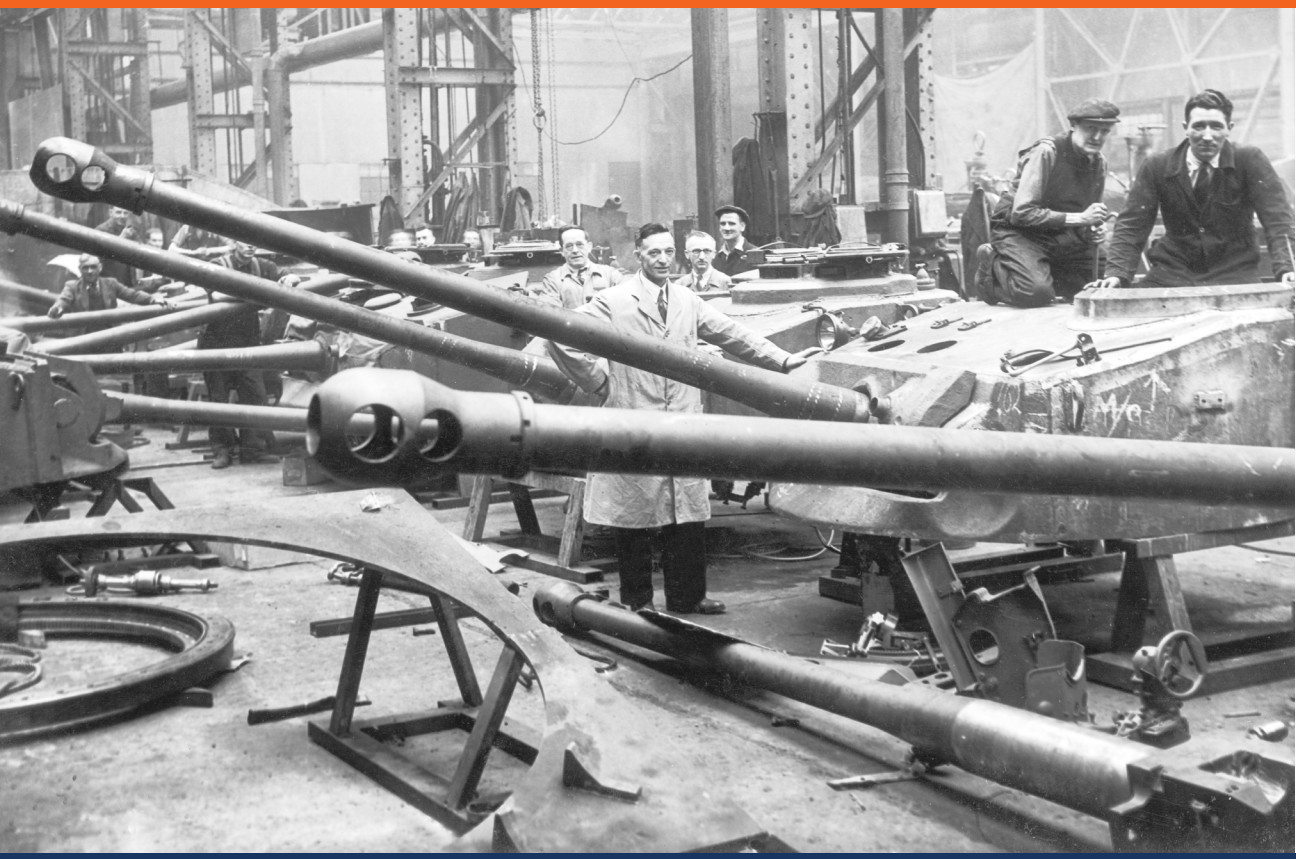
The Economics of the Second World War: Seventy-Five Years On

Edited by Stephen Broadberry and Mark Harrison



A VoxEU.org Book

CEPR Press

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Foreword

May 2020 marks the 75th anniversary of Victory in Europe, a defining moment in modern history which signalled the beginning of the end of years of bloody conflict that left a world fragmented. The physical and economic toll of the war was enormous, touching five continents and dwarfing that of the Great War decades earlier. The scale of mobilisation of all sectors of the economy and society had redefined the concept of 'total war'.

This eBook presents sixteen essays on a range of aspects of the war including the extensive war preparations of the great powers; the conduct of the war (including the management of economic mobilisation, economic warfare, economic exploitation, and the role of economists); and the war's consequences for demography, inequality, economic recovery and political attitudes.

It provides a unique insight into the importance of economics and the sometimes overlooked role that economists played in shaping the war and its outcomes. The evolution of economic warfare is revealed, together with how economic factors powerfully influenced WW2's outcome and its profound and persistent economic consequences. The eBook demonstrates the extent to which economic factors permeated and influenced all levels of the preparations, conduct and consequences of the Second World War.

CEPR is grateful to Stephen Broadberry and Mark Harrison for their excellent editorship of this book. Our thanks also go to Sophie Roughton and Alexander Southworth for their swift and excellent handling of its production. CEPR, which takes no institutional positions on economic policy matters, is glad to provide a platform for an exchange of views on this important topic.

Tessa Ogden
Chief Executive Officer, CEPR
May 2020

Introduction

Stephen Broadberry and Mark Harrison
Nuffield College, Oxford and CEPR; University of Warwick and CEPR

In May 2020 we mark the seventy-fifth anniversary of Victory in Europe, with Victory over Japan to follow in September. In the Second World War, the insurgent powers of the Axis set out to change the international order in their favour (Mawdsley 2020). The world did change, although not as they expected. The process touched the lives of every family on five continents.

The Second World War was the greatest conflict of an era of mass warfare. Both the world wars required a vast mobilisation of productive effort. Mobilisation for the Second World War was more extensive than for the First. The First World War was fought on land in Europe and the Near East and at sea in the Atlantic, while the Second was expanded to Asia and the Pacific, and to the air. While the major economies mobilised 30-60% of their national incomes for the First World War, the Second demanded 50-70%. Both wars reached the limit of what was sustainable for a modern economy at the time. The human losses were also greater: more than 50 million in the Second World War compared with 20 million or more in the First (Harrison 1998, Broadberry and Harrison 2005); this omits the death toll from the flu pandemic of 1918/19, which may have been similar or greater.

Economics – and economists – were everywhere in the war. Economic considerations motivated the war. The war was managed with the help of economics. Economic factors powerfully influenced its outcome. There were profound and persistent economic consequences.

The idea of this book arose as a sequel to the essays we collected for the centenary of the end of the First World War (Broadberry and Harrison 2018). Our chapters are again divided into three main parts. These cover, respectively, the origins, waging, and consequences of the Great War. The editors commissioned Chapters 1 to 4 and 6 for this book and they appear here for the first time. Chapters 5 and 7 through 17 first appeared on the VoxEU website during 2019. They are reproduced here without alteration.

Preparations for war

Chapter 1 by Hans-Joachim Voth examines the circumstances that swept Adolf Hitler to power in Germany in 1933. Hitler's ascent set Germany on a course to dictatorship and Europe on a course to war. These events came immediately after the Great Depression, which had a devastating effect on the German economy. The connection from mass impoverishment to mobilisation of political support for the National Socialists is intuitively plausible but has proven hard to demonstrate conclusively. This chapter shows that the spread of support for Hitler was directly linked to exposure to 'austerity' – cuts in social provision – and to bank collapses.

Discussion of Germany continues in Chapter 2 by Richard Overy. This chapter reviews the long debate over the extent of German economic mobilisation for war in the late 1930s/early 1940s. The early post-war view of a 'peacelike war economy' has now been overturned by research which shows a high level of economic commitment to war, but paradoxically low levels of military output. This has been explained in a number of ways: military intervention in production, uncoordinated control of the economy, or a lengthy learning curve for German war industry.

Chapter 3 by Mark Harrison turns to the Soviet Union, which began to rearm in the 1920s, before Japan embarked on its war of conquest in Asia, and before Hitler came to power in Germany. Germany took on the Soviet Union as an ally in 1939, but attacked its partner in 1941. A surprising aspect of the war that followed was the failure of the Soviet Union to collapse under the pressure of German invasion. Among the factors at work were Soviet war plans and preparations, which were long-standing and comprehensive. They extended from rearmament, the development of heavy industries, and the collectivisation of agriculture to attempts to purge Soviet society of hundreds of thousands of potential traitors and to find common cause with Hitler in the destruction of the European boundaries laid down after the First World War. These preparations were sufficient if judged purely by the war's outcome, but among them were important measures that were unintentionally counterproductive and intentionally cruel.

Chapter 4 by Stephen Broadberry re-examines how lessons learned from the experience of the First World War affected British preparations for the Second World War and wartime economic management. The standard account of wartime Britain emphasises the benefits of learning from experience. In particular, the quicker and more comprehensive move to economic planning in the later conflict is seen as beneficial. However, is it possible that those lessons were learned too well? The standard account may overlook the fact that British planners were also able to draw on the inheritance of an unusually strong liberal market economy and political system. This may have

led post-war governments to be too ready to accept restrictions on market forces that adversely affected long run productivity performance.

Conduct of the war

Chapter 5 by Phillips O'Brien presents a new view of the processes that decided victory and defeat in the Second World War. The war is usually viewed through the lens of the great land battles, from Stalingrad to Kursk to D-Day. This was where soldiers fought and died. The attrition of soldiers was not decisive, however. In the Second World War the main effort of the great powers was put into the construction of air and sea weapons. It was the attrition of ships and planes that decided which battles would be fought and who would win them. This attrition largely took place elsewhere. This article examines the efforts put into the air-sea war and how Allied air and sea power were used to defeat the Axis.

Chapter 6 by David Edgerton continues this theme by considering the position of Britain during the war. Although lacking a great army, and apparently isolated in 1940, the UK remained confident of final victory because it understood its wealth and its dependence on the global economy to be strengths, not weaknesses. The UK mobilised quickly and a great deal, because it was rich and could import while exporting very little, because of its dominance of the sea, and later because of Lend Lease. To the end of the war the UK was able to outproduce a much larger Germany in many munitions of war, if not all of them.

Chapter 7 by Price Fishback turns to the American war economy. The US became the 'arsenal of democracy' by producing a massive amount of military goods that raised real GDP by 72% between 1940 and 1945. Output and employment grew, but not consumption. Multiplier estimates for the expansion of government spending are less than one. Long-range studies at subnational levels show that military spending was associated with small effects on per capita activity. Military spending in the context of a quasi-command economy crowded out private consumption and investment and forced people into the military. In essence, Americans sacrificed heavily to win the war, while their Allies sacrificed even more.

In the Second World War, each side targeted the war production and consumption of the adversary through economic warfare. This was done by submarine warfare against shipping, which had also been tried in the First World War, and also by a new weapon, the long-range bomber. Chapter 8 by Mark Harrison asks: When one country blockaded another's supply of essential goods, or bombed the industries producing them, why did the adversary's economy fail to collapse? This question was addressed soon after

the war by the economist Mançur Olson, then a young USAF officer. His insight arose from the elementary economic concept of substitution. He concluded that there are no essential goods; there are only essential uses, which can generally be supplied in many ways. It was wrong to think of industrial market economies as fragile structures that could be knocked down at many points of weakness. Rather, they are resilient networks with many ways of overcoming temporary shortages.

During the Second World War, despite Allied warfare against their economies, Germany and Japan both performed 'production miracles'. This was especially the case for their aircraft industries. Chapter 9 by Tetsuji Okazaki examines the reasons for Japan's production miracle, focusing on a plant of Mitsubishi Heavy Industries (MHI), one of the two largest aircraft producers in Japan. The key to the production increase was expansion of the supplier network. That is, MHI organised many suppliers to provide aircraft parts to its plants. On the other hand, the supplier network was a potential source of vulnerability. In the final stage of the war, destruction of the supplier network by strategic bombing and the earthquake, caused the collapse of aircraft production at MHI.

Chapter 10 by Hein Klemann turns to the tragic fate of occupied economies. Taken together, the economies of the Nazi occupied countries were roughly twice the size of the German economy, but Berlin obtained less than 30% of its war expenditures from them. This chapter argues that in that sense exploitation failed, but the way Germany tried to exploit its empire had large consequences for living standards during the war, the survival chances of the civil population, and post-war recovery. In Western Europe, where productivity was higher and Berlin took a substantial share of production, mortality was limited and post-war recovery was rapid. In Poland and the USSR, where productivity was lower, continuous warfare and Nazi racism spread destruction and raised mortality, impeding recovery.

During the war, a few European states maintained neutrality. Chapter 11, by Eric Golson, notes that neutrality has long been viewed as impartiality in war. In practice, however, neutral states in the Second World War were realist in approaching their defence, to ensure their survival. Neutrals such as Portugal, Spain, Sweden, Switzerland maintained independence by offering economic concessions to the belligerents to make up for their relative military weakness. Economic concessions took the form of merchandise trade, services, labour and capital flows. Depending on their position and the changing fortunes of war, neutral countries could also extract concessions from the belligerents, if their situation permitted.

Finally, we turn to the role of economics. Chapter 12, by Alan Bollard, observes that the World Wars posed unprecedented economic difficulties in all countries. Economists

played a larger role in the Second World War than in any previous conflict. They advanced the methods of public finance and influenced the directions of the war effort. Under the heading of war finance this chapter describes the efforts of John Maynard Keynes, Takahashi Korekiyo, and H. H. Kung. Under the direction of the war effort, it considers Hjalmar Schacht, Leonid Kontorovich, and Wassily Leontief. By the end of the war, economists were widely embedded in government and policy making.

Consequences of the war

The most obvious and immediate consequence of the Second World War was the loss of life. Most countries were able to count their military losses with some accuracy. Civilian losses were often harder to reckon. Chapter 13, by Cormac Ó Gráda, reviews the evidence on famine-related deaths, which matched or outnumbered military losses. Of the warring powers, only the Soviet Union suffered mass starvation, but it is a measure of the war's global reach that 20 to 25 million civilians died of hunger or hunger-related diseases outside Europe. In Britain effective rationing ensured a 'fair' distribution of food supplies throughout the war and in Germany the famine conditions experienced in 1918-19 were not replicated, but Japan was facing semi-starvation at war's end. In Europe, apart from Greece and the Soviet Union, famine mortality was modest but 3-5% of the populations of faraway Bengal, Henan, and Java perished.

The Second World War, like the First, sharply reduced income and wealth inequality in many countries. Chapter 14 by Walter Scheidel describes how various factors converged to produce this outcome. Mass mobilisation raised demand for labour and reduced skill premiums, extremely high marginal tax rates cut into elite incomes and fortunes, aggressive government intervention curtailed corporate and investment profits and sought to protect workers, consumers, and renters. Returns on capital fell as international markets suffered interruptions and physical assets risked confiscation or destruction. Communist regimes expanded their reach. In market economies, the war experience promoted reforms regarding social welfare, unionisation and taxation that sustained several decades of greater equality.

Chapter 15, by Tamás Vonyó, turns to post-war economic recovery. Victory in Europe brought an end to unprecedented destruction and loss of life. The quarter century that followed is also known as the most remarkable period of economic growth and social progress in Europe. This paradox can be explained by three factors: the foundations of economic recovery remained strong, at least in Western Europe; the Marshall Plan provided vital support for the reconstruction of European trade and cooperation; and the revival of the German economy was supported by the Allies unlike after World War I. By

contrast, in the East of Europe, the foundations for recovery were undermined by the demographic disaster of the 1940s, from which the region could barely recover.

Some consequences of the Second World War are still with us. Chapter 16 by Pauline Grosjean examines the persistent influence of the war on our views of the state, and of each other. Individual-level data from more than 35,000 individuals in 35 countries shed light on how wartime victimisation has shaped political and social preferences in the long run. Personal or family exposure to war violence has left a negative and enduring imprint on levels of political trust throughout Europe and Central Asia, regardless of the outcome or nature of the conflict. It also spurred collective action, but of a dark nature, one associated with further erosion of social and political trust.

Concluding remarks

The Second World War was the greatest conflict of an era of mass warfare. When was that era? Onorato et al. (2014) suggest that it was inaugurated by a transport innovation, the first use of railways to concentrate and deploy a mass army of a hundred thousand men in the Second Italian War of Independence of 1859, followed closely by the larger mobilisations of the American Civil War. Thereafter, railways dominated the logistics of the great land offensives of the two World Wars. The era ended in the 1970s, Onorato et al. maintain, with the advent of another transport innovation, the precision-guided nuclear-capable cruise missile. This took away the point of mass armies by converting them from instruments to sitting targets.

If the era of mass warfare is truly over, then the lessons of the Second World War, like those of the First, should belong to another world that is no longer ours. Given this, we are surprised by the continuing relevance and salience of the lessons that our authors point to.

Writing in the early months of the 2020 coronavirus pandemic, it's clear to us that our world continues to experience episodes that remind us of the profound disruptions of twentieth-century wartime. The public interest suddenly requires the limitation of normal work and leisure. Government directives demand that everyone plays their part. Corporate strategies, family plans, and personal goals are suddenly upended. Each citizen must rebalance personal ambition, family attachments, and the claims of society. There are casualties and losses. Some make sacrifices, while others are sacrificed.

Under these circumstances, it seems that it might be useful to know a few things about what happened, and how it worked out the last time our society was engulfed by an all-consuming emergency.

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About the authors

Stephen Broadberry is Professor of Economic History, Oxford University and Director of the Economic History Programme at CEPR. He is co-editor with Mark Harrison of *The Economics of World War I* (Cambridge University Press, 2005) and the 2018 CEPR eBook, *The Economics of the Great War: A Centennial Perspective*, https://voxeu.org/content/economics-great-war-centennial-perspective.

Mark Harrison is Emeritus Professor of Economics at the University of Warwick and a CEPR Research Fellow. His latest book is *The Soviet economy and the approach of war, 1937-1939* (with R. W. Davies, Oleg Khlevniuk, and S. G. Wheatcroft). This book, and the series that it concludes, received the Alexander Nove Award for Distinguished Scholarship of the British Association for Slavonic and East European Studies in 2020.

Part 1: Preparations for war

1 Roots of war: Hitler's rise to power

Hans-Joachim Voth
University of Zurich and CEPR

The Weimar Republic was Germany's first democracy. Born out of the ashes of the First World War, it struggled after its inception economically and politically. After the end of hyperinflation, the country appeared to stabilise. Growth resumed, and support for democracy grew. And yet, underneath the surface, tensions lingered. They exploded amidst the Great Depression which, beginning in 1929, affected Germany severely. This was expressed in the sudden rise of the Nazi Party and of Adolf Hitler, who became Germany's chancellor in January 1933. This set Germany's course to dictatorship and Europe's course to war.

While few scholars believe that the meteoric rise of the Nazis to power would have been possible without the Great Depression, strong links between economics and radical voting during Germany's slump have so far proven elusive (Falter 1991, Evans 2004, King et al. 2008). Previous work on the link between the economic slump and radicalised voting has largely focused on the unemployed. However, while Nazi electoral support in the country as a whole grew in lockstep with unemployment in the years after 1929, the unemployed themselves rarely supported the Hitler movement.

Two recent research findings have taken a broader view of immiserisation and radicalised voting. Galofré-Vilà et al. examine the effect of austerity on Nazi support. Doerr et al. analyse the effect of Germany's 1931 banking crisis. Both establish a clear link between hardship and radicalisation. Of course, these were not the only factors at work; other recent research has addressed the historical roots of antisemitism (Voigtländer and Voth 2012), the influence of social capital (Satyanath et al. 2017), the power of radio propaganda (Adena et al. 2015), and the role of German business (Ferguson and Voth 2008).

Austerity under the 'Hunger Chancellor'

During the Great Depression, Germany implemented austerity on a singular scale. German Chancellor Heinrich Brüning became known as the 'Hunger Chancellor' because of unprecedented cuts in pensions, benefits, and social transfer payments. Scholars have long hypothesised that these policies undermined support for democracy and increased the appeal of radical parties. As Eichengreen (2018) argued: 'the failure of the political establishment to do more to help those feeling the most damaging effects and instead curtailing even those limited programmes of social support of greatest value to the masses...bred support for political extremists'. The Nazi party campaigned vigorously on an anti-austerity platform. Its party programme in the early 1930s highlighted its commitment to supporting the poor and elderly, as well as support for farmers. Many leading Nazi politicians also attacked tax increases in their political speeches.

Galofré-Vilà and co-authors (2017) use detailed data on both spending cuts and tax increases across Germany. In Germany's main cities, expenditure declined by 6% during the crisis. Hardest-hit were expenditures on health (-14%), education (-33%) and housing (-38%). Headcount reductions and pay cuts in the civil service also took their toll, contributing to a reduction in administrative expenditures by 29%. In a set of 78 cities, Galofré-Vilà et al. find that higher expenditure went hand-in-hand with lower support for the Nazi party – after filtering out the direct effects of economic activity and unemployment. Interestingly, the biggest effects come from cuts in health and housing expenditure.

It could be that towns and cities with bigger cuts in expenditure suffered more from the economic slump. In that case, the link between austerity and Nazi voting might be spurious. However, most taxes were levied at the national level, by the federal government. The federal government in Berlin then transferred a substantial part of its revenue to federal states and municipalities, that carried out a large part of the spending. As the depression hit and the German federal government decided to implement austerity, transfers from Berlin dwindled. Since city and state governments had to rely on federal transfers, this created variation that is arguably unrelated to local economic conditions.

The effect of austerity was not limited to expenditure cuts. Galofré-Vilà et al. also show that tax increases boosted the popularity of the Nazi party. On average, income tax rates increased by over 10% between 1929/30 and 1932/33. The more income taxes rose in a city or town after the onset of the depression, the more votes the Hitler movement received. This is plausible since many potential Nazi voters came from middle-class

backgrounds, where concern over tax was probably more prominent than about welfare payments.

The most compelling analysis by Galofré-Vilà compares electoral districts on opposite sides of state borders. Weimar Germany's federal structure left a good deal of responsibility for spending with the states. While some states cut expenditure a lot, others tried to avoid austerity as much as possible, raising taxes instead. Because the towns and cities are in close physical proximity to each other, the authors assume that they are broadly comparable in terms of social, political, and economic makeup.

For each election, the authors compare support for the Nazi party across pairs of cities, one in a high-austerity state, the other in a low-austerity one. Such 'matched-pair' analysis is common in labour economics, where scholars are interested in the effects of policies such as minimum wages, which vary across state borders. Galofré-Vilà et al. use the same methodology to examine the effects of austerity, and find marked differences. Where the fiscal surplus (the difference between taxes paid and expenditures) was higher, Nazi support increased more rapidly.

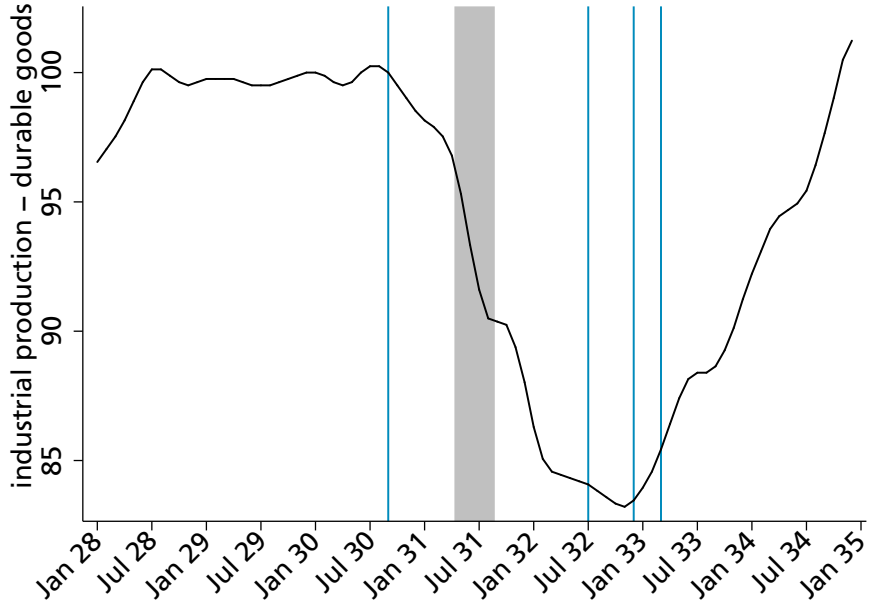
Knut Borchardt (1991) famously argued that the Brüning government's options were limited because it inherited a poor public-finance legacy. The link between Nazi voting and austerity suggests that the policy choices of the time did matter. The Great Depression would have hit Germany hard independent of government policies. But the Brüning government employed austerity policy to put pressure on the victors of World War I, trying to renegotiate reparations. This deliberate choice to use the world economic crisis for political ends directly undermined the viability of Germany's first democracy.

The banking crisis of 1931

Germany's slump was aggravated by a severe banking crisis in the summer of 1931. Just like banking crises elsewhere, it helped turn an ordinary recession into the Great Depression (Figure 1). The crisis was triggered by the collapse of Danatbank, one of Germany's four big universal banks. Following a Central European banking crisis that had begun in Austria in May, German banks experienced deposit withdrawals. Danatbank itself faced unsustainable losses when one of its borrowers, a large textile firm, defaulted due to fraud and bad luck. The ensuing bank run led to a suspension of bank deposits, the failure of another bank, Dresdner, and a three-week bank holiday with Germany's *de facto* exit from the gold standard. Both external and domestic factors, combined with political inactivity because of repayments (due to political conflict

between Germany and France over reparations), turned Danatbank's troubles into a full-blown financial crisis (Ferguson and Temin 2003, Born 1967, Schnabel 2004).

Figure 1 Industrial production of durable consumer goods, Germany 1928-1935



Source: Doerr et al. (2018).

Notes: This figure shows the monthly index of industrial production of durable consumption goods for Germany (Wagemann 1936). The production index is normalised to 100 in January 1930. The shaded area indicates the period of the 1931 banking criss, from the beginning of troubles at Austrian Creditanstalt to the merger between Danatbank and Dresdner Bank. Blue vertical lines show election dates 09/1930, 07/1932, 11/1932, and 03/1933.

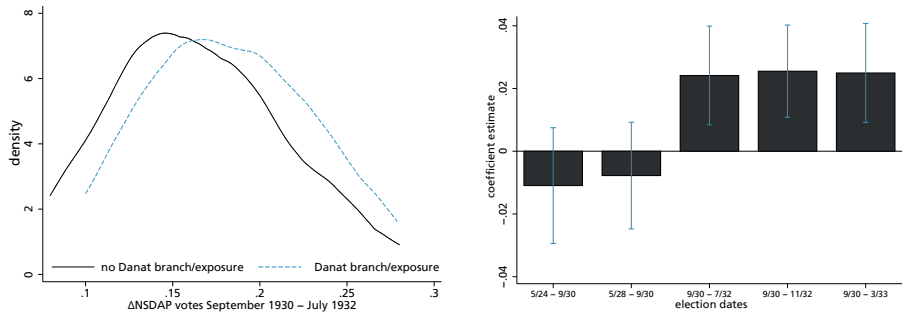
Doerr et al. (2018) show that the German banking crisis was crucial in boosting the Nazi movement's electoral fortunes. It aggravated the German economy's downturn, leading to more radical voting because of declining incomes. In addition, it also increased the Nazis' popularity directly: The bank at the center of the crisis, Danatbank, was led by prominent Jewish banker Jakob Goldschmidt. That 'The Jews are our misfortune', the masthead slogan of the Nazi weekly magazine Der Stürmer, was thus seemingly borne out by indisputable fact. Political radicalisation was a result of the confluence of both economic and political factors.

To identify the effect of bank failures on the real economy and voting, Doerr et al. (2018) collect data on firm-bank pair relationships on more than 5,600 listed German firms. German firms typically had a strong relationship with a single bank, often

the one that had brought them to market. The 'Hausbank' (house bank) would offer payment services, provide credit and capital market services, and send a delegate to the supervisory board of the connected firm (Fohlin 2007). German banks lent nationwide in the 1930s (in contrast to US banks), and bank connections were in general sticky. Importantly, there was no evidence that firms linked to the Danatbank were *ex-ante* riskier than client firms of other banks – nor were they different in size, age, or leverage when compared to borrowers of other large banks. To measure connections with Danat, the authors look both at branches of the bank as well as firm-bank exposure.

Figure 2 Nazi party vote share changes, September 1930 to July 1932 and 1924 to 1933

a) Nazi votes and Danatbank: 1930-1932/7 b) Danat effect on Nazi voting over time



Source: Doerr et al. (2018).

Notes: Panel (a) shows a density plot of the September 1930 to July 1932 change in the NSDAP vote share, conditional on our Danat dummy (=1 if a town has a branch or firms have above-median exposure). NSDAP vote gain is conditional on log city population and share of Protestants. Panel (b) shows coefficients and 90% CI for regression equation (2), where we use the change in NSDAP vote shares for different election dates as outcome variables.

The period from 1930 to July 1932 saw the Nazi Party's great electoral breakthrough – it went from 18.3% of the popular vote to 37.3%. The left panel of Figure 2 shows the change in votes for the Nazi Party between September 1930 and July 1932, conditional on municipalities having exposure to Danatbank or not. The distribution of cities with Danat exposure is clearly shifted to the right – the modal increase is 4-5% greater than in cities that did not have either a Danat branch or exposure to Danat-connected firms. Panel (b) looks at the effect of Danat-exposure over time. Before the banking crisis, increases in Nazi vote shares looked smaller in connected towns and cities. It is only after the banking crisis in the summer of 1931 that electoral support there grew disproportionately.

What accounts for this sharply larger increase in Nazi votes in Danat-exposed cities? Both economic and non-economic factors played a role. The authors first show that cities with a higher share of firms connected to failing banks or branch exposure saw a stronger decline in incomes – by an average of 6.5 to 8 percentage points. Income declines in turn were closely associated with a stronger showing of the Nazi party at the polls. One obvious way to think about the causal chain would therefore be that the banking crisis led to lower incomes, and the economic distress caused more radicalised voting.

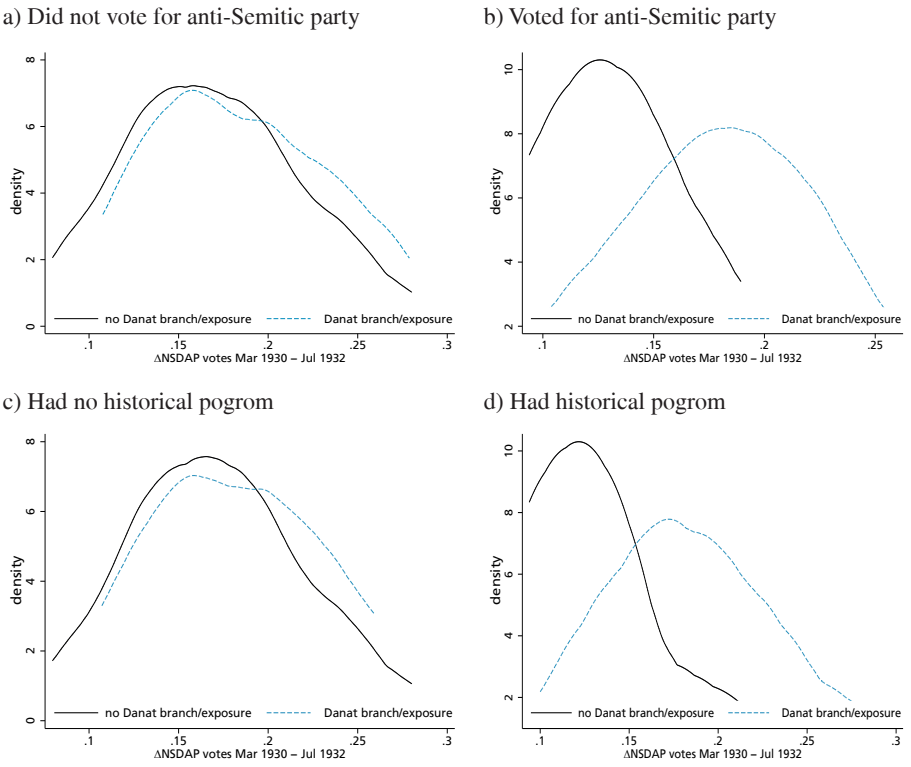
The authors show that this is not compelling. During Germany's banking crisis, another bank failed – Dresdner Bank. Its collapse had very similar economic consequences, producing income losses of 6.5 to 7 percentage points. Nonetheless, exposure to Dresdner Bank had no predictive power for Nazi votes. How can the collapse of a major bank in one case lead to radicalisation, but not in the other? Dresdner and Danat were, respectively, the third- and second-largest banks in Germany, and differences in relative size cannot account for the deviation in outcomes.

The authors argue that Danat's collapse provided a major boost to the Nazi popularity because it was led by a prominent Jewish banker. This provided the Nazis with seemingly incontrovertible proof for their misguided theories of Jewish domination and destruction. Dresdner, in contrast, had no high-profile Jewish managers. Goebbels, later Minister for Propaganda, instructed party propagandists to emphasise that the banking crisis validated the party's anti-Semitic line.

In line with anti-Jewish sentiment being a key factor behind electoral gains, the effects of Danat's collapse on Nazi voting were greatest in towns with an earlier history of anti-Semitism, proxied by medieval pogroms, or by voting for anti-Semitic parties 1890-1914 (Figure 3).

Did relations between Jews and gentiles worsen differentially in towns and cities affected by the Danat collapse? To find out, we collect monthly data on Jewish mixed marriages, an indicator of the quality of inter-ethnic relations. We find that they declined more sharply right after the banking crisis in cities where firms were heavily exposed to failing banks. The financial crisis also had serious aftereffects: Anti-Semitism, heightened by the banking crisis, led to more vociferous forms of hate even after 1933. Cities more exposed to the collapsing banks witnessed higher deportation rates of Jewish citizens to concentration camps, and more attacks on synagogues, Jews, and their property during the 1938 pogroms ('Reichskristallnacht').

Figure 3 Nazi party vote share changes, September 1930 to July 1932, conditional on historical anti-Semitism



Source: Doerr et al. (2018).

Notes: This figure shows a density plot of the Sep 1930 to Jul 1932 change in NSDAP vote share, conditional on two indicators of historical anti-Semitism – votes for anti-Semitic parties (Panels a and b), and historical pogroms (Panels c and d). For Panels a and b, the sample is split into cities where an anti-Semitic party did not enter the election or received a zero vote share around 1900, vs. areas in which it received a non-zero vote share. For Panels c and d, the sample is split into cities that no pogrom in 1349 to 1929, and those that had a pogrom in 1349 and/or 1920. The increase in votes for the NDSAP is conditional on log city population and city share of Protestants.

A rich and growing literature has shown that financial crises have real economic effects on firms and on neighbourhoods (Ivashina and Scharfstein 2010; Almeida et al. 2012; Huber 2018). What has been missing is a clear link between financial shock and political catastrophe. Our study documents this link for one key historical episode – a *financial* shock increased support for a radical political agenda that successfully blamed a minority for the general population's misery.

Conclusions

The relationship between mass impoverishment and political mobilisation is often touted but rarely demonstrated. Recent research has shown this connection as a powerful factor in Hitler's rise to power in Germany. Under fiscal pressure, the Brüning administration oversaw austerity cutbacks on social provision that worsened the situation of low-income households and tax increases borne by the middle class. A banking collapse contributed to the ruin of industrial production and employment. The greater the exposure of local communities to these factors, the more rapidly support for National Socialism spread. Cultural factors amplified this mechanism – where a history of anti-Semitism coincided with adverse economic shocks, support for the Hitler movement grew by leaps and bounds.

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2 The German economy from peace to war: The Blitzkrieg economy revisited

Richard Overy
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Few issues of war economics in the Second World War have occasioned a more active and prolonged debate than the nature of Germany's war economy in the transition from peace to war in 1939 and the early years of conflict. It remains a live issue today, because the outcome either way says much about why Germany eventually lost. Today the German economy is a European powerhouse, so it is a significant issue to find out how such an economy performed under the stress of the last major war and before the long decades of German boom produced the current status.

A peace-like war economy?

For years the common assumption was that the Hitler regime deliberately restricted military mobilisation and output both before and after September 1939 by gambling on short wars and limited resources to fight them. This was the product of the United States Strategic Bombing Survey (1945), whose team of economists (including J. K. Galbraith) tried to explain why German war production in the first years of war was so low compared with Britain, or the first years of Soviet and American war production. The answer they came up with was a deliberate intention on the part of the Hitler regime to limit arms production and the military burden. Burton Klein, one of the economists recruited to the Survey, concluded that the Germans enjoyed a 'prosperous civilian economy' in the transition from peace to war (Klein 1959). Nicholas Kaldor, another economist involved in the assessment, believed that Germany 'made no serious attempt to exploit her war potential fully' (Kaldor 1946). Based on this material, the historian Alan Milward published in 1965 the first full study of the German war economy in which he described a Blitzkrieg economy, designed for short, sharp campaigns, that permitted the regime to keep the civilian economy going at the same time (Milward 1965).

This priority changed, so he argued, only when German forces got stuck in the Soviet Union in 1942, but the economy was not prepared for 'total war' until 1944.

The idea of a limited rearmament and war effort also underpinned the argument which emerged in the 1960s that Hitler feared to place too much strain on German working class living standards in case of a repeat of the social crisis that he believed ended Germany's war effort in 1918 (Mason 1964). Ideology was also supposed to play a part in the low level of female recruitment to the war effort, unlike the other warring powers. Here, too, the regime was thought to favour woman in the home, rather than woman at work, and that meant low levels of labour mobilisation. These two approaches to explaining the modest output of the early years of war were complementary. Politics and ideology combined to produce the so-called 'peacelike war economy'.

Hitler's dictatorship and war preparations

None of these arguments has stood the test of time. They rested in the main on a poor evaluation of the available statistical data, but also on a shallow interpretation of the nature of the dictatorship, which assumed that the Hitler regime was a fragile one, faced with incipient political and social crisis. This intelligence picture of Germany under Hitler took root in the West during the late 1930s and persisted into the war, and indeed justified the intensive bombing campaign on the assumption that brittle public support for war would crack under attack (Overy 1994: 208-12). In reality, the dictatorship was on much more solid foundations, while working-class support for the war effort, and capacity to withstand the bombing, were remarkable features of the German war effort.

The reality of German war preparations was entirely different. From 1936 onwards, with the introduction of the Second Four-Year Plan, the German economy was severely skewed towards war preparations at the expense of increased civilian consumption. By 1938-9 some 19% of national income was devoted to military spending, not counting the expensive economic preparations in building up German industry and machinery, and producing a cluster of new synthetic products, most important of which was oil. In 1914 only 3% of national income went to the military. By 1939, two-thirds of total industrial investment, in what was the second largest industrial economy in the world, was devoted to war-related projects. In May 1939, 28% of the manufacturing workforce was working on orders for the armed forces, a quite exceptional level of commitment in peacetime; in the overall workforce some 37.3% were women, a higher proportion than in Britain or the United States throughout the coming war (Overy 1994: 294, 305).

Rather than limit the war effort in 1940 and 1941, military expenditure rose from 17 billion marks in 1938/9 to 38 billion in 1939/40 and 56 billion in 1940/41. The effect

on consumers was the opposite of the conclusion formed by the Bombing Survey. By 1941 consumption per head had declined from an index figure of 100 in 1938 to 75 in 1942, while the comparable figure for Britain was 87% (Overy 1994: 278). The German people were restricted from 1939 onwards in what they could buy, while a rationing regime for food and household goods sustained what was called an 'existence minimum', but scarcely a 'prosperous civilian economy'. The German urban diet became a monotonous round of potatoes and bread with limited meat, and few fresh foods; for many German families buying clothes or shoes or household goods became a rare occurrence (Ganeva 2017).

The low level and slow growth of German war production

The inescapable fact, however, was the comparatively low level of German war production both before and after the outbreak of war. Aircraft production, which consumed 40% of allocated war economic resources, stagnated in 1940 and 1941; submarine production and tank production expanded, but from a very low initial base. In 1941 Germany still produced only 3,298 tanks, none of them heavy models. Adam Tooze has argued that the real problem facing the German war economy was a shortage of material resources, but this was simply not the case (Tooze 2005). Germany had more aluminium, steel, coal, and machine tools than Britain or, after the 1941 invasion, the Soviet Union, and more manpower. Nor was it a result of Hitler's intervention to preserve living standards. All the evidence shows that he wanted much higher levels of military output and a limit on consumption, but he was constantly frustrated by actual economic performance.

Rolf-Dieter Müller and Richard Overy have both argued that the explanation for the mismatch between the level of resources and military spending and actual weapons output can be found in the nature of the institutional structure for running the war economy, and in the failure of the military services to embrace or understand the virtues of mass production (Müller 2000; Overy 1994). Allied to this was a military culture in which priority was to be given to high quality weapons, and to constant factory modification to meet tactical demands from the front line. Tank production was hamstrung during this period because the army favoured specialist producers and high technical specifications. Quality, of course, matters in war, but against the Soviet Union and Britain combined, quantity was an unavoidable necessity.

Both Müller and Overy have been criticised by Tooze and the historian of German aircraft production, Lothar Budrass, for assuming that 'inefficiency' held back the German war economy. Both argue that resources for war production were built up extensively in

the late 1930s and on into 1940-41 without any sudden break in the middle of the war (Tooze 2005; Budrass et al. 2010). They argue that productivity gains were steady from 1939 onwards in war industry, in some cases quite dramatic gains, and that rising output after 1942 was not due to better organisation or the 'rationalisation drive' identified by Overy and others, but simply from the learning curve in war industry, which meant regular productivity gains as business leaders and workers became more familiar with their tasks. The argument that extensive investment and labour resources were devoted to war production in the late 1930s and early part of the war does not contradict the alleged 'inefficiency' thesis, but the productivity argument does.

What neither Tooze nor Budrass take into account is the actual state of war output. In almost all major classes of weapons, Britain outproduced Germany between 1939 and 1942, from a smaller economic base. The Soviet Union completely eclipsed German output, but again with only a fraction of the steel, aluminium, coal and skilled labour. Productivity gains there may have been, but poor planning, disorganised resource allocation and military interference cut across industry's efforts to produce more. It is evident that the mass production finally achieved in 1944 came from utilising resources more effectively, even under the rain of Allied bombs.

Conclusion

The 'Blitzkrieg economy' is still met with in current historical writing but it has turned out to be a myth, like military 'Blitzkrieg', a term the German armed forces did not use. Germany embarked on exceptional military preparations in the 1930s and converted the economy on a large scale to the early war effort, but in the end the economic performance did not match German's potential capacity for industrial output. That potential was realised after 1945, utilising much of the resource base available during the war (Abelshauser 1998) The current German economic success story has shown the obvious advantages of a market economy over the costs of waging wars of economic conquest.

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3 The Soviet economy and war preparations

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Germany's invasion of the Soviet Union on 22 June 1941, involving millions of troops and thousands of planes and tanks, achieved complete surprise. Within days, German forces penetrated deeply into Soviet territory. In the first months they killed or captured hundreds of thousands of Red Army troops and threatened Moscow and Leningrad. A smashing German victory looked assured (Weinberg 1994: 264-266).

The failure of the Soviet Union to collapse in 1941 or 1942, as France had done in 1940, was one of the war's big surprises (Harrison 2000). One factor in this was Soviet war plans and preparations, which were exceptionally comprehensive. They are detailed in *The Industrialisation of Soviet Russia*, which covers the years 1930 to 1939 and was recently completed by the publication of its final volume (Davies et al. 2018).

Future war

Russia entered the First World War a largely agrarian country under a political autocracy. Within three years, Russia was defeated by Germany's superior army and industry. The Russian government could not supply its army with the munitions to wage a modern war. Nor could it channel the declining food surpluses of the country's 20 million peasant farms to the soldiers and war workers (Dower and Markevich 2018). In a crisis, Communist insurgents seized power and pre-empted constitutional reforms.

During the 1920s Soviet Russia's new rulers thought long and hard about the next war and how to avoid a repetition of defeat and regime change. 'Future war', a report by the Red Army intelligence directorate in 1928 (Samuelson 2000: 22-28), predicted that the next conflict would be a war of equipment, requiring thousands of planes and tanks, for which neither the Red Army nor Soviet industry was ready. On that basis, Stalin and his supporters launched the Soviet economy on a path of military and economic modernisation.

Rearmament

The Soviet Union began to rearm at a time when there were no immediate war threats. Despite frequent diplomatic alarms, the Soviet Union did not face any clear and present dangers of war from 1920 (peace with Poland) to 1937 (Japan's encroachment to the border with China). Economic preparations for war, although broadly defensive in character, were not responsive to any particular threat or immediate crisis, but were forward-looking, long-term, and comprehensive. Following these principles, Soviet rearmament followed a course of gradual and sustained acceleration.

The overall volume of military-economic activity is notoriously difficult to measure in real terms. Across the decade of the 1930s, the numbers of Red Army soldiers in uniform and of planes, tanks, and guns produced by Soviet industry each increased by at least an order of magnitude (Davies and Harrison 1997: 373, 402-406). At the same time, the defence industry made a technological leap from artisan methods to mass production (Harrison 2000, Link 2020) while heavily armoured battle tanks replaced lightly protected vehicles and metallic monoplanes replaced wood-and-canvas biplanes. From 230 research, design, and production facilities specialised in defence activity in 1917, when the war effort of the Russian Empire was at its peak, the Soviet defence industry doubled in size over the next 11 years (to 1928), doubled again in seven years (to 1935), and doubled once more in five years (to 1940) (Davies et al. 2018: 333).

Western estimates suggest that the defence share of Soviet GNP rose from just over 1% in 1928 to 8% in 1937 and 17% in 1940 (Bergson 1961: 128). As of 1939, roughly half the capital investment budget (which was of comparable size to defence) was devoted to building defence and heavy industry facilities and railways and roads that were primarily for defence purposes. Much of this construction work was carried out under appalling conditions by the two million prisoners held in the forced labour camps of the Gulag. The Gulag also maintained R&D facilities for imprisoned specialists working in all branches of the defence industry (Davies et al. 2018: 278-294).

When the European war broke out in 1939, the Soviet Union produced more than one quarter of the world's military aircraft, making it the second largest producer of military aircraft in the world after Germany (Table 1). This is remarkable, given that in 1939 Germany was on a path that Hitler intended to lead to world conquest. After 1939, the Soviet aircraft industry quickly lost its leading position as Britain mobilised (see chapter six); eventually, both were eclipsed by the United States.

Table 1 Combat aircraft produced, 1939: the Great Powers (units and per cent)

	Units	% of total
Germany	8,295	29%
Soviet Union	7,480	26%
United Kingdom	3,731	13%
France (estimated)	3,564	12%
United States	2,141	7%
Japan (estimated)	2,100	7%
Italy	1,750	6%
Total	29,061	100%

Source: Davies et al (2018: 332).

A broader comparison of the Soviet Union's military production profile with Germany's (Table 2) shows that in 1939 the Soviet Union led Germany across a wide range of armaments and munitions, lagged in aircraft and naval shipbuilding by small margins, and was seriously behind only in automatic infantry weapons. That deficit would be quickly remedied after the disastrous 'winter war' of 1939/40 with Finland.

Table 2 War production, 1939: Soviet Union versus Germany (units and per cent)

	Germany	Soviet Union	Soviet Union, % of Germany
Rifles and carbines, thousand	1,352	1,497	111%
Automatic pistols, thousand	120	0	0%
Machine guns, all types	59,100	96,400	163%
Guns, all types and calibres	6,300	16,459	261%
Mortars	4,200	4,457	106%
Tanks and self-propelled guns	2,100	2,986	142%
Combat aircraft	8,295	7,480	90%
Warships, main types	30	28	93%

Source: Davies et al. (2018:332).

Other preparations

Soviet war preparations were not limited to industrial construction and war production. During the 1920s control of the peasantry in time of war became Stalin's top priority. The result was a campaign to suppress the private production and distribution of food and to collectivise agriculture. In the later 1930s, as war expectations crystallised, the state control of food was intensified by forcing the peasants to run down private food stocks and by raising taxes on privately owned livestock. Because work on the collective brought few rewards, minimum labour requirements were imposed on every collective farmer. This paralleled the increasing regimentation of industrial labour (Davies et al. 2018: 209-216, 257-266).

Collectivisation imposed political as well as economic control on the rural population. Stalin especially feared political disruption by foreign enemies acting together with discontented or embittered elements within the country. The actions of the Soviet regime had deprived many citizens of property and of civil rights since 1917. While millions were detained or resettled in the early 1930s, enough time had passed that many such 'former' people had been released back into society. There were also substantial national minorities that shared ethnic ties with potentially hostile neighbouring countries such as Germany, Poland, and China. In 1937, Stalin determined to finish with the problem they represented before war could break out by returning large numbers to detention or killing them.

In public, show trials held in the big cities in 1937 and 1938 purged potentially disloyal managers and leaders. The trials built a public narrative of national encirclement and betrayal by domestic enemies colluding with the foreign enemy. In secret, over a period of 16 months, 'mass' and 'national' operations swept up 1.3 million people; half were detained in labour camps and half were executed (Davies et al. 2018: 1-19).

Externally, the Soviet Union prepared for war by seeking allies. Accommodation with Britain and France proved elusive. The reasons are still debated (Davies et al. 2018: 300-304, Putin 2019). Deep mutual distrust was a surface factor. Underlying this was a clash of objectives. Britain and France aimed to uphold the borders created after the First World War, while Stalin and Molotov proved eager to revise the borders to the Soviet advantage.

The immediate outcome was a turn towards Germany and the Molotov-Ribbentrop Pact of August 1939. Largely following the Pact's secret protocols, the two countries then divided Poland, after which the Soviet Union expanded to the Baltic coast. At the same time, trade expanded between the Soviet Union and Germany. In the first year of the war, Germany's operations in the West ran in part on Soviet oil and grain. In return,

the Soviet Union received quantities of coal, steel, and naval technology (Davies et al. 2018: 304-310).

Evaluation

Soviet war preparations had important consequences. The rapid pre-war expansion of Soviet defence and heavy industries was of great advantage when war broke out. The underlying belief that the next war would be won by massed firepower and means of mobility was correct (see chapter five). The mastery of mass production of weapons would also greatly facilitate war mobilisation.

Soviet citizens paid a heavy price for industrialisation on this pattern. In the 1930s Soviet productivity fell, then recovered and rose above the level of the 1920s. All the additional output went into defence and construction. There was no return to the famine conditions of the early 1930s, but living standards were no higher in the late 1930s than in the previous decade (Davies et al. 2018: 118-126; 294-300).

Soviet rearmament was especially costly because preparations were not limited to contingency plans and reserve capacities for war mobilisation. Instead, a policy of forcing mass production of weapons in large numbers for immediate deployment pressed reserves into service as soon as they were created. From 1930 to 1940, Soviet industry supplied more than 25,000 combat aircraft. Because of rapid technological change, the Soviet armed forces entered the war with very large combat stocks of low value, being already obsolescent.

The Soviet innovation of collective farming also deserves a mixed evaluation. It served its purpose, giving the state wartime control of peasant food surpluses. This prevented any repetition of 1917. The price paid was a highly inefficient agricultural system and a disaffected rural population with enduring memories of expropriation, resettlement, and famine, and with little or no loyalty to Stalin or communism. It was a hard lesson for Soviet villagers to find that Hitler could be as bad or worse.

In the short term, the mass arrests and mass killings of 1937-1938 inflicted a major shock on Soviet state capacity for planning and coordination and on productivity in industry, transport, and construction (Davies et al. 2018: 19-22, 55-66, 157-168, 204-209). Having paid this price, Stalin hoped to have eliminated the potential waverers and traitors before war broke out. His cruel strategy was a miserable failure. In 1941 and 1942, millions of Soviet soldiers surrendered to the invaders and millions of civilians collaborated with the occupiers.

Despite such issues, in the Second World War, the Soviet Union was the only country to withstand a surprise attack and deep invasion. While the war claimed the lives of 26-27 million of its citizens (Harrison 2018), the state survived to declare victory. By 1945 the Soviet Union was a world power, and by 1949 a nuclear power.

By civilian standards of productivity and prosperity, the Soviet economy of the 1930s failed. Benchmarked against measures of national capability, such as military power, it looks more successful. The Soviet economy's capacity to support military power out of proportion to its level of development proved to be a distinctive and enduring feature.

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4 Lessons learned? British economic management and performance during the World Wars

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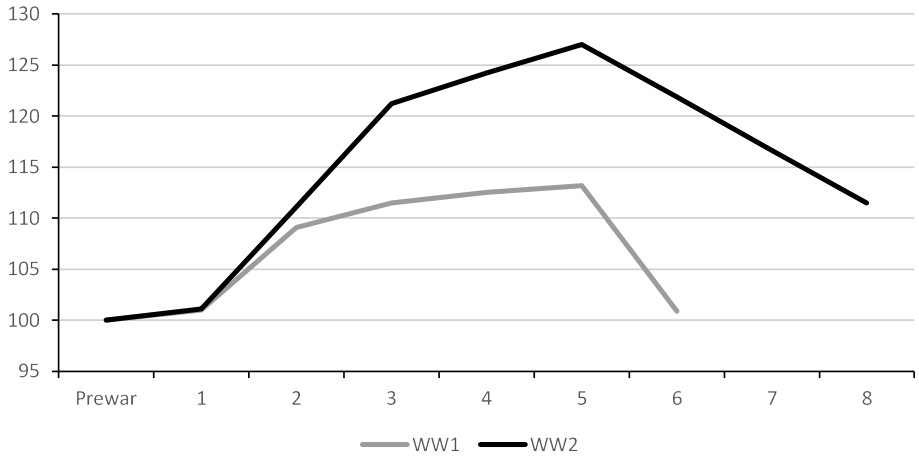
Although much has been written on Britain during the two World Wars, the economic history of these pivotal episodes remains neglected beyond the official histories commissioned shortly after each war, which tend to focus on administrative issues and lack a clear framework for understanding the key economic issues (Ministry of Munitions 1923, Hancock and Gowing 1949). This study, which draws on a paper by Broadberry and Howlett (2016), compares the two war economies, asking to what extent British economic management and performance improved in the Second World War as a result of lessons learned from the experience of the First World War, and considers the implications of those lessons for long run economic performance.

The scale of mobilisation

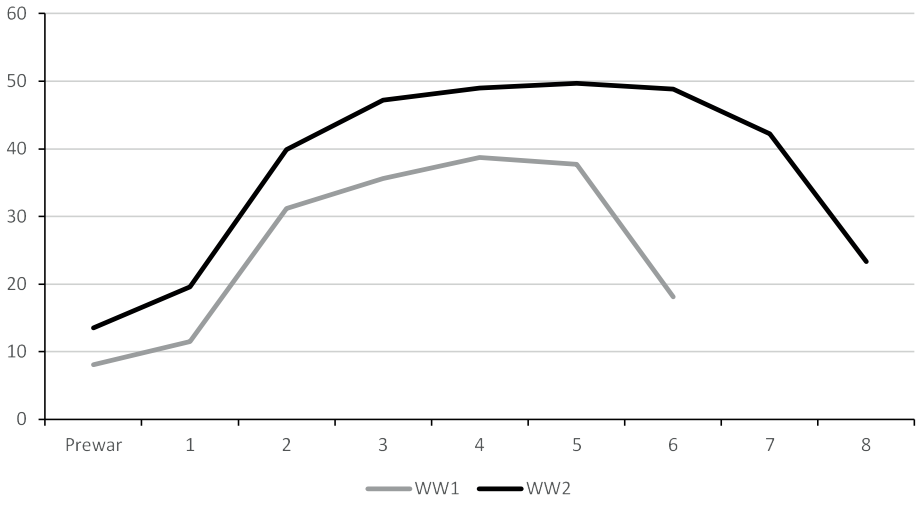
The first point to note about the scale of mobilisation is that the path of real GDP expansion was similar in both wars, peaking after five years, as can be seen in Figure 1. However, the real GDP peak in the Second World War, at 27% above the 1938 level, was double that of the First World War, at 13.2% above the 1913 level. War is waged by the state and therefore one simple measure of wartime mobilisation is the increase in state expenditure as a percentage of GDP, which is shown in Figure 2. The government share of GDP rose rapidly in both wars but the peak was around 10 percentage points higher in the Second World War. In both wars the expansion in government expenditure came primarily at the expense of consumption expenditure, but the bite of wartime austerity was much deeper in the Second World War. Whereas in the First World War the share of consumption expenditure fell from 77.2% in 1913 to a low of 60.2% in 1917, in the Second World War it fell from 78.8% in 1938 to a low of 51.9% in 1943.

Figure 1 Real GDP of the UK at constant factor cost (% of prewar year)



Sources and notes: Derived from Feinstein (1972: Table 6). Prewar year is 1913 for the First World War and 1938 for the Second World War.

Figure 2 Government expenditure as a share of GDP at constant market prices (%)



Sources and notes: Derived from Feinstein (1972: Table 5). Prewar year is 1913 for the First World War and 1938 for the Second World War.

The fact that the scale of mobilisation was substantially greater and achieved more smoothly during the Second World War is usually attributed to lessons learned during the First World War (Pollard 1992). In the earlier conflict, the government's initial aim to maintain 'business as usual' was only gradually chipped away as the war became

more protracted and extensive. In the Second World War, by contrast, the British state used the experience of the previous war to draft plans in the 1930s which could be implemented once fighting became inevitable. This greatly reduced the administrative friction and disruption caused by moving from a peacetime economy to a war economy. Many of the measures introduced in the first 18 months of the Second World War had already been adopted or were refinements of measures first adopted during the First World War. For example, by the time Britain declared war on Germany in September 1939, 50 million ration books were ready for issue (Zweiniger-Bargielowska 2000: 16-17).

Fiscal and financial management

The exceptional nature of the expansion in government expenditure in both wars, in turn required the state to engage in exceptional fund raising exercises. The British state financed the war effort in both wars partly through an increase in taxation, but also through borrowing and printing money.

State revenue increased dramatically in both wars, with a greater reliance on direct taxation. As well as a steady increase in the income tax rate, more workers became liable for tax as a result of inflation. In addition, an Excess Profits Duty was introduced in 1915, reaching 80% by the end of the First World War and 100% by 1940 in the form of the the Second World War Excess Profits Tax (Sabine 1970: 158-159; 168-169). Despite these fiscal changes, the demands of war-financing quickly overwhelmed revenue capacity, so that by 1914/15 tax revenue funded only 40% of expenditure and by 1940 only 35%. Hence the government had to turn to other sources of finance to cover the budget deficit.

Table 1 Sources of finance of central government deficit (£ million and %)

	1914/15 to 1918/19	1939 to 1945
Deficit, total (£m)	6,860	15,965
Of which (% of total):		
Domestic long-term debt	59.7	64.9
Domestic short-term debt	20.4	30.3
Money base	4.7	6.0
Other finance	15.2	-1.2

Source: The First World War: derived from Morgan (1952: 98, 107); The Second World War: derived from Central Statistical Office (1951: 202); Capie and Webber (1985: Table 1.1).

Long-term domestic borrowing financed almost 60% of the budget deficit during the First World War and almost 65% during the Second World War (Table 1). Short-term floating debt, principally in the form of Treasury Bills and Treasury Deposit Receipts, was another significant source of financing the deficit. In the First World War the major source of other finance was borrowing from abroad, particularly from the United States, and although this does not show up in Table 1, the United States was even more important to the war effort in the Second World War via Lend-Lease aid.

To a limited extent, the government also financed the deficit by allowing an inflationary expansion of the money base, more so in the First World War. Money supply (M3) doubled in both wars but inflation control was more successful in the Second World War. Goodhart (1986) sees the sharp increase in the money base (M0) during the first few months of the First World War as necessary to meet a run to cash by UK residents, but Capie and Wood (1994: 233-234) see the injection of liquidity as too large and too long-lasting, thus contributing to wartime inflation, which was substantially higher in the First World War. Whereas the retail price index and the GDP deflator approximately doubled between 1914 and 1918, they increased by only around 50% between 1939 and 1945.

Although there are some broad similarities in how the state raised revenue during the two world wars, there was also a significant difference in the ethos of fiscal policy in the two conflicts. In the Second World War, the state took an earlier and more explicit approach to managing the financial resources of the economy, mainly to better control inflation.

At least until 1917, British fiscal policy in the First World War was governed by the 'McKenna Rule', which saw the duty of fiscal policy as raising enough revenue to pay for normal peacetime expenditure plus the interest on war loans. In his article on 'How to Pay for the War', Keynes (1939) introduced the idea of an inflationary gap, arguing that to prevent the scale of inflation experienced during the First World War, the government needed to calculate national income, so as to assess the war potential of the economy, and then set taxes at the level needed to bring about the necessary transfers from the taxpayers to the government. The extra wartime taxes could be treated as forced savings or deferred pay to be repaid after the war, which had the additional advantage of building up potential purchasing power that could be released in the event of a post-war slump, as well as financing the war effort. To the extent that the government failed to achieve the required levels of taxation or forced savings, there would be an inflationary gap, and the excess of aggregate demand over aggregate supply would bid up prices.

Another tool in the state armoury for controlling demand was rationing. In the First World War, national level rationing was not introduced until 1918, although some

localised rationing had begun in November 1917, and eventually covered sugar, meat, butter, margarine, bacon, ham, and lard. In the Second World War, by contrast, rationing was used from the start and eventually far more extensively. By the spring of 1945, rationing covered about one half of consumer spending on goods at prewar values.

Planning versus the market

It has already been noted that during the First World War, the government was slow to appreciate the need for large-scale intervention and coordination when fighting a total war. But although early policy is sometimes characterised as 'business as usual', this was never really the case. From quite early on, the state was intervening in markets and the war was encroaching on normal economic practice. However, state intervention and management of the economy was relatively *ad hoc* in approach until 1917, and tended to be reactive rather than proactive (Lloyd 1924). The spread of government controls was initially slow because the material burden of the war was initially underestimated, with prewar plans envisaging a strategy based on naval blockade with a small army coupled with the financing of European allies. The rapid expansion of the armed forces therefore initially overwhelmed the capacity of the economy to equip them.

The most significant embodiment of the spread of government influence during the First World War was the creation of the Ministry of Munitions in June 1915, with a key role in the coordination of war production (Ministry of Munitions 1923). The Ministry was given wide powers and was not constrained by financial controls from the Treasury. Although the state began to displace the market, businessmen were co-opted in many areas, so it was not a case of the state displacing business. In this sense, there still was an element of 'business as usual'. The spread of controls was slow compared with the Second World War, with the introduction of conscription delayed until March 1916, and food rationing introduced only in 1918.

The move to a total war footing occurred much more quickly and decisively in the Second World War, building on extensive preparations made during the 1930s. In addition to macroeconomic measures to close the inflationary gap, the government used a barrage of microeconomic measures to ensure the demand for individual goods was brought into line with supply, including: overall central planning to set priorities; rationing to curtail consumer demand; production quotas and the concentration of production in large units in civilian industries; central manpower budgeting to allocate labour across sectors; and central allocation of scarce resources such as steel and capital (Wiles, 1952: 125-158).

The standard approach to the economic history of Britain during the two world wars has been to stress the limitations of reliance on market forces, the slowness of governments in the First World War to learn that lesson, and the benefits of the swift transition to a planned economy during the Second World War. Is it possible, however, that the lessons were learned too well and that belief in the efficacy of controls went too far? And could this be a factor in the relatively poor performance of the UK economy during the post-war period?

Few historians are likely to be persuaded that the achievements of the British war economy can be put down to the smooth operation of market forces during the war itself. But did policy-makers underestimate the positive effects of Britain's liberal political and economic inheritance compared to its main rivals, and therefore overestimate the contribution of government intervention and planning? Olson (1963: 73-116) has made this point strongly in discussing food policy. Before the First World War, free trade Britain depended on imported food, while protectionist Germany was self-sufficient in food, but Britain survived the German submarine blockade as market oriented farmers responded flexibly and expanded output, while Germany's peasant farmers withdrew from the market and contracted output. In a similar vein, Balderston (1989: 224) argues that London's role as the world's leading financial centre provided an efficient mechanism for financing the war effort.

A comparison between Britain and Germany brings into sharp relief Britain's advantage during the two world wars arising from the inheritance of a strong market economy, the financial clout of the City, a strong public administration and (for the time) a well-developed democratic accountability. It is important not to be mesmerised by Germany's rapid industrialisation from the mid-19th century on the basis of protectionism, state intervention and universal banks. Britain's steadier, more market-oriented development made for a more flexible economy, better able to withstand the strains of total war.

The generally positive evaluation of economic planning during the Second World War reinforced a disenchantment with reliance on market forces that had grown out of the mass unemployment of the Great Depression. Although the Labour Party, which formed a majority government for the first time in 1945, rejected a wholesale move to a planned economy in favour of a mixed economy with an emphasis on full employment through Keynesian demand management, there remained in government circles a strong distrust of market forces, which permeated economic policy. Perhaps the most extreme example of this was the persistence of food rationing long after the war ended, with restrictions on the sale and purchase of meat being lifted only in July 1954. A number of important industries were nationalised (including coal, steel, and the railways), while in other industries restrictions on competition, strengthened during the war, were allowed to

continue as a result of 'light touch' competition policy. Broadberry and Crafts (2003) argue that these policies were damaging for Britain's productivity performance during the post-war period, lasting until the change of regime beginning with the first Thatcher government.

Conclusions

The standard narrative of Britain during the Second World War emphasises the improvement in economic management and performance as a result of lessons learned from the experience of the First World War. Although the scale of mobilisation was very high during the Second World War, the state built on that experience to mobilise an even greater share of the nation's resources for the Second World War. In contrast to the slow spread of government controls during the First World War, plans were prepared during the 1930s and implemented quickly in 1939. Lessons were also learned in war finance, which was less inflationary during the Second World War.

However, it is also possible that in emphasising the slowness of the government to appreciate the need for large-scale intervention and co-ordination when fighting a total war, the standard narrative overlooks the fact that British planners enjoyed the inheritance of an unusually strong liberal market economy and political system. This raises the possibility that Britain may have learned the lessons of the war economy too well, with the state too ready to accept restrictions on the operation of market forces, with adverse effects on Britain's post-war productivity performance.

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Part 2: Conduct of the war

5 How the war was won

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Every aspect of the Second World War is discussed in a vast literature. Considering its diversity, explanations of why Germany lost the war are surprisingly predictable. It remains widely argued that the Nazis were beaten mostly by the Soviet Union's powerful Red Army (Hastings 2005: 508, Kennedy 2013: 183).

From June 1941 to May 1945, German 'power' was supposedly engaged and destroyed by the Russians. At some points, more than two-thirds of German infantry were engaged against the Red Army. The famous battles of the Eastern Front, such as Stalingrad and Kursk, supposedly caused the Germans' crippling losses. The upshot of this lopsided deployment was that most German soldiers died in the East. Fighting against the Americans and British, conversely, is often portrayed as a secondary concern (Roberts 2010: 573).

What's wrong with a focus on battles?

This battle-centric view, like much history of the Second World War, is old-fashioned. Historians of strategy have moved away from seeing battles as determinative. Nolan (2017) has argued that attrition losses are more important than battle losses in explaining outcomes.

The battle-centric analysis implies that infantry deployment is the best way to analyse effort. Yet, human-power was rarely the key factor in deciding combat in the Second World War. Equipment and specialised training mattered more. Possessing and operating the largest stores of modern weapons, not only tanks and artillery but also aircraft and naval vessels, determined the course of battles and the war.

If we reframe the discussion of the war to look not only at what equipment was made but also at how it was destroyed, it emerges that the war was decided far from the land battlefield (O'Brien 2015). The most striking sign of this is how little war production

went to the land war and how much went to the combined air-sea war. This was the case for all the powers except the USSR.

Germany

Normally, one thinks of the German Army (with the Waffen SS) as the dominant military arms of the Nazi state. This is a mistake. German ground forces received on average about one-third of German munitions output (O'Brien 2015, 19-33). Major ground weapons systems such as the famous Panzers were a small part, usually closer to 5% than 10%, of total output. Tanks were dwarfed by equipment for the Luftwaffe. Throughout the war, the building and arming of aircraft took up half of German munitions output or more. Beyond this, the supply of anti-aircraft artillery (flak) took up a growing percentage of German output – reaching over 10% in the last year of the war. Finally, the German Navy took a significant slice. Until Germany lost the war in the Atlantic in the summer of 1943, the German Navy often received more than 10% of munitions output (O'Brien 2015: 25).

Table 1 shows a snapshot of when German munitions output peaked (July 1944). It is striking how the air war dominated. Even with the Red Army and Anglo-American armies on their doorstep, production for the army remained a relatively small part of output.

Table 1 Germany, July 1944: Munitions production by type (% of total)

	%
Aircraft	48.3
Ammunition	24.0
Weapons	9.3
AFV (Panzers)	7.8
Naval Vessels	4.5
Motor Vehicles	2.4
Half Tracks	1.6
Powder	2.1

Source: USSBS (1946a: 145).

The German situation was replicated by the other advanced industrial economies. The US, UK, and Japan each spent more than Germany on the air-sea war, with at least 70% of munitions output devoted to air-sea weapons (O'Brien 2015: 33-66).

Japan

For Japan, an equipment-centric perspective suggests that that nation's strength in the war has been overlooked. Histories of the war may give the impression that the war in the Pacific was a sideshow (Beevor 2012). Actually, Japan was at least an economic equal of the USSR from 1942 until the second half of 1944, with a superior economic base and no economic support from its allies.

Table 2 Japan and USSR, 1942-1944: Production of raw materials

	1942	1943	1944
Steel ingot (million tons)			
Japan	8.0	8.8	6.5
USSR	8.1	8.5	10.9
Coal (million tons)			
Japan	118	117	107
USSR	75	93	121
Iron ore (million tons)			
Japan	7.7	7.5	6.1
USSR	9.7	9.3	11.7
Aluminium ingot (thousand tons)			
Japan		105	144
USSR		52	62

Note: USSBS (1946b: 112) for Japanese steel ingot production. For Soviet production see Ellis (1993: 274-276). Tons are metric.

The problem that Japan faced was one of priorities. The sea war required massive amounts of steel. Whereas the USSR used steel for tanks, the Japanese used an equivalent amount for naval vessels and merchant shipping. The difference was not one of economic strength but construction priority (O'Brien 2015: 59-65).

How Axis fighting power was destroyed

Given that air-sea weapons were so costly, what role did they play in beating the Axis? The answer shows why the air-sea war was so dominant. Instead of waiting to destroy Axis equipment on the traditional battlefield, Allied air-sea weaponry destroyed it en

masse before it could ever be used in action, determining the result of every 'battle' long before it was fought. This destruction of equipment is best understood in three phases.

First, there is pre-production destruction, which prevented weapons from being built. This was done most efficiently to both Germany and Japan by depriving them of the ability to move raw materials. By 1942, both Germany and Japan had assembled large, resource-rich empires that had the ability to significantly increase weapons output. Though production increased up to early 1944, this increase was far below what was planned. In the case of German aircraft, for instance, output in the second half of 1943 was 10% below expectations because of Anglo-American bombing (O'Brien 2000: 104). Japanese inability to import bauxite and steel in 1944, abundant in the Dutch East Indies and China, led to even greater underproduction. By the second half of 1944, attacks on the movement of goods throughout the Japanese and German economies meant that the amount of war equipment each could build was far below potential (Mierzejewski 2007: 106-113).

The second phase is direct production destruction – destroying the facilities to make weapons in Germany and Japan. This was the great hope of inter-war airpower enthusiasts for the precise targeting of individual munitions factories (Meilinger 1997: 1-114). During the war, there was an expectation that attacking specific industries such as German ball-bearing production would cripple weapons output. The truth was that these attacks were not as effective as hoped for, as strategic bombing was not accurate enough to completely wipe out facilities (until 1944). That being said, the losses from bombing were greater than those arising in land battles.

The surprise is that land battles destroyed little equipment. German armour losses during the Battle of Kursk amounted to approximately 0.2% of annual output (and moreover was made up of mostly obsolete equipment) (O'Brien 2015: 310-311).

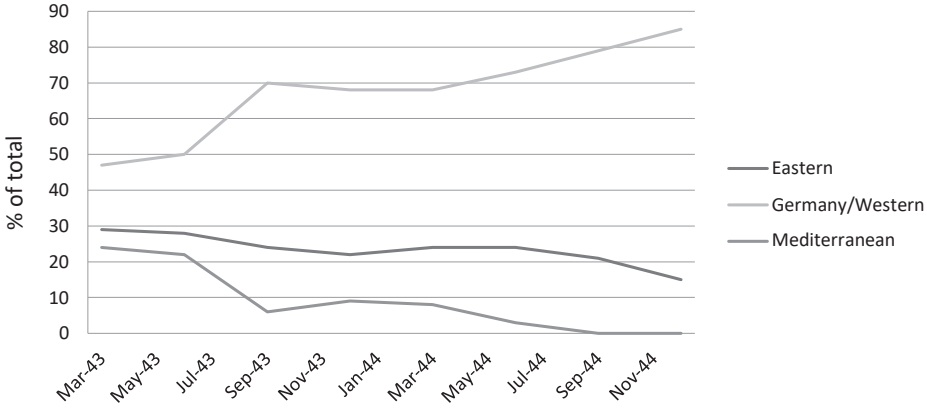
Finally, there were deployment losses. Getting weapons from the factory to the front was no easy feat. It normally required movement over hundreds or thousands of miles using shipping or rail lines that were vulnerable to attack. Aircraft had to be flown, often by inexperienced pilots, over the open ocean in or through difficult weather conditions.

By 1943, as Anglo-American aircraft deployment losses decreased, Axis losses skyrocketed. This was because of the stresses placed on their systems by Allied air-sea power. German and Japanese pilot training was cut back as both ran out of fuel; hastily constructed new factories were producing more aircraft with undiscovered flaws; maintenance facilities at the front were poorly supplied. This meant that the Axis were losing as many aircraft deploying to the front as in direct combat. At times, Japan's losses outside combat were up to twice those lost fighting (O'Brien 2015: 405-7).

The air-sea war

The air-sea war determined the course of the land war. This was done in many ways, most obviously by denuding Axis ground forces of air support. In the summer of 1943, for instance, Germany had to deploy its fighter aircraft to three fronts—to the East, to the Mediterranean, and to air defence of the homeland. As homeland defence dominated, the battlefields were stripped of German fighters. The Army took second priority for the most valuable weaponry Germany was producing. It is no surprise that the German Army experienced catastrophic defeats from then on.

Figure 1 Germany, May 1943-November 1944: Fighter deployment (all types) by front (% of total)



Source: UK National Archives, London, Air Ministry Papers, 40/1207, 'German Air Force First Line Strength during the European War, 1939-1945'.

Overall, by 1944 the Axis could deploy only a small fraction of their potential military capacity into combat – it was being destroyed in a multi-layered campaign long before it could be used against their enemies. This was the true battlefield of the Second World War, a massive air-sea super battlefield that stretched for thousands of miles not only of traditional front but of depth and height.

In the case of the European theatre, it covered an area from the East Coast of the USA to the aircraft factories in Eastern Germany, from the convoys moving goods around the top of Northern Norway to Murmansk to the massive airfields of North Africa and southern Italy. If it did not kill as many Germans directly as the Red Army, it was what allowed them to be killed – while destroying far more in the ways of valuable equipment.

Looking at the war this way allows us to reframe our understanding of what a battle was in the Second World War. Instead of battles being fixed on well-known pieces of earth, air-sea weaponry was constantly in action in battlefields thousands of miles long and many miles in depth – what should be called the Air-Sea Super Battlefield. Victory in this super-battlefield led to victory in the war.

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6 Never alone, and always strong: The British war economy in 1940 and after

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British economic historians have long made important contributions to the history of the second world war in Europe and globally, starting with the crucial work of Milward (1977). Much work has also been done on the economic history of the British war effort. For more methodologically national historians (Hobsbawm 1968, Calder 1969) it was a unique moment in which the economy prospered. The war has also played a central story in accounts focused on decline: supposedly poor rearmament and war production were seen as symptoms of a weak industrial base (Kennedy 1976, Barnett 1985). For more recent economic historians, it is as an interesting case of national macro-economic management (Broadberry and Howlett 1998, Howlett 2004). Over the last two decades, these national perspectives have been contested. An early and important challenge came from Milward (1984) who stressed the ways in which the war changed the UK's international economic position. To understand the British war effort, it is imperative to note that it depended on the high relative income per head of the UK, and its continued integration into a world (war) economy. It needs to be contrasted to the much more national/European German case (Edgerton 2005, 2011, Tooze 2006).

The intensity of mobilisation, 1940

In 1940 British arms production was not low, despite the image that a retreating British army at Dunkirk all too often suggests. In 1939 military expenditure was 15% of net national product (NNP), and 44% in 1940, which was only 10-12% points below wartime peak (Peden 2007: 194, Howlett 2004: 2). Through 1939, 1940, and 1941, output surged, with most of the late war output achieved by 1942 (Harrison 1990). Aircraft production was the highest in the world, and so was warship-building (Peden 2007, Edgerton 2011). Even tank production for its smaller army was only slightly behind Germany's (Edgerton 2011: 64). What needs to be explained is not a failure

to rearm, but rather how such high levels of rearmament were achieved in 1940. The answer is clear: it resulted from the development of new *specialised* arms factories planned long before the outbreak of war (Edgerton 2005). The defeat in 1940 was not due to British industrial weakness, but rather, it was the loss of the powerful French army on the field of battle. In 1940 neither the UK, nor the British Empire, was either alone or weak, as post-war historians would later claim.

The British elite, and British economists, were confident of victory in 1939 (Edgerton 2011:11-14). That is why, with France, they had declared war long before they were attacked. Even after June 1940, British economists, for example Geoffrey Crowther of *The Economist*, were confident of eventual victory (Edgerton 2011: 71). This now seems extraordinary because many historians, including economic historians, have implied Germany obviously had the upper hand, in being a larger and more national economy. Yet at the time a very different, and richer, understanding was in play. British economists like Crowther understood that it was not only aggregate output which mattered, but also the capacity to turn it over to war production. That depended on output per capita, in that the richer economy had more room to make weapons after basic subsistence was taken care of. Crowther estimated UK, plus dominions, national income at 40 arbitrary units, compared to the whole of Nazi Europe at 55, implying significantly higher income per head in the UK-dominions case. He noted also that British car production was greater than that of Germany and France combined (Edgerton 2011: 71).

The crucial role of overseas supply

The second, closely connected point, was that British economists and planners saw overseas supply as a strength not a weakness. The UK was quite exceptional in its reliance on overseas supply, not only for food, but also for many raw materials, and remained so throughout the war. It was a strength because the UK could get fuel, oil, petrol, aviation spirit and lubricants, without having to produce it domestically from coal or imported crude. Similarly, it could acquire food by ship, allowing British workers to go into the forces or the arms industry, rather than having large numbers toiling on the land, as was the case for Germany. The UK benefitted from being integrated into a global economy, while Germany, which conquered Europe, was forced to rely on European resources which it exploited ruthlessly, but they would never yield anything like as much as was available to the UK and its allies (Tooze 2006, Edgerton 2011).

The UK's trade, and potential for mobilisation, was seriously threatened in 1940. The German conquest of north western Europe, and the closing of the Mediterranean with

the entry of Italy into the war, could have been devastating. For, contrary to imperialist myth, the UK imported a lot of food and raw materials from Europe and North Africa (bacon, eggs, fruit, iron ore, paper-making materials, etc…). So successfully was this coped with however, that it hardly figures in the histories. Supplies came instead from further away. North America suddenly became a key source of supply, adding to a continuing supply from the southern hemisphere, including the imperial territories there. Although it meant more ships were needed, as the length of hauls increased, many did become available as major parts of the Danish, Norwegian, Dutch and Greek merchant marines came over to the UK. Another response to constrained shipping was to substitute bulky and heavy imports with more compact ones. Thus, imports of steel and finished munitions replaced iron ore imports, and meat and cheese imports, at higher than prewar levels, helped replace animal feed imports. The British nation was ringed by hostile submarines, which took a significant toll, but it is a serious exaggeration to claim that the UK was blockaded or besieged from 1940. If the quantity of material imported fell, though not always as much as sometimes suggested, imports by real value, while falling from 1940, were in 1943 and 1944 above prewar levels, such that on average wartime imports were higher in real value than in 1938 (Edgerton 2011: 159-62).

At first, imports all had to be paid for. There had indeed been an export drive from early 1940. However, the mid-1940 emergency led to a quite deliberate running down of reserves in the expectation that the US would help in the future. And a still neutral US did. The Lend-Lease act of March 1941 had a profound immediate effect, even though free supplies would only flow significantly later. It allowed the British government to cut back on exports, starting a 'concentration of production' in the exporting industries to release labour and buildings for the war effort. The high mobilisation of the UK was thus the result of a joint decision, which was only made possible by US, and other overseas support, on a massive scale, not a newly national effort. From 1942, Lend-lease munitions, food and raw materials, arrived on such a scale as to add more than 15% on top of the output of the UK economy in 1944.

The US was not the only supplier. Goods from the rest of the world, Canada excepted, came into the UK as British purchases. However, there was a very important twist – much of this was paid for with sterling, which it was understood would remain in the UK until the end of the war, in effect a loan, rather than be sent out as exports. These were the so-called sterling balances. In fact, Argentina, Australia and other suppliers, had little choice – the UK was by far their largest market, and the alternative European market was cut off. The enormous buying and naval power of the UK paid huge hidden dividends.

Although it has come to be believed that the UK made huge strides in feeding itself during the war, it still relied significantly on food imports, much more so than Germany. Germany had much higher levels of female employment, not least because of the needs of agriculture. The post-war claim from Calder (1969), that the UK was much more effective than Germany in mobilising women was not correct – the key point was that the UK had a higher proportion of women yet to be mobilised at the beginning of the war, because so few were tied to the land.

Surprisingly for a smaller economy, supplying smaller armed forces, the UK outproduced Germany in total weight of aircraft throughout the war, and in tonnage of new warships. Astonishingly, it also outproduced Germany's Europe in tanks in 1941 and 1942 (Edgerton 2011: 220). As a result, the highly mobilised UK had overwhelmingly more equipment per serviceman and woman than did the German forces (Harrison 1988: 175).

Furthermore, British war production needs to be understood as a global, not national process (Edgerton 2011, Geyer and Tooze 2015). In 1943, with US tanks arriving, the British army had more than twice the number of tanks the whole German *Heer* did, even though it was much smaller and less engaged in combat activities (Edgerton 2011: 220). National rifle production would never have been enough to supply the British Army, let alone the wider imperial armies, not least the huge Indian Army. Standard British rifles were produced in Canada, Australia, India, and the USA. These were not unique cases. Even in arms the UK was not self-sufficient in the way in which the European Axis powers collectively had to be.

Conclusion

The high mobilisation of the UK was put down by nationally focused historians to an inward turn of the British economy, the genius of the British political system and experts, and the mobilisation of women. Indeed, it came to be believed that in 1940-41 the British people felt themselves to be alone, and that they responded by organising to fight a people's war. The reality was that the UK mobilised a great deal, because it was rich, because it could import vast quantities while exporting very little: it depended on strangers, if not necessarily their kindness, as never before.

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7 The Second World War in America: Spending, deficits, multipliers, and sacrifice

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During the Second World War, the US was the most likely country to have experienced an economic stimulus from increases in spending because so little of the war was fought on American soil. For decades people claimed that the Second World War was a fiscal stimulus that pulled America out of the Great Depression.

The official facts seem to fit the story. Defence spending rose from 1.4% of GDP in 1940 to over 37% in 1945 and the federal deficit rose from 3% of GDP in 1939 to 27.5% in 1943. Meanwhile, civilian unemployment rates fell from 9.5% in 1940 to below 2% from 1943 through 1945. Real GDP per person reached a wartime peak that was 67% higher than the 1940 level.[1]

Studies of the effect of war spending, however, tend to find relatively small multipliers for economic activity. Barro (1981) estimated that the multiplier for the Second World War spending for the nation was around 0.6. For comparison, a multiplier of 1 means that a dollar of the Second World War spending raised income by that dollar; a multiplier of 1.5 implies a rise of income of the war dollar plus 50 cents extra in spillover benefits. Barro's multiplier of 0.6 suggests that the war spending crowded out about 40 cents of private economic activity for every federal government dollar spent.

Gordon and Krenn (2010) found higher multiplier estimates for military spending prior to US entry into the war. The federal government ramped up defence spending from 1.2% of GDP in 1938 to 1.7 in 1940, and to 5.1% in 1941. From the start of 1939 through June 1942, they estimated a multiplier of 1.8 because the economy was still suffering from high unemployment and unused capacity. When US manufacturing hit capacity in the latter half of 1941, the multiplier fell to 0.88. Barro's multiplier of 0.6

1 Government fiscal data, unemployment, and GDP throughout are from Carter et al. (2006: 2-83, 3-21, 3-24 to 3-26, 5-103 to 5-105, and 5-109).

suggests that the multiplier fell still more as war production replaced more and more of production for civilian goods.

More recent studies focus on the effects of the Second World War spending at the county and state level. Brunet (2017) found a state-level multiplier of only 0.25 during the war and suggested that the estimate for the national economy is only 0.3. Cullen and Fishback (2013) examined how military spending inflows into counties influenced the change in peace-time economic activity between 1939 (before the war) and the late 1940s and 1950s (after the war).

The primary effect was a population increase with small effects on economic activity per person. The finding was the same when Fishback and Jaworski (2016) examined even longer-term effects on the 1960s through 2010. Jaworski (2015) tested to see if the surge in war spending in the South spurred a long-run rise in southern manufacturing and found only a small impact. In all of these cases, the authors suggest that once the economy reached capacity, the war spending crowded out normal economic activity.

The crowding out of normal activity became more obvious after the war ended. Keynesians had predicted that the reduction in government production and deficits would lower income, which in turn would lower private consumption and investment. Instead, consumption and investment rose sharply in the absence of war spending (Higgs 1999). In addition to the crowding-out problems, there were substantial transition costs of converting factors to war-specific production at the start and then reconversion to peace-time production after the war ended.

The estimates of multipliers during the war are unlikely to be applicable to the US market economy during peacetime because the structure of the economy was drastically different. The US war economy was a quasi-command economy in which the government forced 10% of the workforce to join the military at compensation levels well below normal wages. The military had the first claim on all resources, as over 36% of estimated GDP was devoted to the production of war goods that would be destroyed, left behind, or mothballed. Production halted on automobiles, civilian housing, and most consumer durables. The military also had first claim on the materials for clothing, food, and other factors. This led to rationing of meat, gasoline, fuel oil, kerosene, nylon, silk, shoes, sugar, coffee, processed foods, cheese, and milk.

Make no mistake. The war-time production that made the US economy 'the arsenal of democracy' was a tremendous accomplishment. In a very short time span, the US economy produced 17 million rifles and pistols, over 80,000 tanks, 41 billion rounds of

ammunition, 4 million artillery shells, 75,000 vessels, nearly 300,000 planes, and many more items and services for the war.[2]

But were Americans better off during the war than they had been before the US entered the war? Higgs (1992, 2006) provides ample evidence that they were not. For most Americans, the Second World War experience might better be described as a sacrifice in which they gave up their normal consumption, worked longer and harder, and a significant share gave up lives and limbs to join their Allies in defeating Germany, Italy, and Japan.

Consumption per capita measured with official prices shows no change in private consumption between 1941 and 1944 but the estimate does not account for the declines in quality of goods, the extra costs of obtaining rationed goods, and the complete absence of other goods. Once the consumption figures are adjusted to develop better estimates of the true prices, the amount consumed per person was lower throughout the war than it was in 1940 when the economy was still climbing out of the Great Depression.

Fighting the war and building munitions required people. In the last year of the war, 18% of the combined civilian and military labour force were in the military and another 22% were producing munitions. The men and women serving in the armed forces were typically paid, in money and in-kind, the equivalent of about two-thirds of the earnings of an unskilled worker at home. Their activities were determined by orders of superiors 24 hours per day and many were sent in harm's way. Over 400,000 died and another 670,000 were wounded. Those who survived slogged through horrific conditions and experienced events that scarred them for life, psychologically. For each death or severe casualty, there were likely several family members and close friends who mourned their loss of life or limb. Families were separated for long periods and their time together was overlaid by the dread of the next separation.

Workers on the home front worked more intensively. In manufacturing, weekly hours rose from 38 in 1940 to 45 in 1944. Night shifts became more common and workplace injury rates rose. War work disrupted many long-term plans by drawing teenagers out of school, women from their homes, and the elderly out of retirement. Pay rose but was restricted by wage ceilings, and many had to migrate to new cities to take advantage of the new opportunities.

2 Field (2008) finds that productivity grew less during the war than before or after. There were positive spill-overs from war research, like radar and microwaves, but many military production processes were too costly to be transferred to market production.

To pay for the war, the federal government sharply increased tax rates. The average tax rate for top incomes rose to 90%. Further, the number of households paying income taxes rose six-fold. Even families in poverty had begun paying income taxes.[3] Even though federal tax revenues rose to 20% of GDP in 1945, war borrowing led the national debt to more than double to 105% of GDP. In addition, earnings were 'taxed' by inflation that eroded purchasing power by 5% per year using official prices and 9% per year using alternative estimates.

Despite the sacrifices, many remember the war as prosperous relative to the Depression because everybody had a job and developed a sense of shared sacrifice to defeat the Axis. Some individuals did fare better. Blacks migrated north and west to better jobs. Industrial demand for women's services rose during the war; despite a post-war fall, it remained higher than in 1941 (Shatnawi and Fishback 2018). With little to buy, people accumulated wealth through savings or bought existing housing, which fuelled the post-war boom delayed by the war.

In sum, the Second World War involved extensive sacrifices by Americans. Yet, these pale in comparison to the sacrifices in the rest of the world where 60 to 70 million died and refugees fled as factories, farms, and homes were decimated. The US would have been much better off economically had it never entered the war. The world economy would have been vastly better off had the war never started.

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3 A family of four started paying taxes at $600, well below a $993 estimate of the poverty line (Carter et al. 2006: 2-663).

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8 Economic warfare: Insights from Mançur Olson

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Mançur Olson (1932–1998) is best known for contributions to the political economy of collective action (Olson 1965) and of comparative economic development (Olson 1982, 2000). In earlier work, Olson also provided novel insights into the economic adaptation of countries to international conflict.

When one country imposed trade sanctions on another, blockaded its food supply, or bombed its war industries, why did the results so often disappoint or surprise? This question puzzled and frustrated civilian and military leaders on both sides in two world wars. Olson proposed that the answer lay in the elementary economic concept of substitution.

Bombing Germany

The possibility of economic warfare arose when a country's economy was fully employed in the supply of war. The strategy of economic warfare was to weaken an adversary's fighting power by attacking it, not directly, but through its supply chain. The tactics of economic warfare then aimed to block or destroy supplies of the commodities thought to be essential to the enemy's war production or its war economy more generally. It was a tactical success if ships were sunk or factories were destroyed.

But strategic success was achieved only if the enemy's fighting power was weakened as a result. Given tactical success, would strategic success follow? Olson (1962) argued that the link from tactics to strategy would generally be undermined by the adversary's adaptation. The key to this response, he suggested, was substitution.

Allied economic analysis suggested that ball and roller bearings were 'essential' to the supply chain of German munitions (Bollard 2019). From August to October 1943, the US Army Air Forces systemically attacked and largely destroyed the small number of factories around *Schweinfurt* that provided around half of Germany's ball-bearing

capacity. While the cost in aircraft and crew was heavy, the observed effect on German war production was near zero (USSBS 1946: 4-5).

Olson noted several reasons. A high proportion of Germany's existing supply of ball-bearings was used unnecessarily, where plain bearings would also do. Plain bearings were easily substituted when the supply of ball-bearings failed so that the much smaller range of truly essential uses could still be met. In addition, to assure the essential uses, capital and labour were quickly diverted from other employments to rebuild the essential capacity in dispersed, less vulnerable locations. Thus, the German economy under attack was re-optimised for war by sliding along its production frontier, although at a cost to other less-important objectives.

This led Olson to be critical of model-based approaches to target selection (such as Wassily Leontief's input-output framework) that assumed fixed coefficients in production and consumption. Such models implied that to deprive an economy of a single 'essential' commodity, whether ball-bearings, oil, or molybdenum, would be a crippling blow. But this followed entirely from ruling out substitution, which turned out to be crucial to the outcome.

Starving Britain

In *The Economics of the Wartime Shortage*, Olson (1963) generalised his idea. He asked how Great Britain, of all nations most dependent on international trade, survived three major conflicts – the Napoleonic War and two World Wars – without famine. Olson noted that food was widely thought of as an 'essential' good and that, in all countries, food security loomed large in thinking about war preparations. This was the thinking of German leaders in two world wars when they applied submarine warfare to the blockade of the British Isles, aiming to cut the UK economy off from its main sources of food.

Olson rejected the idea that, in an integrated market economy, any one commodity, even food, was more essential than any other. At the margin, where choices must be made, the strategic value of a dollar's worth of food would always be about the same as a dollar's worth of anything else. In a rich society, food would have many uses, some essential and some inessential or luxurious. 'It is not the *type of good*', Olson wrote (1963: 9), 'but the *type of use* that distinguishes a necessity from a luxury' (my emphasis).

Before the Second World War, Britain imported more than three-quarters of wheat and flour, oils and fats, butter, cheese, and sugar (Hammond 1951: 394).

The Battle of the Atlantic was hard fought and very costly to both sides. By 1942, as Table 1 shows, food imports were running at just half the rate of the first nine months (October 1939 to June 1940). The loss of imports was only partly mitigated by a substantial increase in home production. Yet, after a dip at the end of 1939, British food stocks never fell below the pre-war level.

Table 1 British food supplies and consumption in the Second World War

	Pre-war	1939	1940	1941	1942	1943	1944
Imports under Ministry of Food (million tons and quarterly rate)	...	5.5	3.8	3.7	2.7	3.0	2.8
Home production:							
– Wheat (million tons)	1.7	1.6	1.6	2.0	2.6	3.4	3.1
– Potatoes (million tons)	4.9	5.2	6.4	8.0	9.4	9.8	9.1
– Cattle stock (million head and mid-year)	...	8.9	9.1	8.9	9.1	9.3	9.5
Food stocks (million tons and end-December	10.5	7.5	10.6	13.4	13.7	15.8	15.0
Energy consumed (thousand calories per person, average)	3.0	...	2.8	2.8	2.9	2.8	...

Sources: Food imports and stocks are from Hancock and Gowing (1949: 206-207, 357-358); home production and energy consumed from Hammond (1951: 387, 393).

Notes: The figure for food imports under 1939 covers October 1939 to June 1940, and that for 1940 covers July to December 1940. The figures for pre-war home production are averaged over 1936-1938. The figure for pre-war food stocks is from the end of August 1939.

Most importantly, Table 1 shows the calories consumed per person remained essentially constant throughout the war, while their distribution was probably somewhat equalised by rationing. Rationing covered 'luxury' foods, but bread and potatoes were the most important sources of calories. These were never rationed, which also speaks to the adequacy of the food supply (Hammond 1951: 388). As for health, in 1942, deaths among children and adult civilians fell below the rates of 1939 and continued along the pre-war downward trend (Titmuss 1950: 521, 524).

Thus, Britain survived blockade despite initially relying on foreign sources for nearly two-thirds of calories for human consumption. Other countries that entered the war more nearly or entirely self-sufficient struggled and sometimes failed to feed their populations. They failed because they were poorer and so had fewer inessential uses of food at the outset or because their economies were insufficiently integrated so that efficient substitutions did not take place – or both.

Implications

The implications of Olson's thinking were at the time, and remain today, contrary to the thinking of nearly all government leaders and advisers in every country, including Britain. For two centuries, the threat of war has prompted calls for a larger agriculture (or manufacturing industry), more food and oil security, and larger stocks of 'essential' goods. Any suggestion that the pursuit of self-sufficiency in such commodities is unnecessary, or even harmful, appears to lie well beyond the bounds of 'acceptable' discourse. Yet historical investigation shows that such efforts were often, if not always, misdirected.

It is tempting to swing the other way and conclude that economic warfare was always pointless or had no effect on the outcome of the war. Olson (1962: 313) took pains to reject this conclusion. He emphasised that supply-chain disruption was ineffective mainly when the economy was wealthy (so any commodity had many inessential uses) and when the commodity concerned was only partly interrupted (so enough remained for essential uses). He maintained that substitution had its limits.

As an example of when those limits were breached, he gave the German synthetic oil industry in 1944–45. Germany had no natural oil reserves and the pre-war creation of a synthetic oil industry was itself a substitute for a commodity in short supply. Access to Romania's oilfields was lost in August 1944, making Germany entirely dependent on domestic sources. Repeated bombing of the oil plants in the summer of 1944 permanently reduced supply below consumption. By the time of the Ardennes

offensive of December 1944, German plans relied on capturing Allied fuel stocks for their success (USSBS 1946: 8-9).

Extensions

Four extensions are suggested. One is to the uses of economic assistance from one ally to another in wartime. During the decisive years of the war, the US economy, being twice the size of the combined economies of the UK and USSR, showered $50 billion of military-economic aid on Britain and the Soviet Union through the Lend-Lease programme. The framing purpose of Lend-Lease was 'further to promote the defense of the US' – and nothing else. But that is not necessarily how the aid was used.

Inter-ally aid turned out to be the converse of economic warfare. Just as the architects of the Combined Bomber Offensive did not predict and could not control the substitutions that the Germany economy made to adapt to destruction from the air, so too the US Lend-Lease administration did not predict and could not control the Soviet economy's adaptation to the inflow of Allied munitions and war goods.

These resources were provided strictly to support Soviet fighting power. Because the external resources were at least partial substitutes for home resources; however, the Soviet authorities were able to respond by diverting those home resources to consumption and investment (Harrison 1996: 139-146). The re-optimisation described here was also an element in Olson's later work (Olson and Zeckhauser 1966) on the free-riding problem in NATO.

Another extension is to the sources of national feeling in wartime. The effect of economic warfare on the enemy's fighting power is indirect; it works via the economy. It follows that economic warfare always does 'collateral' damage to people who are civilians, whether or not they are part of the enemy's supply chain. The result is often to stiffen the enemy's resistance. The collateral damage inflicted on British cities by German bombers stiffened British resistance; the same done to German cities stiffened German resistance. The collateral damage of Germany's submarine war on Atlantic shipping in the First World War brought America into the war against Germany.

More generally, war is polarising and economic warfare extends that polarisation to the civilian population. This then facilitates what Olson saw as the enemy's adaptation to economic warfare: economic warfare makes angry civilians more willing to tighten belts and make do with substitutes that would be unacceptable in peacetime. This does not make economic sanctions pointless, but it is a predictable consequence that should be reckoned with beforehand.

A third extension addresses the question: can economic sanctions be a substitute for battle? International relations since 1945 have provided many cases of economic sanctions aimed at forcing states to change their behaviour without bloodshed, most of them apparently unsuccessful (Jones 2015). Examples range from the Warsaw Pact countries in the Cold War to China, Cuba, North Korea, Southern Rhodesia, South Africa, Myanmar, Iraq, Iran, and Russia. In a few cases, sanctions or the threat of them have had completely unexpected side-effects: in 1941, US oil sanctions precipitated Japan's attack on Pearl Harbor, while the fear of blockade was a factor in Hitler's plan to seize the farmlands and oilfields of the Soviet Union. These examples suggest that economic sanctions may not ultimately save soldiers' lives. They may achieve their goals only when backed up by the credible threat or use of superior fighting power.

Finally, Olson's idea may be useful in illustrating the importance of economic analysis. When you teach the principles of consumer choice, consider whether your students may find the life-or-death consequences of substitution in a besieged economy to be a more impressive motivation than doughnuts versus pizza.

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9 Supplier networks as a key to wartime production in Japan

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Japan entered the Second World War on 8 December 1941 (Japan time), when its navy and army attacked Pearl Harbor and Kata Bharu in the Malay Peninsula, thus starting the Pacific War. By that time, Japan had already been at full-scale war with China for more than four years. The war with the Allied nations, including the US and the UK, forced Japan to further mobilise resources for the war.

The Japanese government tried to cope with this challenge by strengthening economic controls and reorganising the economic system. One of its top priorities was to increase the production of aircraft, which had been recognised as a critical weapon since the attack on Pearl Harbor and the naval battle off Malaya.

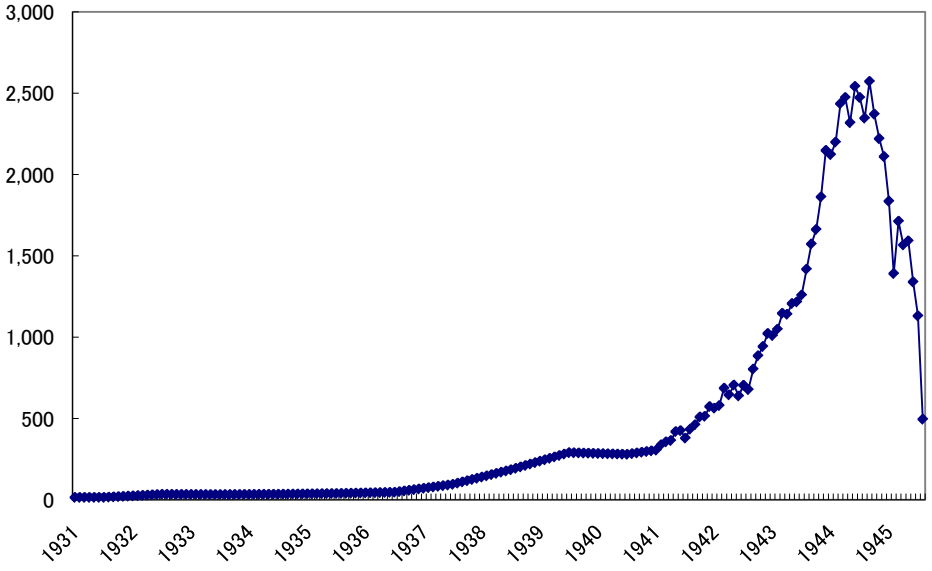
The task of increasing aircraft production was achieved fairly well. The Japanese aircraft industry, which operated at a very small scale before the Second World War, became a huge industry, employing 1.5 million workers by the end of the war. Monthly airframe production, which was 306 in January 1939, increased to 2,541 in May 1944 (Figure 1). Indeed, the Japanese war economy experienced an 'armament miracle' or a 'production miracle' during the Second World War, as did Germany and the US.

With respect to the US, Rockoff (1998) stressed the contribution of multiple factors, including a return to work of the unemployed, an increase in average per-worker working hours, and a geographic shift of workers, to the increase of output, based on the macroeconomic data.

With respect to Germany, Budrass et al. (2010) demonstrated that the increase in aircraft production could be attributed to two main factors, i.e. learning-by-doing and outsourcing, based on micro-data from the audit reports of major aircraft producers.

I contributed to this strand of literature by analysing how the rapid increase in aircraft production was achieved in wartime Japan (Okazaki 2011). The focus is the role of the supplier network.

Figure 1 Monthly airframe production



Note: The monthly production before 1940 was estimated by interpolation, assuming that average monthly production was achieved in July of each year.

Outsourcing parts production in the wartime Japanese aircraft industry was noted in the final reports of the US Strategic Bombing Survey (USSBS), which were written just after the war. In my paper, I explored how the supplier network was expanded and how it worked for aircraft production, focusing on the Nagoya Aircraft Works of Mitsubishi Heavy Industries Co., one of the two largest aircraft producers in wartime Japan.

From just after the beginning of the Sino-Japanese War in July 1937, the military authorities requested Mitsubishi Heavy Industries to expand its aircraft production capacity, and the request size increased as the tide of the war began to flow against Japan. In response, Mitsubishi Heavy Industries rapidly expanded the capacity of the Nagoya Aircraft Works, with the support of the military authorities and the government.

The Nagoya Aircraft Works was supplied with engines by the Nagoya Engine Works inside Mitsubishi Heavy Industries, but it relied on many outside suppliers for other airframe parts. The USSBS reports indicate that Mitsubishi Heavy Industries contracted out 32% of its work on aircraft production to subcontractors. Nagoya Aircraft Works undertook to find and manage its subcontractors when the expansion of production capacity began. Before the Pacific War, the Nagoya Aircraft Works had already set up a branch office with staff stationed in Osaka and Tokyo to find subcontractors and then supervise their work.

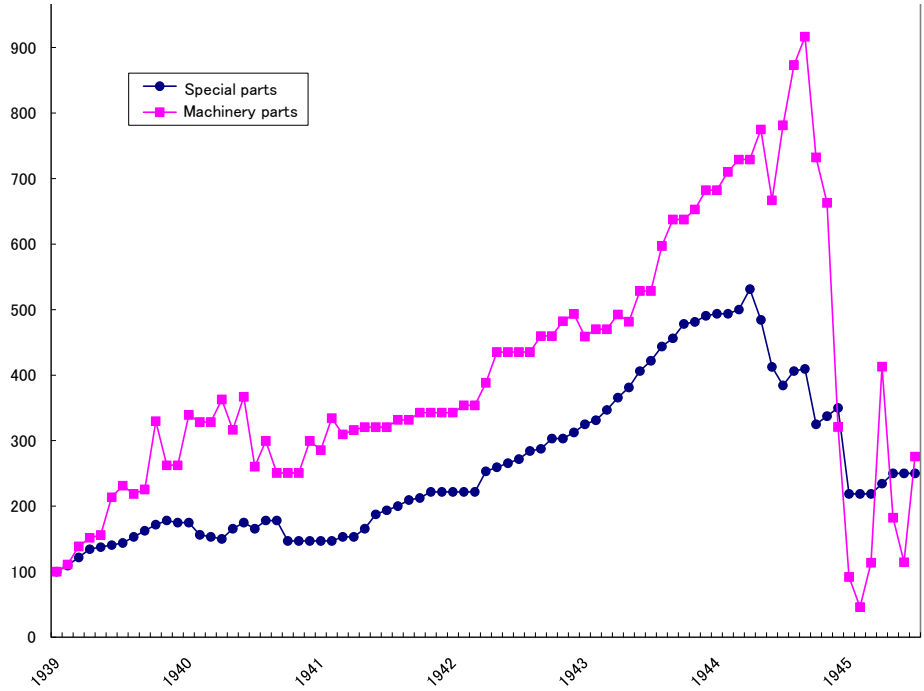
Detailed documents on the suppliers and parts' supply are available for No.5 Works of the Nagoya Aircraft Works, which produced airframes for the Army. Table 1 provides the number of suppliers for the No. 5 Works by parts category. Special parts include bearings, electrical parts, and springs, and the suppliers were mainly large firms. On the other hand, machinery parts – generally comprising miscellaneous items such as 'small parts', 'large parts', and 'kinds of stopcocks' – were mostly supplied by small and medium-sized firms. As shown in Table 1, the number of suppliers increased sharply in 1939 and again from 1943–44. These changes in the number of suppliers are approximately associated with the orders and production of Army airframes.

Table 1 Increase of suppliers for No.5 Works of the Nagoya Aircraft Works

	Number of suppliers		
	Special parts	Machinery parts	Forgings and castings
1937	0	2	2
1938	0	4	4
1939	38	42	6
1940	49	44	6
1941	52	42	7
1942	55	50	10
1943	64	74	24
1944	74	101	29
1945	70	101	29

We can see how parts' supply from outside suppliers to No.5 Works increased and how it contributed to airframe production. Figure 2 shows the supply of parts. While the supply of both special parts and machinery parts increased up until 1943, the supply of machinery parts grew faster. In addition, whereas the supply of special parts began to decline after April 1944, the supply of machinery parts continued to increase until September 1944. However, the supply of machinery parts declined very sharply in December 1944 and, consequently, the index of machinery parts' supply fell relative to the supply of special parts.

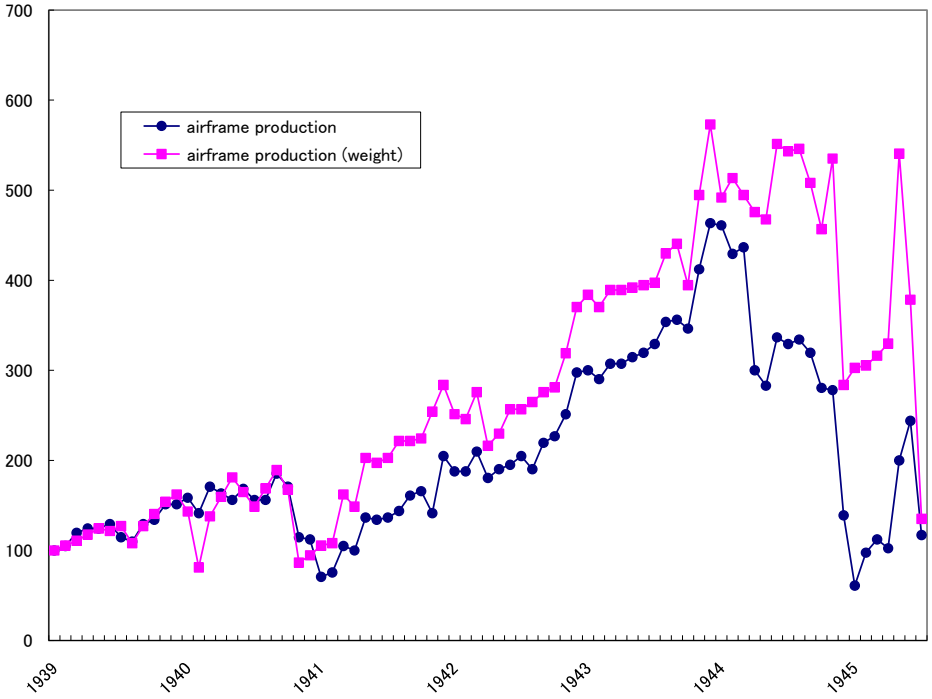
Figure 2 Increase of suppliers for No.5 Works of the Nagoya Aircraft Works



Airframe production in No.5 Works is shown in Figure 3. After a decline at the end of 1940, because of a change in the major type of airframe manufactured, production increased sharply from 1941 to 1943, with further acceleration in late 1942 and late 1943. The document that the Nagoya Aircraft Works submitted to the USSBS just after the war stated that special parts' supply was the most binding constraint on airframe production during the war. This implies that the increase in special parts' supply indicated in Figure 2, enabled the rapid expansion of airframe production.

I examine the binding constraint on airframe production at the No.5 Works of the Nagoya Aircraft Works and its change over time, estimating a production function that includes supplies of special parts and machinery parts as the explanatory variables. Splitting the whole period into two sub-periods, i.e. April 1939–May 1942 and June 1942–July 1945, shows that only the coefficients on special parts are significantly positive in the first sub-period, while only the coefficients on machinery parts are significantly positive in the second sub-period.

Figure 3 Airframe production and supply of inputs at No.5 Works of Nagoya Aircraft Works (1939.1=100)



Note: The monthly production before 1940 was estimated by interpolation, assuming that average monthly production was achieved in July of each year.

I then break down the growth of airframe production based on the estimated coefficients (Panel A and B of Figure 4). The supply of special parts explains airframe production for most of the period, whereas in the final phase of the war, the sudden decline in the supply of machinery parts explains the decline of airframe production. The sharp decline in the machinery parts' supply was caused by an earthquake and the strategic bombing in December 1944 that destroyed the supplier networks around Nagoya City.

We can conclude that until the end of 1944, airframe production at the No.5 Works increased as the upper limit bounded by the supply of special parts rose, which is based on the condition that the other inputs, including machinery parts and labour, were abundant. But in the final phase of the war, the strategic bombing and the earthquake destroyed the supply networks for machinery parts around Nagoya City, which then led to the collapse of airframe production at the Nagoya Aircraft Works.

Expansion of supplier networks enabled the Nagoya Aircraft Works to increase airframe production rapidly during the Second World War. However, it was a potential source of vulnerability at the same time, which became a reality in the final phase of the war.

Figure 4 (a) Decomposition of airframe production: April 1939 – May 1942

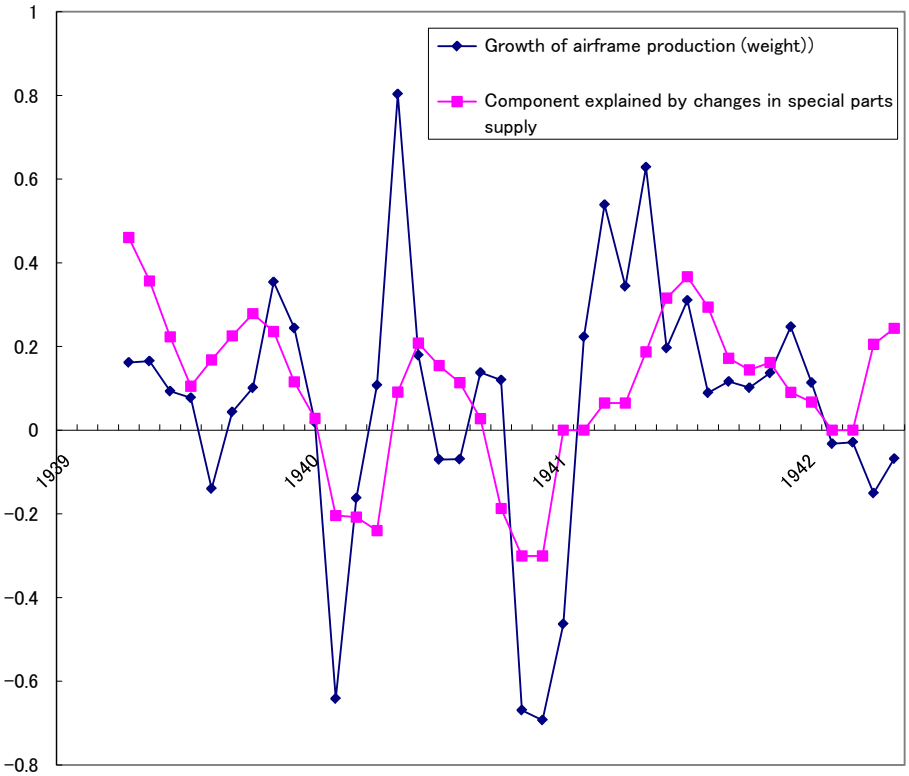
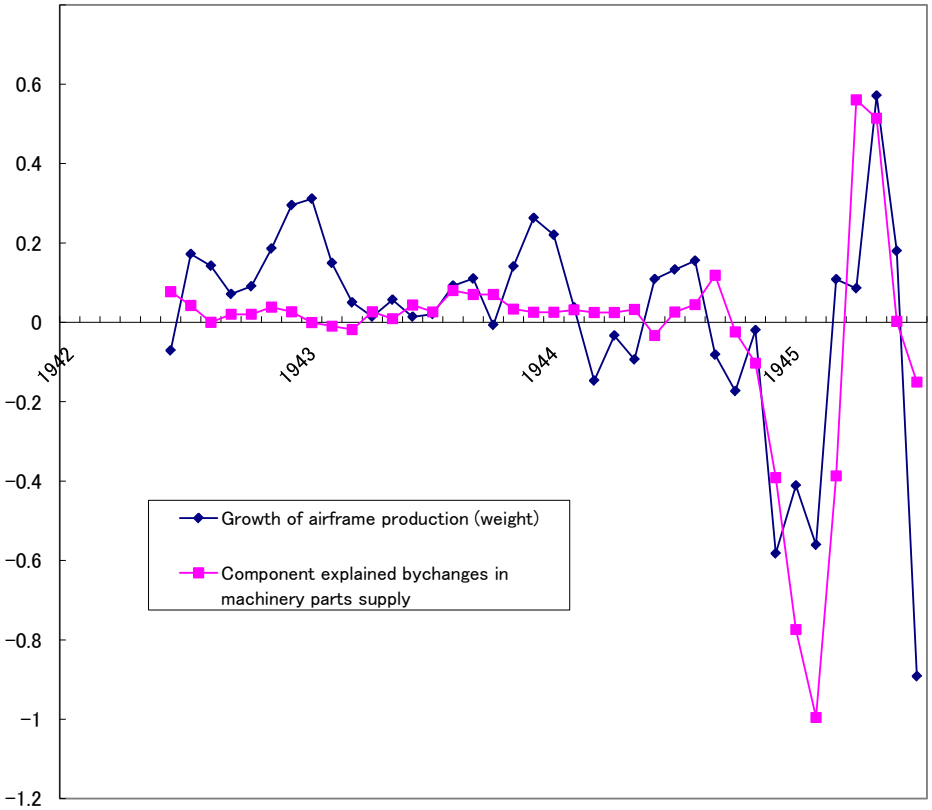


Figure 4 (b) Decomposition of airframe production: June 1942 – July 1945



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10 Exploitation and destruction in Nazi-occupied Europe

Hein Klemann
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Adam Tooze wrote that, in 1940, in 'Belgium, the Netherlands and above all France [...] economic activity collapsed, never to recover'. Nonetheless, he estimated, occupied Europe paid 25% of Berlin's war costs, which raises the question of how this was achieved (Tooze 2007: 28, 420). An even higher figure comes from Götz Aly (2005: 166ff, 326), who concluded that the occupied countries paid 70% of Hitler's war.

While Aly's work is more aligned with left-wing journalism focusing on German war guilt than with scholarly literature, his point is correct that, whenever Germany conquered a country, Berlin immediately started to exploit its economy. Germany had to do this, being a middle-sized country at war with the world's major powers. Already in 1939, when it attacked Poland, Germany was in desperate need of labour. The army claimed ever more men. Between 1939 and 1944, the German civil workforce decreased from 39 to 29 million (Herbert 1992: 165–180, Overy 1994: 50–51). To keep the war going, this loss had to be compensated at the expense of occupied Europe.

Seizing stocks of labour, materials, and machinery was easy but destroyed the occupied economy. Everywhere in occupied Europe, one aspect of occupation policy was a 'hunt for labour' (Klemann and Kudryashev 2014: 128-154). Young men, and sometimes young women, were ordered to report to the railway station to be sent to Germany for work. Because many went into hiding, people of that age group were subsequently rounded up with increasing arbitrariness and violence from cinemas, football matches, and the streets. Meanwhile, production fell.

The alternative was to seize a share of the occupied economy's flow of output; this was less destructive but more difficult (Klemann 2008). Companies produced in return for payment, while Germany, a debtor country, paid only with IOUs of dubious value. Because the war began half a decade earlier than was expected by Hermann Göring, overseer of the Four-Year Plan, the methods of exploitation of conquered territory

were improvised. Army officers, Berlin potentates, party ideologists, and occupation authorities all made their own policies.

Order was introduced only in 1942 when Albert Speer became minister of munitions. Speer was hated by Nazi Party insiders, who undermined his policies by gaining Hitler's support for hunting labour (Klemann and Kudryashov 2012: 31-32). The economic outcomes for occupied Europe reflected this complex mix of factors.

Exploitation

Different rates of exploitation across occupied Europe may be explained by levels of economic development, the military context, and racism (Klemann and Kudryashov 2012: 43ff). Before the war, Western Europe had highly productive economies with a per capita GDP more than double that of Eastern Europe (Table 1). The German authorities concluded that the western economies should produce, while factors of production were taken from elsewhere to employ in more productive settings. Agriculture and mining, however, were to continue even in the most inefficient countries, just as the Czech production of coal, iron, steel and machinery remained important.

Table 1 German-controlled Europe by real GDP and population in 1938

Territory	Population (million)	Real GDP ($ billion)	Population share (% of total)	Real GDP share (% of total)	GDP/head	
					($)	(% of average)
Western Europe	65	302	23	38	4,593	131
Eastern Europe	104	224	37	28	2,161	62
South-eastern Europe	46	71	16	9	1,563	45
Central Europe	20	55	7	7	2,772	79
German allies within Europe	47	145	17	18	3,068	88
Total	282	797	100	100	3,501	100

Source: Harrison 1998: 7–8, own calculations. Real GDP is measured in international dollars and 1990 prices.

The military context also varied widely across occupied Europe. From June 1940, there was little fighting in Western Europe for four years. In the USSR, however, German

attacks pressed the front eastwards with each spring, while Soviet winter offensives pushed the Wehrmacht back. Armies foraged and plundered behind the front lines; when retreating, they destroyed what they could not take. A German general remarked: 'Without grub, we cannot fight' (Schüler 1987: 557).

When the Wehrmacht's need was urgent, it confiscated what it needed from in the occupied USSR, Poland, or the Balkans, the foraging zone for Rommel's Afrika Korps. Given that these regions were initially poor, such requisitions immediately threatened the population's survival chances.

Finally, Nazi racism made a difference. German behaviour towards so-called Aryans was much better than toward Slavic people, not to mention Jews or Roma. Western Europeans, considered Aryan, were in principle respectfully treated. Worse off was the population of Eastern Europe and the Balkans: Nazi-racism ranked them higher than Jews or Roma so they were not immediately murdered, but any who were not productive for Germany were denied food rations. Given that most survived, clandestine production must have been substantial (Klemann and Kudryashov 2012: 393 et seq.).

An exception was the Czech lands of Bohemia and Moravia. To keep production going there, official rations were higher than elsewhere in occupied Europe (Kroener et al. 1999: 244, Lindberg 1946). In the rest of Eastern Europe, men and women were hunted for work in Germany. There, they lived in barracks; their clothing was marked to isolate them; they were paid less for longer hours and given smaller rations. Forced workers from Germanic countries were treated as Germans, except that they were not promoted (Klemann and Kudryashov 2012: 132).

Outcomes

Occupied Europe contributed 93.6 billion Reichsmarks (RM) to the German war effort (Table 2). If we add the value of unpaid booty and of forced labour, the sum increases to RM118.2 billion, or 28.6% of the cost of Germany's war effort (Klemann and Kudryashov 2012: 105).

As of 1938, the economies of all occupied Europe were roughly twice as large as the German economy; the Western European economies alone were nearly as large (86%). The above 28.6% shows Germany's failure to exploit its empire at the same rate as the metropolitan economy. If exploitation had been in proportion to size, the Western occupied territories alone should have supplied around 40% of all that Germany needed to fight its war.

Berlin especially failed to exploit France, which contributed just RM955 per head, compared with the Dutch at RM1,667 and the Norwegians at RM2,379 (Boelcke 1985, Buchheim 1986: 117-147, Klemann 2002). At the same rate as the Netherlands, the French would have contributed RM30 billion more, raising occupied Europe's contribution to 36%.

Table 2 Contributions of occupied Europe to the German war economy, 1938 to the end of 1944

	Contribution		Population		Contribution per head	
	Billion RM	**% of total**	**Million**	**% of total**	**RM**	**% of average**
Western Europe	75.6	78	64.6	31	1170	251
Bohemia and Moravia	4.2	4	7.5	4	1019	218
Balkans	4.5	5	10.8	5	420	90
Eastern Europe	9.3	10	104.0	50	90	19
Total	93.6	100	208.0	100	467	100

Source: Klemann and Kudryashov (2012: 99, 105).

The relative failure was not caused by sabotage. It was a consequence of the fact that France's production of coal and raw materials fell, while the Nazi elite failed to see the advantage of supplying the occupied economies with resources that were also dearly needed in Germany itself. Thus the concept that Germans should always come first backfired, with adverse consequences all over Europe but especially in France (Klemann and Kudryashov 2012: 334-335, Nefors 2000: 168–169, Mensink 1946: 65–66). Deprived of coal and raw materials, the country could not deliver.

Disappointed with deliveries, the more fanatical Nazis, in turn, promoted the hunt for labour. From 1942, young men were also taken from Western Europe. Most went unwillingly and, for each one taken, two went into hiding (Klemann and Kudryashov 2012: 131). Thus, the damage caused by this policy to the local economies was much greater than the gain to Germany.

Consequences

Europe did not literally pay Germany, as Tooze's words might be taken to imply. Berlin wanted goods and factors of production such as labour – not money. Germany's suppliers in the occupied countries were paid, but Germany took the money from the treasuries or central banks of these countries. Thus, it was the whole country that carried the burden of its occupation, rather than the supplying firm.

Occupied economies found the means by inflating the money supply. Stimulated by a total of RM76 billion (Table 2), the Western European economies boomed from the last months of 1940 to the autumn of 1941. Then, problems with the supply of coal and raw materials became manifest. Nonetheless, the policy of letting these countries produce kept their economies intact.

In 1941, Western Europe reached full employment for the first time since 1929 (Klemann 2002: 364–365, Radtke-Delacor 2000: 103, Maddison 2003: 48–54, Luyten 2008: 152-153). Profits and investment increased. In the Netherlands, industrial capacity in 1945 was substantially higher than in 1940 (Klemann and Kudryashov 2012: 316).

While shortages developed, the destruction of trade and German confiscations were more important factors than the decline of production, which was greatly exaggerated by wartime statistics. In fact, to avoid wartime regulations and prohibitions, clandestine markets developed while increasing shares of production and consumption disappeared from the data. This had a further effect after the war when the legalisation of the underground economy gave post-war recovery the appearance of a miracle.

It is true that the Western European economies declined from 1942 as the production of consumer goods was prohibited and supplies of coal and raw materials stagnated. In France, where legal economic activity fell by about one half, the clandestine economy was relatively large, but France was still the only occupied Western country that did not quickly recover (Klemann and Kudryashov 2012: 331).

The best data are available for the Netherlands, where legal economic activity fell by about one-quarter – not three-quarters, as was believed after the war. With a modest correction for clandestine production, overall economic activity declined by just 14%, the lowest point being the famine year 1944 (Klemann and Kudryashov 2012: 32).

The situation was far worse in South-Eastern Europe and the Balkans. Estimates for given territorial units are impeded by the German policy of carving out new borders and obliterating the old ones. Despite this, it is clear that, in the East, exploitation did not stimulate economic activity, but rather devastated it. The German authorities took anything that was needed and destroyed everything that could be used by the enemy.

The average human losses of the East European countries was 14% of the pre-war population (Table 3). The main causes of death were combat, genocide, and economic hardship arising from the occupation regime. Combat is represented in the table by soldiers fallen in battle, and genocide accounted for murdered Jews. The remainder, amounting to 6.7% of the pre-war population, fell victims of economic circumstances.

Table 3 War casualties in thousands and in percentages of the population, 1938–1945

	Population in 1938 (mill)	Casualties (thousands)			Casualties (% of population)		
		Military	**Non-Jewish civilians**	**Jewish civilians**	**Total**	**Non-Jewish civilians**	**Total**
Eastern Europe*	209.9	11,100	14,099	4,222	29,421	6.7	14.0
Balkans**	22.6	466	723	138	1327	3.1	5.9
Czechoslovakia	15.3	25	63	277	365	0.4	2.4
Western Europe ***	65.8	236	421	214	871	0.6	1.3
Occupied Europe	313.6	11,827	15,306	4,851	31,983	4.9	10.2

Source: Klemann and Kudryashov (2012: 418).

Notes: Partisan deaths are included in military casualties. Key: * Occupied USSR, Poland, Estonia, Latvia, and Lithuania. ** Greece and Yugoslavia. *** France, Belgium, the Netherlands, Denmark, and Norway.

On top of that, mines and industries were destroyed along with towns, villages, roads, and railways, especially in the occupied USSR. In 1945, therefore, it seemed impossible to restore production within a reasonable timespan.

The people of the Balkan countries also suffered greatly, although economic hardships carried off non-Jewish civilians at only half the rate of Eastern Europe – 3.1% rather than 6.7% of the pre-war population.

Against the wider European background, mortality from hardships in Western Europe was very low at 0.6% of the population, and near zero in Denmark. That Czechoslovakia

fell in the same category suggests that Nazi racism mattered less than the quality of production and the proximity to combat.

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Hein Klemann (Erasmus University Amsterdam 1957) studied history at the Free University Amsterdam (VU) and economics at the VU and the University of Amsterdam. He obtained his PhD at the VU in 1990 for a dissertation on Dutch trade in the 1930s, entitled *Between Reich and Empire*, which was awarded the Dirk-Jacob Veegens Prize of the Royal Holland Academy of Science for the best historical thesis of the year. Since then, he has been affiliated with Utrecht University and the Netherlands Institute for War Documentation (NIOD), where he wrote a study of the economic development of the Netherlands during the German occupation. Working with a Russian colleague, Sergey Kudryashov, he wrote *Occupied Economies* about the economics of occupied Europe. Since 2005 he has been Professor of Social and Economic History at the Erasmus University Rotterdam.

11 The economics of neutrality in the Second World War

Eric Golson
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Dozens of European states adopted neutrality at the beginning of the Second World War, but by 1945 only Ireland, Portugal, Spain, Sweden, Switzerland, and Turkey remained independent or unaligned. Before the war, the traditionally neutral countries put their faith in collective security and did not rearm, despite the increasing militarisation in Europe after 1933. They believed that the League of Nations had removed the need for war by substituting a system of conflict prevention. This belief failed with the Munich Agreement in 1938 (Wylie 2002).

Geography still protected some countries such as Ireland and Turkey, for whom large bodies of water made direct invasion difficult. But Portugal, Spain, Sweden, and Switzerland were unable to provide a military defence against encirclement. They would surely have put up a significant fight but would still have lost if invaded by Britain or Germany. Like other neutral countries, they could not build armies capable of resisting a powerful attacking force.

While each case is different, the problem of maintaining neutrality in the Second World War had some general features. In order to remain independent, the neutrals had to combine military defence with making themselves economically useful to the belligerent. The economic concessions given by small states included trade in goods and materials, labour provision, and capital. These concessions proved sufficiently valuable for the belligerents to continue to respect the neutral's independence, despite continued threats of invasion (Wylie 2002).

Merchandise trade and services

Each of the countries which remained neutral after June 1940 was able to assuage the belligerents' political intransigence and maintain friendly relations by exporting various material goods to each of the belligerent groups: from Sweden, iron ore and

ball-bearings; from Switzerland, watches, metal goods, and machinery; from Spain, food, iron ore, and wolfram; from Portugal, leather hides and wolfram (Golson 2011).

Swedish trade was particularly beneficial for the resource-strapped German Reich in military terms: iron ore, ball-bearings, and machine tools were used in the manufacture of German guns, tanks, and aircraft (Golson 2016). These goods were also needed by the Allies, particularly Britain, for the continued manufacture of aero-engines and machines. Despite its geographic location within the German sphere, the Swedish government allowed much-needed war materials to reach Britain illicitly (Golson 2012).

Beyond merchandise, the European neutrals provided a variety of services to the belligerent powers: Portugal provided the British with shipping services (Golson 2020); Sweden provided the Allies and Axis powers with diplomatic, shipping, and insurance services; the Swiss provided diplomatic, protecting-power, banking, and insurance services; and, although Spain was generally less service-oriented, it was still paid for providing shipping to the Allies and diplomatic representation to the Germans. The belligerents were ultimately net payers to the neutrals in most of these relationships, buying millions of pounds of neutral services they could not obtain from any other source (Golson 2011).

The economist Mançur Olson (1963) suggested that in wartime no one good would hold more value than another at the margin, the reason being the scope for belligerents to find substitutes for missing products. It is clear, however, that substitutes were not in fact easily available for all the neutral goods and services. Despite the efforts made in particular industries, substitutes were often more expensive or of lower quality.

This is shown by the case of Swedish steel for ball-bearings. In both the UK and Germany, ball-bearings made from domestic materials had much higher failure rates; this led to the grounding of many Royal Air Force planes when they were desperately needed (Golson 2012). In services, there was no easy substitute for Swiss diplomatic and protecting-power work during the war. It was efficient for the belligerents to obtain the goods and services available from the neutral countries through trade.

Of course, the engagement between the neutral and belligerent economies led to much controversy, including accusations that the Swedes and the Swiss were working for the German war effort.

Labour

A steady supply of labour is important for any war economy; too few workers or too few soldiers foretell an eventual battlefront defeat. During the Second World War, imported labour helped to sustain the economies of Germany and Great Britain. Germany used foreign voluntary and forced labour from occupied Europe to replace German workers sent to the fronts.

Neutral countries also contributed but to a smaller extent. Geographical constraints limited Portuguese, Swedish, Swiss, and Spanish labour participation in the war effort (Golson 2013). From beyond the North Sea, no significant numbers of Swedes could work in Germany or Great Britain. The Portuguese were even further away from the Germans, and although some Portuguese worked in the British shipping industry, their numbers were quite small.

Spain promised 100,000 workers to Germany during the early years of the war, but numbers peaked at less than 10,000. Switzerland's proximity to Germany theoretically allowed more substantial labour transfers, but while the Swiss promised thousands of workers for German industry, only 1,800 were ever allowed to go (Golson 2014). The Swiss could not work in Britain to any large extent because they could not get through the blockade.

So, although Spanish and Swiss labour was initially expected to contribute to the German war effort, the outcome fell short. Promises though were many and the promise was useful in dissuading the Germans from invading.

Capital

Capital is the last key dimension: in two cases the numbers show substantial support of the belligerent by the neutral. Despite considerable transfer restrictions during the war, the neutrals accepted private transfers amounting to substantial flows. All belligerents severely restricted the transfer of funds to neutral countries, to prevent hot money flows and destabilisation.

In most of the neutral–belligerent relationships, these transfers benefitted the belligerents by 0.1% to 0.5% of GDP annually between 1940 and 1944. Exceptions were the larger annual Swedish–UK transfers averaging 0.8% of GDP and Portugal–UK at 1.1% during 1941–1944. Significant increases in transfers from Germany occurred in the last years of the war, as German defeat became more likely (Golson 2011).

The neutrals also allowed the Germans and British to accumulate large unpaid balances in order to placate the belligerents on whom they depended. Some smaller loans were settled with capital transfers. Portugal allowed Britain to run a clearing deficit, later converted into a loan, which at the end of the war amounted to 28.6% of Portuguese GDP (Golson 2020). Generally, Switzerland and Sweden allowed Germany to run clearing deficits; although the Swedish balance was largely paid off by the end of the war, the balance due to Switzerland amounted to nearly 10.7% of Swiss GDP in 1945 (Golson 2011).

Spain also provided clearing loans, on top of Civil-War debts already owed to Germany, but precise figures are not available. Various loans and short-term clearing agreements were provided, but capital account balances were sometimes settled in gold, particularly when the war was not going well for the debtor (Britain before 1941 and Germany after 1942). Thus both the Allied and Axis powers transferred gold to the neutrals to pay deficits (Bower 1997). The acceptance of German gold has become a point of controversy, given how much of it came from plundered central banks and murdered Jews.

Conclusion

No simple formula allows a country to isolate itself from the pressures and problems of the outside world. Neutrality as it existed up to the Second World War was largely a legal concept, dating back to the early 1600s when the first definition of non-participation in war was provided by Hugo Grotius. He argued: 'from those who are at peace nothing should be taken except in case of extreme necessity, and subject to the restoration of its value'. In exchange, neutrals had to 'show themselves impartial to either side in permitting transit, in furnishing supplies to his troops, and in not assisting those under siege' (Grotius 1646/1925). But Grotius' conception of neutrality as impartiality could not withstand the extension of total warfare to all facets of state power.

In order to maintain their independence in the Second World War, neutrals had to make up for their relative military weakness by offering economic concessions to the belligerents. Despite their different starting points, the concessions by Portugal, Spain, Sweden, and Switzerland were similarly motivated. The media, politicians and lawyers have disparaged the version of neutrality that these states chose as no more than a convenient excuse for self-enrichment. For small states in a world at war, however, the defence of neutrality was complex; survival was everything.

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12 Economists at war

Alan Bollard
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War requires extreme reallocation. Resources must be found and financed. Prices and costs may be overlooked, while markets are disrupted as civilian law gives way to commands from the military, and sometimes from warlords.

How did economics and economists of the 1930s and 1940s contribute to war preparations and the waging of war? Surveys such as Harrison (1998) provide context. Biographies can illuminate individual lives, for example Skidelsky (1983, 1992, 2000) on Keynes, Smethurst (2007) on Takahashi, and Weitz (1997) on Schacht. Bollard (2019) compares and contrasts the contributions of key economists in various belligerent countries.

Paying for the war

In principle, war might be funded in different ways—out of past savings, current taxes, borrowing (abroad or domestically), or through inflation. In 1939, John Maynard Keynes published *How to Pay for the War* (reprinted in Moggridge 1972: 367-439). He recognised that even in wartime there were choices. The efficiency of war mobilisation and the distribution of burdens on workers, lenders, and future generations would depend on the funding method chosen. The impulse of the UK government at the start of the Second World War had been to control markets and ration supply. Keynes turned this on its head, proposing to ration demand by using taxes and compulsory savings.

One of the problems Keynes identified was that wartime spending would overwhelm the normal business cycle and cause over-heating. To this end he helped organise the first major UK National Accounts. He accepted that post-war stabilisation would become a major problem. It was unclear whether there would be a labour shortage or a shortage of demand after the war. He also thought about how to activate the stabilisation tools of fiscal and monetary policy after wartime disruption.

In the Far East, preparations for war had started much earlier. In 1905, Japan had defeated Russia, financed partly by Japan's first international capital borrowings in Europe. This

was followed by intense pressure to fund the Japanese Imperial Army's expansionist plans. These pressures brought down successive governments in the interwar years.

Japan was cushioned from the worst of the Great Depression by a unique combination of fiscal policy and quantitative easing. But in 1931, the Japanese Army invaded Manchuria and laid out plans for further expansion to secure the key materials necessary for wartime production that Japan was lacking. While the army prepared for a wider invasion of China, civilian ministers led by Minister of Finance Korekiyo Takahashi tried to limit their demands for a larger share of the national budget. But the army and navy chiefs had seats in Cabinet and blocked budgets that did not meet their growing demands for military spending.

It was a critical time for civilian government, with revolving cabinets, assassinations, and attempted coups. Takahashi struggled against military intransigence. He was criticised and threatened but refused to budge, and, in 1935, he was assassinated by army officers. This marked the end of civilian control in Japan.

In Japan, civilian control over paying for war broke down. It was likewise difficult to effect rational economic policies where military control broke down. This was the chaotic position faced by Chinese economist and Finance Minister H H Kung as the Japanese invaded his homeland. Simultaneously facing conflict with the Japanese, the Chinese Communist Party, and various regional warlords, the Chinese Kuomintang (nationalist) government desperately needed funding for its army.

Where Western macroeconomic principles would not work, Kung took a distinctly Eastern approach. He used connections with the gang leaders of Shanghai to extort salt and cigarette taxes from starving peasants, strong-armed the banks to lend to the Government, nationalised their assets, ran a racket with the country's silver reserves, printed paper money, and took a slice of the opium trade. As the war continued, he extorted military and financial aid from the US by lobbying, threatening, and promising. This kept the Kuomintang Army going for a decade until its ultimate defeat.

Resources for the war

With its demands on arms production, army mobilisation, and labour force reallocation, war brought a major shock to peacetime allocation and access to resources in all belligerent countries. Supply of strategic resources from food to coal, iron, nonferrous metals, oil, and rubber was key to all the war efforts. Some large countries like the USSR and the US could access key resources from within their own economies. But others

like the UK depended on food imports, and Japan on importing essential materials of war.

The Versailles Treaty of 1919 barred Germany from significant rearmament. Despite this, Germany began covertly rearming in the mid-1920s. Secret rearmament accelerated in the early Hitler years. Hjalmar Schacht, the governor of the Reichsbank and minister of the economy, worked on ways to evade trade restrictions and to access key resources through barter deals with ex-colonies and countries in southeast Europe. To pay for this undercover trade, Schacht devised creative financial instruments such as the so-called MEFO bills, issued to armaments suppliers and discountable by banks under direction from the Reichsbank.

Nazi Party chiefs led by Hermann Göring promoted a self-sufficiency programme that Schacht felt would cause serious economic distortion, promoting production without regard to prices or costs. National Socialist ideas of procurement from occupied Europe were equally basic: coal from France and grain and oil from the Soviet Union, extracted by force if necessary. Schacht came into conflict with the Nazi leaders who arrested him in 1944. He was rearrested in 1945 by the Allies and put on trial at Nuremberg, but the court acquitted him of war crimes.

The ally most impacted by the Second World War was the USSR. Although weakened by the collectivisation of the peasants, the Holodomor famine, and repeated purges, its economy was rearmed and mobilised under centralised control. Stalin was hostile to the idea of constraints and trade-offs and his rule by terror extended to economists: well-known academics like Kondratiev and Feldman had been eliminated. Those who wanted to survive had to be very cautious.

The intensity of Soviet war mobilisation left civilian consumption at or below a bare minimum. The consequences of this approach were addressed by mathematician and economist L V Kantorovich. He researched ways to improve the efficiency of Soviet resource allocation, inventing linear programming in 1941. In wartime he generalised this work in a report *The Best Use of Economic Resources* (later published as Kantorovich 1965), which pointed to the use of shadow prices to improve sectoral efficiency. Unfortunately, the Soviet ideologues saw such prices as a contravention of the fundamental precepts of Marxist-Leninist economics. As a result, Kantorovich's work was suppressed until the Khrushchev thaw.

The US, with its huge wealth, resources, industrial structure, freedom from invasion, and late entry to the war, managed its reallocation of resources relatively smoothly. The government used its extensive industrial resources to mass-produce ships, planes, tanks,

and other equipment. The war effort was administered by new agencies employing many economists, including Soviet and European emigres.

On leave from Harvard University, Wassily Leontief joined the Office of Strategic Services. His job was to investigate whether the USSR had the resources to hold out against the German invasion. Leontief built an input-output model which used scarce Soviet data to show that the Soviet economy was more robust than had been thought.

Leontief's input-output provided an economic mapping that the generals could readily understand. The techniques were adapted by another group of Office of Strategic Services economists in London to identify the most vulnerable points of the Axis economies and to direct Allied bombing more effectively. They used input-output mapping to estimate potential damage to the enemy war effort, directing Allied air forces to bomb aircraft factories, marshalling yards and oil plants.

The aftermath of war

World War II created big government, big debt, and big reconstruction needs, all consistent with an increasing role for economists. The tools of macroeconomics, managerial economics, and computing were all born during this time. In the early post-war years, economists grew in numbers and confidence, becoming embedded in official government positions and establishing themselves as the applied professional discipline we see today.

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Part 3: Consequences of the war

13 The famines of the Second World War

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By constraining consumption and restricting the flow of goods, people, and information, wars make famines more likely. During the Second World War, famine-related deaths matched or outnumbered military losses. While some of the main actors (the UK, the US, Germany, and Japan) escaped famine, the death tolls elsewhere were massive in both absolute and relative terms.

The scale of mortality

Although increases in infant mortality rates, the prevalence of stunting, and deaths from tuberculosis – all clear markers of malnutrition – were widespread, of the warring powers only the Soviet Union suffered mass starvation. More died of famine in occupied Soviet regions than anywhere else. The Nazi Hunger Plan of early 1941, which envisaged the expulsion and starvation of 30 million people out of grain surplus areas, never materialised, but brutal requisitioning in Nazi-occupied areas resulted in about 4 million deaths.

When Soviet POWs are included, about seven million Soviet citizens perished of starvation and famine in occupied areas (Table 1). Ukraine and Belarus suffered disproportionately, with the former losing over three million, or nearly 8% of total population, to famine. At least another one million died in the non-occupied Soviet Union, mostly in blockaded Leningrad. Deaths would have been much higher in non-occupied areas but for good harvests, a huge increase in potato cultivation, and Allied food aid (Gerhart 2009, Ellman and Maksudov 1994, Barber and Harrison 1991: 88-89, Vallin et al. 2012: 69, Goldman and Filzer 2015, Collingham 2011: 213-218, Wheatcroft and Ó Gráda 2017).

Elsewhere in Europe, Greece was worst affected in relative terms. There, famine followed Nazi occupation and Allied blockade in 1941. Although foreign food aid

helped, arriving in neutral Swedish vessels from November 1942, the death toll of about 300,000 still accounted for about 5% of the population (Hionidou 2006: 2).

Table 1 Famine deaths during the Second World War

Soviet Union	7 to 9 million
- Of which, under German control	6 to 7 million
- Under Soviet control	1 to 2 million
Bengal province, India	2.1 million
Henan province, China	2 million
Java	1.3 to 2.4 million
Vietnam	1 million
Greece	300,000
Austria	100,000
Netherlands	15,000 to 25,000

Source: Gerhart (2009), Ellman and Maksudov (1994), Barber and Harrison (1991: 88-89), Vallin et al. (2012: 69), Goldman and Filzer (2015), Collingham (2011: 213-218), Wheatcroft and Ó Gráda (2017). All figures are approximate.

Famine mortality elsewhere in Europe was lighter. In Austria, about 100,000 (1.5% of the population) perished in 1944-45 (Mitchell 1975: 90). As 'Aryans', the Dutch were relatively well treated by their Nazi occupiers until late 1944, when occupying forces in the heavily urbanised western Netherlands responded to a rail strike and associated partisan activity with an embargo on the transport of food supplies. This quickly converted a situation of adequate food supplies to one of severe privation and famine. Estimates of excess mortality during the *Hongerwinter* range from 15,000 to 25,000 (Ekamper et al. 2017: 114).

In Italy, food consumption fell from a pre-war mean of about 2,600 calories a day to 1,900 calories by 1944; classic famine symptoms may have been absent, but both infant mortality and deaths from infectious and respiratory diseases rose, first in the south, then in the north (Daniele and Ghezzi 2017, League of Nations 1946: 5, Collingham 201: 366).

World War II led to several major famines in Asia. In Java, estimates of excess mortality in 1943-45 range from 1.3 to 2.4 million; the latter estimate would have meant 5.7% of the population (Brennan et al. 2017: 24, van der Eng 2008: 38). In the Chinese province of Henan, drought and war-induced famine killed an estimated two million in 1942-43 and forced another 2-3 million to flee, while in Vietnam a combination of poor harvests and war led to one million deaths (Muscolino 2015: 2, Huff 2018, Baker 2018: 94). In

both Henan Province and Vietnam, those totals would have represented about 5% of the populations.

For Bengal, the best-guess estimate is 2.1 million (Maharatna 1996: 147), or about 3% of the total population. In Iran, a critical source of oil and a transit route for Soviet supplies, harsh requisitioning measures by occupying British and Soviet troops resulted in disease and famine, although the death toll, though unknown, was probably modest (Bharier 1968: 277). Outside Europe and Japan, where most deaths were directly attributable to starvation, famine victims succumbed mostly to infectious diseases (compare Maharatna 1996: 151-154).

Entitlements and rationing

Food rationing was almost universal during the war. Rations generally reflected some definition of 'need', whereby the military and those engaged in heavy labour were granted extra calories and women and children generally were entitled to less; in Britain, invalids were entitled to extra food in exchange for sugar entitlements. The perception that rationing was 'fair' probably boosted morale (Johnston 1953: 170, Barber and Harrison 1991: 80).

In Britain, Germany, and Japan, rationing was effective; even though food availability was sharply reduced almost everywhere, few literally died of hunger. Britain and Germany managed to maintain food consumption per capita at about 3,000 calories throughout the war. In Japan consumption fell from a norm of 2,000 calories per capita before Pearl Harbor to 1,900 calories in 1944, plummeting to 1,680 calories by the war's end. Belgium, the Netherlands, Denmark, Norway, and Finland fared somewhat worse at 2,300-2,800 calories. In France, ineffective rationing under German occupation yielded inadequate calories – an average of 1,180 in 1941-44 – with resultant increases in mortality in some areas and widespread resort to black markets (Mouré 2010).

The range and quality of foods available worsened. In Japan, rice available for domestic use dropped from 153 kilograms to 119 kilograms per capita and fish from an average of 63.6 grams per diem in 1939/41 to 31 grams in 1945. Wheat, barley, soybeans, potatoes, and yams were substituted for rice. The lack of fish and fresh fruit and vegetables led to protein and vitamin C and B1 deficiencies; there were significant increases in the incidence of beriberi and tuberculosis, and the physical growth of children was severely constrained (Johnston 1953: 163-164, 268-269, 276, USSBS 1946: 20-21, Kagawa et al. 2011, Aldous 2010). Until very near the end of the war, the authorities managed to maintain a daily ration of 2.3 go (approximately 1.725 cups; 1,158 kcals) for normal consumers, though with an ever-diminishing rice share (Johnston 1953: 202).

For much of the war, supplementary rations were available for certain categories of workers, but the deterioration of supplies led to increased reliance on the black market. Still, classic famine symptoms and excess mortality were absent in wartime Japan.

Bacon, butter and sugar were the first food items to be rationed in the UK, starting 8 January 1940; eventually, practically everything but bread and vegetables was rationed. Rationing was by weight except in the case of meat (by price). By contrast, in Greece – where rations were minimal, control of supplies ineffective, and the normal functioning of markets lacking – black markets were ubiquitous. Clothes, household goods, medicinal drugs, and sex were exchanged for food (Hionidou 2004).

Since Sen (1981: 6-8), it has been conventional to distinguish famines arising from a loss of food entitlements amongst the population from those attributable to an absolute shortage of food. Sen's study of the Bengal famine of 1943-44 was widely recognised as a classic case of starvation amidst sufficiency. It is better seen as a war famine, however.

Perhaps the most convincing evidence against the official claim that there was no decline in food availability is the series of food drives instigated by the government in the fall of 1943, which uncovered virtually no hoarded stocks.

The Moldova famine of 1946-47 has been deemed an intermediate case: food became less available, but more forceful government action would have saved the situation (Ellman 2000, Wheatcroft 2012).

Resilience and repression

Resilience and morale don't win wars but they clearly matter. The role of resilience is an important theme in the new literature on the Dutch *Hongerwinter* (de Zwarte 2019) and the Leningrad blockade (Kirschenbaum 2017, Goldman and Filtzer 2018). In unoccupied parts of the Soviet Union, the authorities maintained morale by matching brutality and repression with strenuous and largely successful efforts at feeding the population and keeping infectious diseases at bay; in Leningrad, where massive mortality was unavoidable, major epidemics were prevented (Barber and Harrison 1991: 87-88). In Japan, civilian morale was already at a low ebb and famine imminent when the use of atomic bombs was decided; whether the military would have countenanced surrender otherwise is disputed (USSBS 1947).

The denial of information and of the freedom to move were aggravating factors in wartime famines. Repression in the form of wartime censorship hid the gravity of the

situation in distant Bengal in 1943 from the British public, while Stalin's refusal to reveal the true situation in the Soviet Union in 1945/6 precluded aid from former allies. Another standard famine coping mechanism, migration, was constrained by warfare and wartime restrictions, but it still operated powerfully in Henan province and in Greece (Muscolino 2015, Hionidou 2019).

The shadow of war

It is never over until it is over. Of the plethora of long-run outcomes linked to prenatal exposure to famine during the Dutch *Hongerwinter*, lower adult body size and higher incidences of diabetes and schizophrenia are the most robust (de Zwarte 2019, Lumey and van Poppel 2013). Stanner and Yudkin (2001) ruled out any link from foetal exposure during the much larger Leningrad blockade of 1941-44 to metabolic or cardiac conditions in adulthood, but Vågerö et al. (2013) found that exposure to the blockade in childhood or adolescence predicted cardiovascular disease (for men), breast cancer (for women), and higher adult blood pressure (for both). Related work on children's wartime exposure to hunger on adult outcomes, using European survey data, has identified significant costs in terms of other economic and health outcomes (Kesternich et al. 2014).

Finally, the famines that followed in the wake of the Second World War are part of the reckoning. In February 1946, US President Truman warned of a global famine that 'may prove to be the worst in modern times'. One famine cost 100,000 lives in Tokyo in the second half of 1945; another was the Soviet famine of 1946-47. The latter was proportionately most severe in Moldova, where 100,000 or 5% of the population perished, but most costly in numbers of lives in Ukraine (300,000) and elsewhere in the Soviet Union (500,000) (Ellman 2000: 611-617, Vallin et al. 2012: 70). Elsewhere, despite Truman's warning, malnutrition was widespread but famine was averted (Aldous 2010, Collingham 2011: 467-474).

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14 Inequality: Total war as a great leveller

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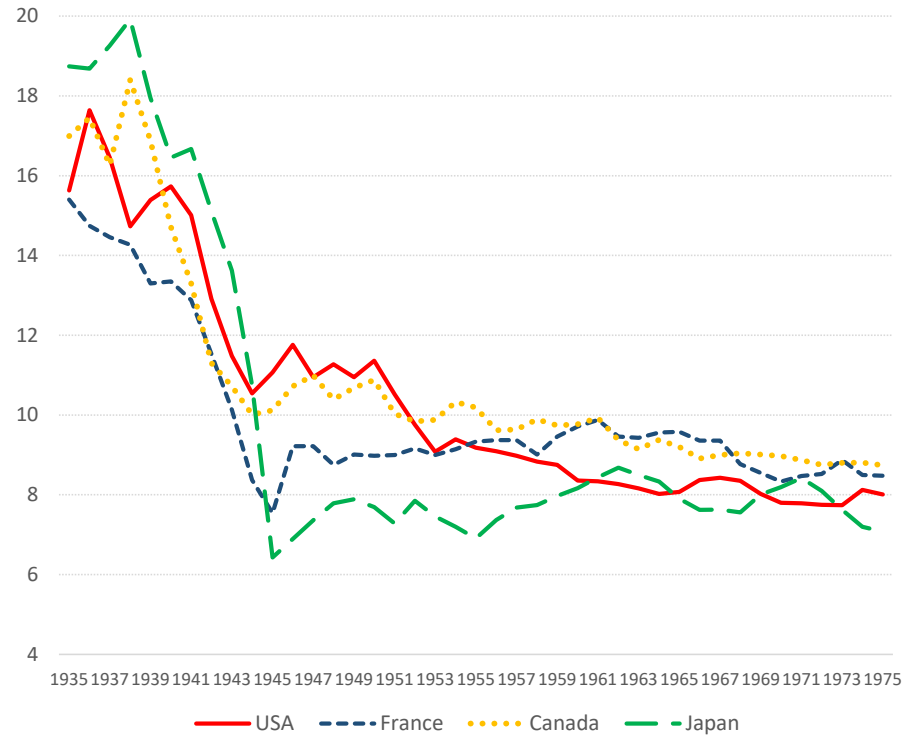
By the beginning of the 20th century, income and wealth inequality in many countries had reached new heights (Roine and Waldenström 2015, WID). Over the following decades, this trend was dramatically reversed. Why? Throughout history, catastrophic shocks had repeatedly levelled economic disparities (Scheidel 2017). The 20th century was no exception: mass mobilisation warfare that sometimes triggered radical revolution greatly narrowed the gap between elites and masses.

During the First World War and its immediate aftermath, inequality declined from national all-time highs in France, Germany, and the UK. It fell even more dramatically in Russia after the Bolshevik takeover (Scheidel 2018). The biggest shock of the interwar period was non-violent: in the US, the Great Depression reduced income and wealth inequality, first on its own and then thanks to the New Deal, but largely failed to have comparable effects elsewhere. Truly widespread levelling occurred only in response to the unprecedented pressures and dislocations of the Second World War.

Scale

The evidence leaves no doubt about the intensity of this process (WID is the most important data repository, based on Atkinson and Piketty 2007, 2010 and more recent case studies). Across a dozen countries that were directly involved in the war, the income share of the highest-earning 1% of households declined on average by close to one-third of the pre-war share. National drops ranged from a modest 6% in New Zealand to a staggering two-thirds in Japan. The US (at one-quarter of the pre-war share), the UK (at one-third) and France (at one-half) fell in between these extremes. Germany's record is somewhat obscured by poor data but likewise fits this pattern. Even close bystanders such as Ireland, Portugal, Spain, Sweden, and Switzerland recorded contractions of elite income shares (Scheidel 2017: 132-4, based on WID).

Figure 1 Top 1% income shares in four countries, 1935-1975 (% of income).



Source: Scheidel 2017: 131, Fig. 5.1, based on WID.

Although inequality often continued to fall for several decades after the end of the war, change unfolded much more rapidly during the actual war years. In France, for example, fully 92% of the net decline in the top 1% income share from 1938 to the early 1980s had already occurred by 1945. In the US, more than half of the corresponding net reduction between 1940 and the 1970s took place before 1945, and three-quarters in Canada. In Japan, inequality in 1945 was lower than at any time before or since, and at least by one measure the same was true of Germany in 1950. In the UK, by contrast, wartime equalisation accounted for a somewhat smaller share of the total decline, just as it did in some Nordic countries and in India (Scheidel 2017: 134-7, based on WID).

Even so, with the single exception of Sweden, in all relevant countries for which we have data, levelling was much more rapid during the war itself. In Central Europe, the effects of the Second World War were compounded by post-war socialism: in Poland, the top 1% income share more than halved between 1935 and 1947, before halving again by 1955. Conditions in Hungary followed a similar trajectory (WID).

The evidence for income Gini coefficients is less extensive but generally consistent with that for top income shares. In the US, different types of income Ginis fell by seven to ten points during the war years and stabilised thereafter. The UK was not far behind, and Japan's income distribution appears to have undergone even more severe compression (Scheidel 2017: 137-8).

The share of all wealth owned by the richest 1% likewise declined: seven war-affected countries registered an average drop by about one-third between 1914 and 1945 (Roine and Waldenström 2015: 539). Much of this rebalancing was driven by dramatic losses at the very top. For example, the value of the largest 0.01% of estates in France fell by two-thirds during the Second World War, while that of the largest 1% in Japan plummeted by no less than nine-tenths (Scheidel 2017: 115, 139).

By contrast, instances of growing income inequality during the Second World War are extremely rare. Only Argentina and South Africa, where entrenched elites profited from the export of raw materials and foodstuffs, are currently known to have bucked the global trend. More generally, Latin America, spared the exigencies of war, served as a counterpoint to equalising developments elsewhere (Prados de la Escosura 2007: 297).

Causes

A wide range of factors converged in driving down inequality (Piketty 2014: 146-50, Scheidel 2017: 118-23, 143-64). Although their specific configuration varied by country, the underlying dynamics were the same: mass mobilisation, invasive government intervention, interruptions of international markets, and more often than not significant physical destruction caused massive economic shocks (Ransom 2019).

Capital, which was largely concentrated in the hands of the few and therefore accounted for much of existing income and wealth disparities, suffered greatly: the two world wars witnessed the most serious declines in returns on capital on record. During the Second World War, real returns on government short-term securities and long-term bonds turned negative, while returns on equities dwindled as well. The aggregate return on capital (r) fell short of the rate of economic growth (g), temporarily reversing the disequalising effect of Thomas Piketty's axiom of 'r > g' and undermining the prominent standing of capital owners (Jordà et al 2019.: Figs. VII, X, XIII, XV).

Some countries were more heavily affected than others. France lost two-thirds of its capital stock. In Japan, which lost a quarter of its housing stock and 80% of its merchant ships, income from rent and interest disappeared almost completely, and dividends also

declined sharply. In some cases, foreign or colonial assets – another prerogative of the well-off – became unavailable or inflation wiped out savings.

Desperate to sustain total war, governments of all stripes embraced economic planning: controls on wages, prices, rents, and dividends primarily targeted the wealthy and sought to mobilise and appease soldiers and workers at the expense of capitalists. Nationalisation schemes and confiscatory fiscal emergency measures rounded off these packages. Taxes on income and wealth, which had already surged during the First World War, reached new and unparalleled heights: in the early 1940s, averaged across 20 countries, the top estate and income tax rates rose to one-third and almost two-thirds, respectively (Scheve and Stasavage 2016: 10).

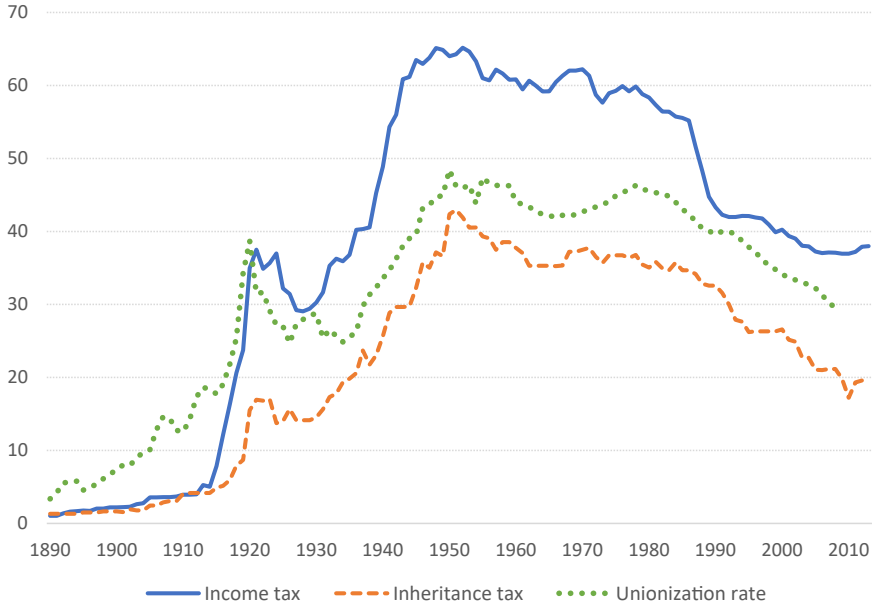
Legacies

Acting in concert, these sudden developments could not fail to narrow the gap between economic classes. Yet, the end of hostilities merely slowed levelling without putting an end to it; in most cases, it continued for several more decades into the 1970s or 80s. Social and political change that was deeply rooted in the experience of total war ensured a more even distribution of the gains from strong economic growth (Scheidel 2017: 164-73).

Until the 1970s, top tax rates often remained at levels close to those reached during the Second World War (Roine and Waldenström 2015: 556, Scheve and Stasavage 2016: 10). While income taxes flattened take-home pay, wealth taxes retarded the rebuilding of large fortunes. Unionisation was instrumental in ensuring wage compression. Union membership peaked in the wake of the Second World War: in 1945 in the US, and on average five years later in a sample of ten OECD countries (Scheidel 2017: 166-7).

Extensions of the right to vote, which had surged in and right after the First World War, once again gathered steam. More generally, the shared experience of total war helped shape attitudes and outcomes: conscription and rationing, often coupled with evacuations, bombing, or worse, eroded class distinctions and raised expectations of fairness and inclusion. Thus, the war served as a crucial catalyst for the creation of the welfare state (e.g. Klausen 1998). The Second World War created both the political will and the fiscal and organisational capacities required for ambitious redistributive programmes.

Figure 2 Mean top rates of income and inheritance taxes in 20 countries and mean trade union density in ten countries, 1890-2010 (%).



Sources: Scheve and Stasavage 2016: 10, Fig. 1.1; Scheidel 2017: 167, Fig. 5.13, from https://www.macro.economics.uni-mainz.de/klaus-waelde/trade-union-density-from-1880-to-2008-for-selected-oecd-countries/.

It is true that in all of this, other factors such as education and technology also played a major role. Even so, the political initiatives that had been precipitated by the pressures of war provided an indispensable framework for equalising change. As Sir William Beveridge put it in 1942, 'Now, when the war is abolishing landmarks of every kind, is the opportunity for using experience in a clear field. A revolutionary moment in the world's history is a time for revolutions, not for patching' (Beveridge 1942: 6).

Genuinely 'revolutionary' change was limited to Eastern and Central Europe and China. During the late 1940s, Stalin's and Mao's forces imposed socialism on a quarter of the world population. By 1950, one in three people on earth lived under communist regimes. Yet, at the same time, the market economies of Western Europe, North America and the Pacific Rim – which together accounted for more than another fifth of humankind – also went a long way in promoting an egalitarian agenda.

Sustained by economic growth that ensured full employment and strengthened the bargaining power of the masses, the institutional legacies of mass-mobilisation warfare managed to meld material progress with gentle levelling. By now an increasingly distant

memory, post-war equality cannot be separated from the formative experience of the Second World War.

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WID, "World inequality database", https://wid.world/.

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15 Recovery and reconstruction: Europe after the Second World War

Tamás Vonyó
Bocconi University

The world war that began 80 years ago when the German armoured divisions crossed the Oder – and ended with a surrender act aboard a warship in Tokyo Bay – was the worst of all wars, 'the War of the World' that brought the 'descent of the West' (Ferguson 2006).

The struggle of Nazi Germany and Imperial Japan for global supremacy exhausted the human and economic resources of much of Europe as well as East and Southeast Asia (Boldorf and Okazaki 2015). The six years of carnage incinerated 60 million souls, among them six million Jews. The majority of the military casualties were citizens of the Soviet Union, China, Germany, and Japan, but the dead were mourned the world over (Weinberg 2005). Tens of millions more were displaced and haunted by the oppressions of war, men wearing the scars of battle and women scarred by the humiliation of abuse at the hands of the enemy or their own husbands returning from the torments of frontline service. After the war had ended in Europe, 12 million Germans were held as Allied prisoners of war, two million of them never to return home. Millions of children across the continent would grow up without a father.

The enormous firepower of industrial warfare and aerial bombardment 'brought physical destruction that few could have imagined and few imagined could be overcome in their lifetime' (Vonyó 2018). That a Europe more prosperous than ever would emerge from this apocalypse astonished the world. Most economies shattered by war returned to pre-war levels of output within five years. The quarter-century that followed would be engraved in collective memory as the most remarkable era of macroeconomic stability and social progress in the history of the western world (Milward 1992) and as the 'golden age of economic growth' in Europe, both East and West (Crafts 2018).

Western Europe: Foundations of recovery

There is consensus in the more recent historiography of the post-war era that the foundations of economic life remained strong. Across Western Europe, the casualties of war were more than offset by natural population growth and post-war mass migration. Despite the scale of material damage, industrial equipment and plants survived the war remarkably intact. Even in Germany and Italy, the two main targets of Allied strategic bombing, industrial fixed capital grew by 20% and 30%, respectively, between 1936 and 1945. Power-generating capacity was also enlarged and needed little repair.

Industrial production had been brought to a halt by the demolition of the transport infrastructure, in particular bridges and railway hubs. But the maintenance of wartime command-economy controls and warlike labour mobilisation swiftly eliminated these bottlenecks and avoided the acute shortages that might have fuelled social unrest and runaway inflation, as Europe had experienced at the end of the First World War (Boltho 2001). By 1947, industrial production was back at pre-war levels in at least the victorious powers and the non-belligerent economies.

Continued revival and the resumption of economic growth were held back by institutional and geopolitical factors rather than the lack of productive capacity. The reconstruction of Western Europe required the abolition of the command economy and the liberalisation of prices and wages; the elimination of the dollar shortage to enable countries ravaged by war to import the capital goods necessary to rebuild their infrastructure and restock their factories; the restoration of the European division of labour; and international cooperation to resolve the German question and remobilise German industry (Milward 1987, Eichengreen 2007).

These prerequisites were impossible to achieve without American leadership in the rebuilding of the post-war order (Maier 1981). Recent scholarship has found the positive impact of the Marshall Plan not so much in the scale of material assistance, but rather in the political strings attached to it (Eichengreen 2007). Dollar aid enabled recipient nations to eliminate raw material shortages and invest in bottleneck industries, but only in exchange for trade liberalisation. The resources afforded by the counterpart funds allowed governments to finance public investment projects without the need to cut back on welfare spending, but they were compelled to reintroduce free markets and lift wartime controls and rationing, despite fierce opposition from labour unions.

Perhaps most crucially, the Marshall Plan, passed in 1948, underpinned post-war political stability by marginalising communist parties and supporting centrist governments, by forging a western alliance to contain Soviet expansionism, and by rehabilitating West Germany on the international stage. Indeed, it demonstrated a dramatic shift in

Allied policy towards German economic recovery, which until 1947 was inhibiting, and it offered sufficient compensation for the leading claimants on German reparations: France and the Benelux states.

The centrality of Germany

Germany was defeated and divided, but the rebuilding of Germany was necessary for the economic revival of Europe. West Germany alone remained the largest market and the prime exporter of capital goods on the continent. It was the precise aim of the Marshall Plan to mobilise German industrial might for European reconstruction.

It was the most momentous task, for the war and the post-war settlement had dislocated the German economy in more ways than one. The air war destroyed much of the urban housing stock. This left millions trapped in the rural hinterlands without the prospect of finding employment and left urban industry with a crashing labour shortage (Vonyó 2012). The miserable living conditions and the rigidities of Allied occupation prevented the return to normal economic life.

Price controls began to ease and markets revive following the currency reform of 1948 but restrictions on imports remained in place for another year and on production in strategic industries and the merchant navy for even longer. The division of Germany untied input–output links between western and eastern industrial districts and left severe structural imbalances in manufacturing capacity on both sides of the Iron Curtain.

These dislocating forces were primarily responsible for the disappointing productivity performance of German industry and also for the falling behind of the East German economy in the post-war years (Ritschl and Vonyó 2014). East Germany inherited highly specialised industrial districts, which were now cut off from both their major suppliers of intermediary inputs and their largest market. What followed was an exodus of both skilled labour and thousands of small and medium-sized firms. Economic reconstruction in West Germany lasted throughout the 1950s and propelled the Wirtschaftswunder (Vonyó 2018), while the damage the division on Germany had caused in the East was irreparable.

Reconstruction was a driving force behind the growth miracles of post-war Europe, including the other defeated powers, Austria and Italy, as well as Greece and Spain, both ravaged by civil war. The role of reconstruction growth in the early post-war period was confirmed econometrically by Dumke (1990) and Temin (2002), but more recent investigations demonstrated that its impact did not vanish until the end of the golden age (Vonyó 2008, 2017).

These novel findings also revealed that the falling behind of Eastern Europe in the post-war era was not so much the consequence of socialism as the result of comparatively modest levels of investment and weak reconstruction dynamics (Vonyó 2017). Both, in turn, can be best explained by the differential impact of the war and the post-war settlement on population growth, which deprived Eastern Europe of the flexible labour supply that has long been recognised as instrumental in western reconstruction and structural modernisation (Kindleberger 1967).

Eastern Europe: A demographic disaster

The brutality of the Eastern Front in World War II was apocalyptic and brought unprecedented destruction. The most devastating campaigns in global military history were fought over the 'bloodlands' stretching between Berlin and Stalingrad (Snyder 2010). Thousands of towns and villages were removed from the face of the earth; tens of millions were made homeless.

The human toll was incomparable to any other region of the world. Forty million Eastern Europeans died in the carnage, including more than five of the six million European Jews who perished in the Holocaust. From the invasion of the Soviet Union, Nazi Germany waged a war of extermination. The thirst for vengeance among the oppressed revealed itself in early 1945, when the Red Army rank and file ran amok in the eastern provinces of Germany, although Soviet soldiers often behaved similarly towards the 'liberated', too.

Millions more fled west, either running from the advancing Soviet troops or defecting when the communist parties rose to power in the Eastern regions. The expulsion of ethnic Germans from Central and Eastern Europe after 1945 and forced population exchanges enhanced this exodus. In accordance with Article XIII of the Potsdam Agreement, 15 million Germans were driven from their historical settlements east of the rivers Oder and Neisse, of which approximately nine million had lived in the eastern provinces of Prussia in 1939. One million were deported to the Soviet Union, with another 700,000 forcefully resettled from the European to the Asian territories of the USSR and 13 million expelled to post-war Germany and Austria. Two million were killed or went missing in the course of these deportations (Vonyó 2018).

While these population movements featured prominently in German historiography, their impact was largely ignored in the economic history of Eastern Europe. The effect of war casualties, including those physically or psychologically disabled, combined with the post-war settlement, was devastating. The populations of Hungary, Romania, and Yugoslavia stagnated between 1939 and 1950. Czechoslovakia, Poland, and the

Soviet Union each suffered population declines of 10–20% over the same period. Czechoslovakia and Poland did not recover from this demographic shock until the 1960s. The shortage of labour, and especially of skills, was crushing. The eastern provinces of Prussia, ceded to Poland and the USSR in 1945, and the Sudetenland were temporarily depopulated and their industrial districts lost most of their pre-war labour force.

Across Central and Eastern Europe, the war left behind a distorted demographic structure with a crippling shortage of able-bodied young men, who had traditionally constituted the backbone of the industrial workforce. The Holocaust and the expulsion of ethnic Germans, together with the mass voluntary exodus of the bourgeois middle class, bequeathed upon the tormented region a plethora of industrial and commercial enterprises without their original owners and the necessary skills and managerial know-how required to operate them.

The economic performance of the eastern half of Europe after 1945 can only be evaluated in light of these inauspicious beginnings. While communism and the command economy played their part, they are not the whole story. The initial conditions of economic recovery in Eastern Europe were also far less favourable than in the West.

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16 How the Second World War shaped political and social trust in the long run

Pauline Grosjean
University of New South Wales

What is the political legacy of the Second World War? One tradition has described war as the precondition for state formation and nation building (Tilly and Ardant 1975, Tilly 1985). Another emphasises the political and social disintegration that follows conflict, leading to heightened risk of further conflict and 'conflict traps' (Collier et al. 2003, Collier and Hoeffler 2004).

Two problems stand in the way of firm conclusions from macro-level studies. One is omitted variables that correlate with both the occurrence of conflict and the quality of institutions. Another is reverse causality between state capacity and conflict. These problems can be overcome by micro-level studies, which examine the effects of varying exposure to conflict on individuals in similar cultural and institutional conditions.

My research (Grosjean 2014) has found consistent patterns in how the Second World War shaped individual attitudes across Europe and Central Asia. A representative sample of respondents across 35 countries in 2010, 65 years after the end of the war, shows that a family history of wartime victimisation has systematically eroded political trust and the perceived legitimacy of institutions. Greater exposure to violence has also made people more likely to engage in political and social groups and collective action.

Data: The Life in Transition Survey

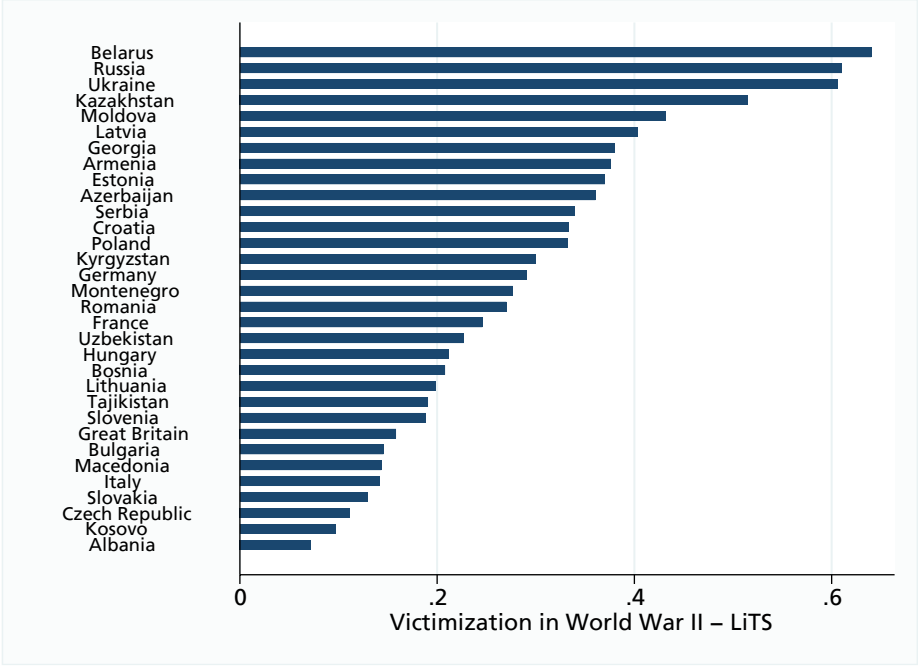
The Life in Transition Survey (LiTS) is a nationally representative survey in more than 30 countries of former Communist Europe and Central Asia, carried out by the European Bank for Reconstruction and Development and the World Bank. Three waves have been collected since 2006. In 2010, the survey included a question on family and personal exposure to the Second World War, as well as to more recent conflicts for the

countries that experienced a civil war since then. I focus here exclusively on the Second World War; in Grosjean (2014) I consider exposure to conflict more broadly.

The 2010 wave was also collected in five Western European comparison countries (France, Germany, Great Britain, Italy, and Sweden). One thousand respondents were included in each country (1,500 in Ukraine and Russia), making the total number of observations more than 39,500. I exclude countries that were neutral during the war from the data, leaving a sample of 35,960 individuals.

Asked whether they, their parents or their grandparents were physically injured or killed during the Second World War, nearly 30% of respondents answered yes (unweighted average). As Figure 1 shows, the incidence of victimisation ranges from more than 60% in Belarus, Russia, and Ukraine to less than 10% in Albania and Kosovo.

Figure 1 The incidence of reported victimisation in the Second World War by country



Source: Grosjean (2014: 435).

Note: At the country level, the frequency of self-reported victimization is highly correlated with independent measures of war-related fatalities (Grosjean 2014: 436).

Which political and social norms are most critical for long-run stability and society? Trust in formal institutions has been found among the determinants of economic growth (Acemoglu 2005, Acemoglu et al. 2011, Besley and Persson 2009, 2010), market

development (Greif 2012), economic liberalisation (Grosjean and Senik 2011), and post-conflict political recovery (Bigombe et al. 2000). Trust in others is also a factor in growth (Knack and Keefer 1997, Guiso et al., 2010), the functioning of markets (Fafchamps 2006), and institutional quality (Tabellini 2008, 2010). Participation in social groups and collective action is the focus of Puttnam (1995), and research on the social legacy of conflict has relied on similar measures of social capital (Bellows and Miguel 2009). Whether social capital is necessarily positive or negative for development is a point to which we will return.

The answers of the respondents to the LiTS allow us to measure the most relevant political and social norms.

- Trust in central institutions of the nation: the presidency, the government, and the parliament, scaled 1 (low) to 5 (high).
- Perceived fairness of the justice system: equal treatment in the courts and protection against the state, scaled 1 to 5.
- Trust in others (as against needing to be careful when dealing with others), scaled 1 to 5.
- Capacity for collective action: participation in demonstrations, strikes, or petitions.
- Participation in social groups: membership of religious, recreational, educational, labour, environmental, professional, charitable, or youth associations.
- Participation in politics: membership of a political party.

We then look at how respondents' norms and preferences expressed in 2010 are related to family exposure to violence during the Second World War, which ended 65 years previously.

Confounding factors and reverse causality

In the first instance, I consider the relationship between the intensity of victimisation in the Second World War and political and social preferences across the whole sample. However, this relationship might depend on the outcome of the war for the nation. For example, trust in the state might be enhanced in countries that were victorious and weakened in those that were defeated. For some countries there was also a civil war, as in the Balkans. Therefore, I contrast the role played by victimisation among the Allies (Great Britain with the Allied governments in exile (today's Czech Republic, Poland)) and the Soviet Union; the Axis and client states (Albania, Bosnia, Bulgaria, Croatia, Germany, Hungary, Italy, Kosovo, Macedonia, Montenegro, Romania and Slovakia);

and the remaining divided countries (Belarus, three Baltic states, France, Moldova, Serbia, Ukraine).

Second, the quality of institutions varies greatly across countries. For example, Great Britain and Bulgaria show similar wartime death rates but widely different institutions and cultural norms. This would influence individual answers about political trust or social capital, regardless of wartime experience. To speak to the legacy of wartime victimisation on political trust and social capital, it is essential to maintain constant the quality of formal institutions and cultural factors. For this reason, the analysis only compares individuals within the same neighbourhood (primary sampling unit) in the same country.

Third, there is the possibility of reverse causation: people may have suffered violence selectively, because of the level of their political trust or because they belonged to social groups or political parties. The fact that the war ended 65 years before the survey was conducted attenuates this selection concern. In 1939, only 8.4% of our respondents were alive; only 0.3% were 16 or older. The average respondent is 46 years old and thus reports their parents' or grandparents' victimisation, not their own. Systematic victimisation would be a problem only if the preferences that made people suffer wartime violence were inherited down the generations. Still, I control for respondents' characteristics that could be correlated with political trust and social capital or family history of victimisation, such as age (and age squared), gender, ethnicity (proxied by mother tongue), education, working status, religion, and income. Essentially, I compare individuals not only from the same neighbourhood, but also with similar personal characteristics, who differed in family exposure to war violence.

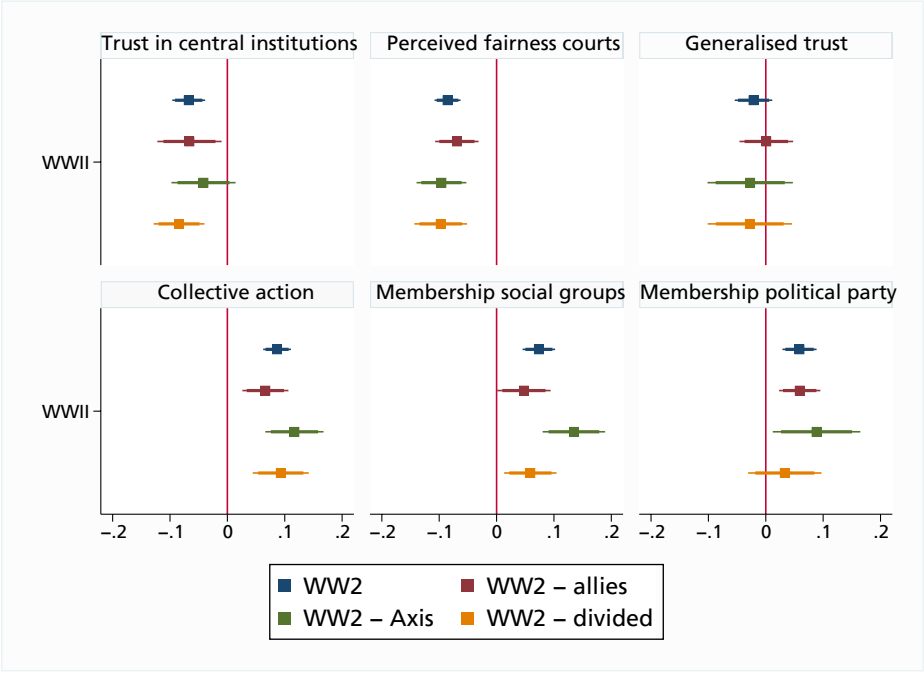
Figure 2 displays the results of OLS regressions of the indices of trust in institutions and of social capital on an index of wartime family victimisation. The regressions control for individual characteristics and neighbourhood fixed effects. As indicated in the figure's legend, the first line uses the whole sample, the second only the sample of Allies, the third Axis countries only, and the last the sample of remaining divided countries.

On this basis, we reach four main findings:

- Wartime victimisation erodes trust in the state today.
- Wartime victimisation spurs involvement in collective action.
- For those whose families were victimised, membership of social groups marks even lower political and social trust.

The effects on trust are stable down the generations.

Figure 2 Victimisation in the Second World War reduces political trust and spurs collective action



Source: Grosjean (2014).

Note: Each chart shows four coefficients on wartime victimization of a different dependent variable. The four coefficients, in order from top to bottom, are for the whole sample, Allies, Axis, and divided countries. Controls and fixed effects are described in the text. The dependent variables are standardised, so the coefficients are directly comparable. Standard errors are clustered at the country level. Horizontal bars correspond to 10% (thick line) and 5% (thin line) confidence intervals. When the confidence interval does not overlap with the vertical bar at zero, the coefficient is statistically significant at the 5% level.

Long-term effects of wartime victimisation

Wartime victimisation erodes trust in the state today.

Sixty-five years on, political trust is strongly and negatively affected by wartime victimisation, regardless of the war's outcome for the country. (But the effect is only marginally significant in Axis countries.) The effect is similar on perceived fairness of the courts.

The magnitude of the results is quite large. Today, people whose families were victimised in the war are less trusting of the central state and of the courts by 0.07

and 0.08 standard deviations, compared with others with similar socioeconomic characteristics in the same locality. For trust in the central state this is nearly five time the effect of being unemployed. For trust in the courts, it is ten times.

By contrast, there is no strong effect on generalised trust – a puzzle to which we return below.

Wartime victimisation spurs involvement in collective action.

Today, people whose family was victimised in the war are more likely to engage in collective action by demonstrating, striking, or signing petitions, and they are more likely to join social groups and political parties. Again, the fate of the nation at the war's end has no strong influence.

What is captured, exactly, by involvement in collective action and in social and political groups? The sociological literature is divided. Putnam (1995) sees it as promoting social cohesion. Bourdieu (1985) saw the opposite: social capital can be exploited in group rivalry, leading to social exclusion and political violence (see also Portes 1998). Recently the "dark side" of social capital has been unveiled by Satyanath et al. (2013): the density of civic associations in interwar Germany helped the advance of the Nazi Party to power. Similarly, victims of the 1990s Tajik civil war participate more in groups when they have less trust in other people and the state (Cassar et al. 2013a, b).

For those whose families were victimised in wartime, membership of social groups marks even lower political and social trust.

We find that the collective action spurred by war victimisation may be of a similarly dark nature. In families that were victimised, people who participate in groups today are those that place less trust in others and in politics (Grosjean 2014: 447-448).

This may solve the puzzle that our measure of generalised trust seems unaffected by wartime experience. Conflict may increase trust in friends and relatives, while reducing trust in strangers.

The effects on trust are stable down the generations.

Are the effects we observe driven by war survivors and the immediate post-war generation, and do they fade over time among younger people? Our data allow us to distinguish four different birth cohorts, separated by 1940, 1960, and 1980. I find that

the overall legacy of war victimisation does not fade, showing only modest declines in some dimensions while increasing in others.[1]

Conclusion

Family victimisation in the Second World War has led, across the board, to a persistent decline in political and social trust. Far from fading over generations, some effects prevail among those born since 1980. Thus, wartime experience is among the complex mix of factors at work in the long-term decline of social and political trust across the Western world.

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1 These results are not reported in Grosjean (2014). Details are available from the author upon request.

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About the author

Pauline Grosjean is a Professor in the School of Economics at UNSW. Previously at the University of San Francisco and the University of California at Berkeley, she has also worked as an Economist at the European Bank for Reconstruction and Development. She completed her PhD in economics at Toulouse School in Economics in 2006 after graduating from the Ecole Normale Supérieure. Her research studies the historical and dynamic context of economic development. In particular, she focuses on how culture and institutions interact and shape long-term economic development and individual behaviour. She has published research that studies the historical process of a wide range of factors that are crucial for economic development, including cooperation and violence, trust, gender norms, support for democracy and for market reforms, immigration, preferences for education, and conflict.

The Second World War was the largest conflict in history, touching five continents and changing the lives of millions. The scale of mobilisation of all sectors of the economy and society had redefined the concept of 'total war'. It was the last time that Western societies were mobilised for an all-consuming conflict that demanded years of sacrifice and service from every citizen and every family. Such watershed moments are sometimes neglected in economics.

This eBook brings together recent research on a range of aspects of the war including the extensive war preparations of the great powers; the conduct of the war (including the management of economic mobilisation, economic warfare, economic exploitation, and the role of economists); and the war's consequences for demography, inequality, economic recovery and political attitudes.

The Second World War witnessed the growth and power of economics as a weapon and strategy in warfare. Economics – and economists – were everywhere in the war. Economic considerations motivated the war. The war was managed with the help of economics. Economic factors powerfully influenced its outcome. There were profound and persistent economic consequences.

The eBook examines the role of economics in the preparations, causes, conduct and consequences of the war. Chapters examine the importance of economic factors in the war preparations, studying the effect of the great depression on the German economy and its role in carrying Hitler to power, German economic mobilisation and the transformative rearmament plans of the Soviet Union under Stalin. It also explores how lessons learned from the experience of the First World War affected British preparations for the Second World War and wartime economic management. Other chapters discuss how economic factors influenced the conduct of the war, including how Allied air and sea power were used to defeat the Axis, the growth of the American war economy, which raised real GDP by 72% between 1940 and 1945, and the tragic fate of occupied economies exploited by the Nazis. Finally, authors explore the significant economic consequences of the Second World War, including evidence on famine-related deaths and the long road to post-war economic recovery.

Overall this eBook provides a unique insight into the importance of economics and the sometimes overlooked role that economists played in shaping the war and its outcomes. The evolution of economic warfare is revealed, together with how economic factors powerfully influenced the war's outcome and its profound and persistent economic consequences. The eBook demonstrates the extent to which economic factors permeated and influenced all levels of the preparations, conduct and consequences of the Second World War.

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