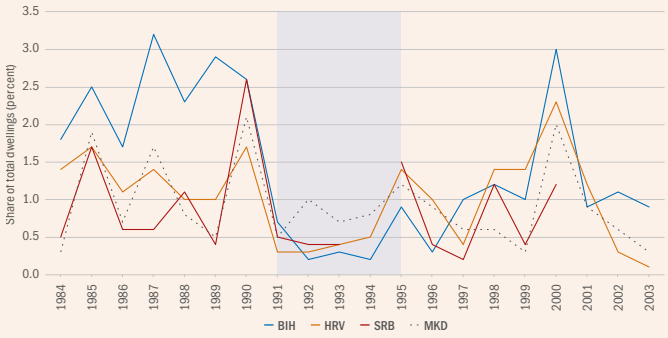
BOX 1.4.

Wars and cities

As this chapter has shown, wars inflict lasting damage on capital stocks, despite investment rates gradually recovering post-conflict. This box complements that analysis with evidence of sharp declines in the construction of residential housing during wars and only sluggish recoveries thereafter, with some lasting effects on city structures.

The construction of residential housing drops sharply during wars and recovers only slowly thereafter. In 2017, the Euro Survey – a regular representative survey of private individuals in 10 economies in central and south-eastern Europe conducted by the Austrian National Bank – included a series of questions about respondents' dwellings, including their year of construction. The evidence from that survey points to a sharp decline in the construction of residential housing during the Yugoslav Wars of the 1990s, with only a sluggish recovery thereafter. The number of dwellings constructed in Croatia, Bosnia and Herzegovina and Serbia fell sharply between 1991 and 1995, both relative to the pre-war period and relative to trends in North Macedonia, which was less affected by the war (see Chart 1.4.1). This pattern is even more striking when looking specifically at cities in those countries (such as Sarajevo), which experienced heavy fighting and thus substantial damage to infrastructure.

CHART 1.4.1. Construction of residential housing drops sharply during wars and remains sluggish thereafter



SOURCE: 2017 Euro Survey and authors' calculations.

The distribution of economic activity across space – across countries, across regions within a country, and across cities – is, in part, driven by increasing returns to agglomeration. In other words, firms and households benefit from being close to each other as a result of knowledge spillovers and the pooling of suppliers and labour. At the same time, economic activity is also driven by the characteristics of individual locations – such as the benefits that arise from being located close to natural resources, rivers or coastal areas. New research in the field of economic geography has sought to examine the relative importance of these two mechanisms, looking at whether war damage has a lasting effect on patterns of economic activity. Wars can have a lasting impact on agglomeration patterns, with agglomeration centres potentially being destroyed, whereas the geographical advantages of particular locations can be expected to reassert themselves fairly quickly.

Empirical evidence on whether war damage leaves a lasting mark on cities is mixed. For example, Allied bombing of Japanese cities during the Second World War resulted in major changes to the relative sizes of those cities in the short term. However, it does not appear to have had a lasting impact, with most cities returning to their previous position in the list of the largest urban centres by size within 15 years.[73] Research has also found that Japanese cities regained their pre-war shares of aggregate manufacturing output, as well as re-establishing specific industries.[74]

In contrast, evidence from West Germany suggests that the Second World War had a major and lasting impact on the distribution of the population across cities. Cities that were hit relatively hard by Allied bombing and the subsequent invasion (which tended to be larger cities) did not generally return to their previous ranking, leading to a more even distribution of the population across cities.[75] This was despite significant reconstruction efforts (with post-war construction rates standing at three times the levels seen before the war in response to the destruction of some 2.3 million dwellings, with heavy reliance on pre-fabricated housing units).[76] The effects were even longer-lasting in East Germany, where post-war recovery in the housing stock was considerably slower.[77]

[73] See Davis and Weinstein (2002).
[74] See Davis and Weinstein (2008).
[75] See Bosker et al. (2008) and Bosker et al. (2007).
[76] See Analytics Economics (2022); see also Di Giovanni and Chelleri (2017) and Saeed et al. (2021).
[77] See Brakman et al. (2004).

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