War Mobilization and Economic Development: World War II and Structural Transformation in India *

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Abstract

Can temporary wartime mobilization change the long-run development trajectory of an economy? We study how mobilization for World War II in colonial India influenced its subsequent long-run economic development. From 1939 to 1945, the British colonial government purchased massive amounts of war materiel within India. We study long-run impacts on Indian structural transformation – the transition of employment from agriculture to the modern sectors (industry and services) – in Indian districts. Causal identification takes a shift-share approach, exploiting variation across industries in war-related government orders, and variation across districts in their pre-war industrial structure. Our analysis covers nine decades (1921-2011), and makes use of a wide array of newly digitized data. We find that World War II economic mobilization (demand for war materiel) had a positive and significant impact on long-run structural transformation in Indian districts. More than six decades after World War II, Indian districts that experienced higher demand for war materiel during 1939-1945 experienced higher structural transformation from agriculture towards industry and services. We find substantial spillovers across economic sectors, particularly towards services sectors that were not directly subject to the initial World-War-II-related demand.

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1 Introduction

September 1, 1939 is one of the most famous dates in the 20th century, marking the German invasion of Poland and the start of World War II in Europe. The date two days later is less well-known. On September 3, 1939, the British Viceroy of India, Lord Linlithgow, made a brief address on All India Radio announcing that India was at war with Germany. The British brought India into World War II on the Allied side by fiat, without consulting Gandhi, Nehru, or any Indian political leader (Raghavan, 2017). It could do so because India was a British colony, and would remain so until August 15, 1947 (another famous date in history).

India would subsequently make major contributions to Britain's World War II effort. From 1939 to 1945, India served as a major arsenal and war materiel supplier for the British Empire in its war efforts worldwide. The total value of goods procured was phenomenal, amounting to one-third of India's pre-war (1938) GDP. This wartime procurement constituted the last major intervention of the British Raj in the Indian economy (Sinha and Khera, 1962).

Can temporary war mobilization change the long-run development trajectory of an economy? We study how the economic mobilization of colonial India for World War II – its supply of materiel for the war effort – influenced independent India's subsequent long-run economic development. We are interested in structural transformation (the transition of employment from agriculture to industry and services) in Indian districts that were exposed to varying degrees to World-War-II-related demand for war materiel.

For causal identification, we exploit variation across industries in the magnitude of World War II purchases in India by the British colonial government, combined with variation across Indian districts in the pre-war presence of industries producing those war-related products. We combine these sources of variation in a shift-share research design. Our analysis traces the dynamics of effects on structural transformation over nine decades, from 1921 to 2011.

This study is made possible by two innovations on the data front. First, we make use of a unique tabulation of procurement of World War II materiel in India by the British colonial government, which provides the total Indian rupee value of hundreds of distinct procured products. To our knowledge, this data source, Aggarwal (1947), has not previously been used in research in economics. Second, we have made

substantial investments in digitizing district economic structure data from Indian Censuses from 1921 to 1951, which previously were not available in electronic form. With district-level employment at the detailed occupation level from the Census and product-level war procurement from Aggarwal (1947), we can construct our key right-hand-side shift-share variable. The Census data also provide our main dependent variable, structural transformation of the economy from agriculture to the modern (industry and service) sectors.

We find that demand for war materiel during World War II had a positive and significant impact on long-run structural transformation in Indian districts. More than six decades later (through 2011), Indian districts more exposed to World War II materiel procurement see greater transitions of their labor forces from agriculture to the industry and service sectors. Impacts are not limited to the specific industrial sectors that produced war-related goods. In particular, we find substantial spillovers of impacts to service sectors that were not directly subject to the World-War-II-related demand. Growth of service-sector employment accounts for the majority of structural transformation effects, in both the short and longer run.

We address potential threats to causal identification. A pre-trend analysis from 1921-1931 establishes that districts experiencing higher World-War-II-related demand (as measured by our shift-share variable) were not already experiencing more rapid structural transformation in the pre-war period. We also show that our estimates are robust to controlling for time trends that are related to a wide range of baseline (pre-World-War-II) characteristics of districts (economic characteristics, historical conditions, and geographic features). In addition, we also show that variation across districts in military service of soldiers in the war is not driving the empirical results. Our estimates are highly robust to controlling for proxies for a district's population in World War II military service, suggesting that military service in the war effort does not contribute to the structural transformation effects we document.

Our paper is structured as follows. We first discuss the related literature and our contributions. Then, we provide an overview of World War II mobilization in India. Following that, we describe our empirical analyses, data, and results. We conclude by discussing the implications of our results for economic policy-making and potential future research directions.

2 Related Literature and Our Contributions

Our work contributes to three research areas: the economic impacts of war mobilization, the economics of industrial policy, and the long-run consequences of British colonial policies in India.

Economic Impacts of Wartime Mobilization

We contribute to research on the economic consequences of wartime mobilization. Prior research on the impacts of war production and investment, mostly on the U.S., has found mixed results. Many studies argue that World-War-II-related demand had limited impact on post-war productivity growth (Rhode, 2003; Fishback and Cullen, 2013), for example due to inefficiencies from shifting between civil and military production (Higgs, 2004; Field, 2008; Rockoff, 2012; Jaworski, 2017; Field, 2022).

Other studies have documented positive effects of military spending and investment on both short- and long-run economic outcomes. Several studies find that World War II military spending had positive effects on productivity through the 1950s, owing to economies of scale, learning by doing, public R&D, and government provisioning of plant and equipment (Gordon, 1967; Ruttan, 2006; Ristuccia and Tooze, 2013; Gordon, 2017). Similar short-run effects have been noted in Japan, South Korea, and Taiwan during the Vietnam War (Naya, 1971; Stubbs, 1999). Moretti et al. (2021) find, among OECD countries in recent decades, that government defense-related R&D expenditures have positive spillovers on R&D and productivity growth in the private sector. Studies have also identified longer-run impacts of war mobilization. Garin and Rothbaum (2022) find that government investment in plants for World War II production had long-run positive effects on overall employment and high-wage manufacturing work in U.S. localities. U.S. public R&D investments in World War II have also been found to have long-run positive effects on patenting and high-tech employment in U.S. localities (Gross and Sampat, 2023).[1]

Historians have also viewed World War II as having stimulated subsequent Indian industrialization (Morris, 1983; Roy, 2016), although there are views to the contrary (Tomlinson, 1996; Kamtekar, 2002). McNeill (1982) (p. 356) also views World War II production as having given "special impetus to Indian industrialization".

We contribute with economic analysis of the impact of war mobilization in a con-

[1] A related literature in political science argues that war is conducive to long-run growth by fostering state-building and institutional development (Rasler and Thompson (1985), Stubbs (1999), Gupta et al. (2016), Dincecco et al. (2022)).

text, India, that is more relevant for developing countries overall than prior research focusing on the U.S. or the OECD. Our work is also distinguished by finding (and seeking to further explore) very long-run effects of historical war mobilization – over six decades since World War II. This contrasts with the existing literature which either focuses only on short-run effects, or does not find long-run persistence of effects.

Economics of Industrial Policy

Our research also sheds light on the impacts of industrial policy (policies aimed at changing the industrial structure of the economy). Wartime mobilization policies are a type of industrial policy, in that they aim to shift production towards industries that contribute to military capability. Since the beginnings of development economics, scholars have highlighted the potential for industrial policy to promote structural transformation from agriculture to industry (Rosenstein-Rodan, 1943; Nurkse, 1953; Hirschman, 1961). Industrial policy has been seen by many scholars as a key driver of economic development in a number of East Asian countries, such as South Korea and Taiwan (Amsden, 1989; Wade, 1990; Evans, 1995; Rodrik, 1995). Others have argued that industrial policy has been ineffective or even harmful for economic development (Baldwin, 1969; Krueger, 1990; Weinstein, 1995; Beason and Weinstein, 1996; Lee, 1996; Pack, 2000; Lederman and Maloney, 2012).

Justifications for industrial policy (as opposed to *laissez-faire*) point to a variety of market failures, such as information imperfections and the need for learning-by-doing (Arrow, 1962; Hausmann and Rodrik, 2003), coordination externalities (Buera et al., 2021), and labor-training externalities (Rodrik, 2007). In many models of economic growth, there can be low- and high-development equilibria, for example due to financial market incompleteness (Townsend, 1979; Greenwood and Jovanovic, 1990; Bencivenga and Smith, 1991; Acemoglu and Zilibotti, 1997), aggregate demand externalities (Murphy et al., 1989), or credit constraints on human capital investments (Galor and Zeira, 1993). In such growth models, industrial policy can move the economy from the low to the high equilibrium.

We contribute to an emerging literature that exploits historical natural experiments to understand the impacts of industrial policy. Recent such papers include empirical analyses of the South Korean 1970s heavy and chemical industry drive (Liu, 2019; Choi and Levchenko, 2021; Kim et al., 2021; Lane, forthcoming), Finnish World War II reparations (Mitrunen, 2021), import trade protection in France (Juhász, 2018), temporary input cost advantages in British shipbuilding (Hanlon, 2020), and

China's 19th-century self-strengthening movement (Bo et al., 2023).[2]

Compared to the literature examining historical episodes of industrial policy, our work is distinguished, first of all, by its geographic scope covering (nearly) all of India, and thus roughly one-sixth of world population. The Indian context, while distinct in its own ways, provides insights that may be of greater relevance to developing countries more broadly than existing research on historical industrial policy episodes in South Korea, Finland, France, or Britain.[3] One reason it may be important to study these questions in a developing country context is that the impacts of industrial policy may vary across countries with different initial levels of industrialization. The nature of such heterogeneity is ambiguous in theory; industrial policy could have either larger or smaller effects on subsequent development in initially less-developed places.

Our research also takes a very long-run scope compared to most prior studies, over six decades from World War II to 2011. Only Juhász (2018) examines effects of industrial policy over such a long time span (over seven decades in the 19th century). In the analysis of Bo et al. (2023), the end of the 19th century intervention period to 1937 spans roughly four decades. Choi and Levchenko (2021), Mitrunen (2021), and Hanlon (2020) examine impacts over roughly 20-30 years from their policy of interest to the final period of analysis.

Finally, our study differs from prior work in the specific form the industrial policy takes. In the Indian World War II context, industrial policy was likely to have operated mainly via government procurement, raising the level of demand faced by producers. (We are currently collecting data on and investigating the extent to which other industrial policies like credit subsidies may also have played an important role in India during World War II.) By contrast, the industrial policies studied in prior work are credit subsidies (South Korea), trade protection (France), input cost advantages (Britain), and government establishment of factories (China).

[2]Our work is also related to research using frontier econometric techniques to study modern-era industrial policies, as opposed to policies enacted in a distant historical period (such as Nunn and Trefler (2010), Aghion et al. (2015), Alder et al. (2016), Rotemberg (2019), Criscuolo et al. (2019), Fan (2021), Manelici and Pantea (2021), Giorcelli and Li (2021), Cox (2023)), as well as those using structural estimation (Kalouptsidi, 2018; Barwick et al., 2019). Earlier calibration-based analyses include Head (1994) and Irwin (2000). Harrison and Rodríguez-Clare (2010) provide a literature review. Also related is Kline and Moretti (2014), who study long-run structural transformation due to the U.S. Tennessee Valley Authority's public infrastructural investments. Dell and Olken (2020) on the persistent impacts of the colonial Dutch cultivation system in Java also has elements in common with the industrial policy literature, in highlighting how historical production investments can affect long-run structural transformation.

[3]Among prior historical studies, only Bo et al. (2023) examines a developing-country context – China – and it does not document effects persisting to the present day.

British Colonialism in Indian Economic History

Finally, we contribute novel insights in the literature on the long-run impacts of British colonialism in India. Prior work examines the impacts of direct vs. indirect colonial rule (Banerjee et al. (2005), Iyer (2010)), colonial institutions (Banerjee and Iyer (2005), Gupta et al. (2016), Castelló-Climent et al. (2018), Lee (2019)), railroad infrastructure (Donaldson (2018), Chaudhary and Fenske (2022)), and the colonial legacy of partition (Bharadwaj and Fenske (2012), Bharadwaj et al. (2015), Bharadwaj and Mirza (2019)). Bonfatti and Brey (forthcoming) study how reductions in imports due to World War I trade disruptions affect industrialization and support for the anti-colonial movement in Indian districts.

In this context, our work is unique in examining the impacts of war mobilization on long-run economic development. No prior research in Indian economic history has covered this ground.

3 World War II Mobilization in India

With the onset of World War II, the British colonial government of India initiated a wide-ranging set of policies to expand Indian production of goods needed for the war effort (Aggarwal, 1947; Sinha and Khera, 1962). Most prominently, war-related public procurement was massive: the total value of goods procured over 1939-1945 amounted to 33% of 1938 Indian GDP.[4] The vast majority of these World-War-II-related goods were shipped outside India's borders to other theaters of the war (Sinha and Khera (1962), Appendix Tables 2 and 4).

The government procurement goods for the war effort from a wide variety of industries in India, to varying degrees. Our empirical analyses take advantage of this variation in the magnitude of procurement across industries, and the geographic variation in the location of pre-war industries (described below in Section 4).

In addition, the set of government policies to support the war effort included measures such as credit subsidies, subsidies for capital investments, and direct establishment of state-owned firms in key industries. In some cases (such as munitions and machine tools), the government mandated production by private firms, coordinated production across firms (say, to ensure supplies of intermediate inputs), and facilitated knowledge transfer (e.g., via technical assistance missions by foreign experts).

[4]The total rupee value of war-related public procurement is calculated using Aggarwal (1947). The GDP figure for 1938 is from Appendix Table 6(d), Sivasubramonian (2000).

The government also supported research institutes to develop substitutes using local materials for goods that were scarce due to war-related trade disruptions.[5]

We would expect that the extent of these other policies to stimulate production in different industries would be highly correlated with the amount of government procurement across industries. The amount of government procurement in an industry can thus serve as a proxy that represents both the impact of government procurement *per se*, as well as the set of other policies that are aimed at stimulating production in the industry. Our analyses (described below) therefore focus on estimating the impact of the amount of government procurement.

Minimal fighting took place on Indian soil during World War II, but 2.5 million Indian soldiers fought on the Allied side in a number of war theaters, most importantly against the Japanese in Burma (Raghavan, 2017). In principle this military service could also have economic effects on soldiers' origin areas. In analyses below we show that including proxies for district-level participation in military service in World War II has no influence on the estimated effect of the shift-share variable. Actual military service does not appear to be a mechanism through which effects of our shift-share variable operate.

4 Empirical Analyses

We aim to shed light on the impact of war mobilization on Indian economic development in the long run. We present here analyses examining impacts on structural transformation – the shift of employment from agriculture to the modern sectors (industry and services).

The causal variation we exploit is variation across industries in the magnitude of World War II purchases by the British colonial government of India, combined with variation across Indian districts in the presence of those industries in the pre-war period. We combine these sources of variation to implement a shift-share research design, which we describe in Section 4.1 below.

The sample for analysis is a panel of 164 Indian locations ("districts") observed from before to after World War II. In these analyses we take the magnitude of war-related government procurement as the measure of the extent of "war mobilization" across industries. While the magnitude of procurement of goods across industries

[5] We do not yet have comprehensive data on these other types of policies, but are actively working to assemble a full picture of such policies.

has a direct effect on industry (and thus district) outcomes, the British colonial government also implemented other policies to stimulate supply of goods needed for the war effort (such as credit subsidies, technical assistance, capital grants, etc.). In currently ongoing work, we are assembling data to quantify the extent of these other policies across industries. In this section's analyses, therefore, one should interpret our regression coefficients as representing the combined effect of the magnitude of procurement itself, as well as any concurrent government policies to stimulate supply (whose extent across industries is likely to be correlated with the magnitude of government procurement).

The analyses we present here take the Indian district as the unit of analysis. In concurrent ongoing work we will also examine outcomes at the level of the industry or product.

4.1 Empirical Approach

To estimate the causal impact of war mobilization on structural transformation of Indian districts, we take a shift-share approach (following Borusyak et al. (2022)) that exploits the district-level incidence of British colonial government World War II purchases across industries.

The intuition for the shift-share strategy is as follows. British wartime procurement varies across industries, with some industries (e.g., munitions) experiencing very high demand, some (e.g., footwear) seeing intermediate levels of demand, and others low or zero wartime demand (e.g., musical instruments, jewelry, pottery). Indian districts also vary in the pre-war presence of different industries, as measured by the share of employment by industry. Some have relatively high shares of employment in industries that experienced war-related demand, such as munitions and footwear, while other districts have low such shares. Districts with higher pre-war presence (employment shares) in war-related industries should experience higher increases in demand (on a per worker basis) due to war-related government procurement. Our approach involves creating a shift-share variable quantifying the extent to which a district experienced World-War-II-related procurement. This variable will be the causal variable of interest in our analyses.

To account for border changes over time, we combine administrative districts so as to be able to track consistently-defined locations from before to after the war. We aggregate Census data appropriately to map to these combined locations. We

continue to refer to these combined locations as "districts". Some districts cannot be included in our current analyses due to data limitations (e.g., pre-war data are absent for much of present-day Rajasthan and Gujarat). We exclude the Andaman and Nicobar Islands since these were occupied by Japan during the war and thus did not provide any war materiel. We also exclude from our analyses districts in the northeast region (which includes Bengal and Assam) because war procurement and production intentionally avoided that region due to the proximity to Japan's advance in Burma (Raghavan (2017), p. 321).

The shift-share variable, $Shiftshare_d$, is predicted World-War-II-related government purchases per worker in district d:

$$Shiftshare_d = \sum_i S_i \times \omega_{id,1931} \tag{1}$$

The "shifts" in the shift-share are S_i, wartime purchases per worker in industry i: total World War II purchases in industry i divided by the total number of pre-war (1931) workers in industry i in British India (purchases are denominated in nominal Indian rupees, INR). This is a measure of the magnitude of war-related purchases across industries. In a subset of 49 out of 195 industries, there is non-zero demand; it is these "war-related" industries on which we focus.[6]

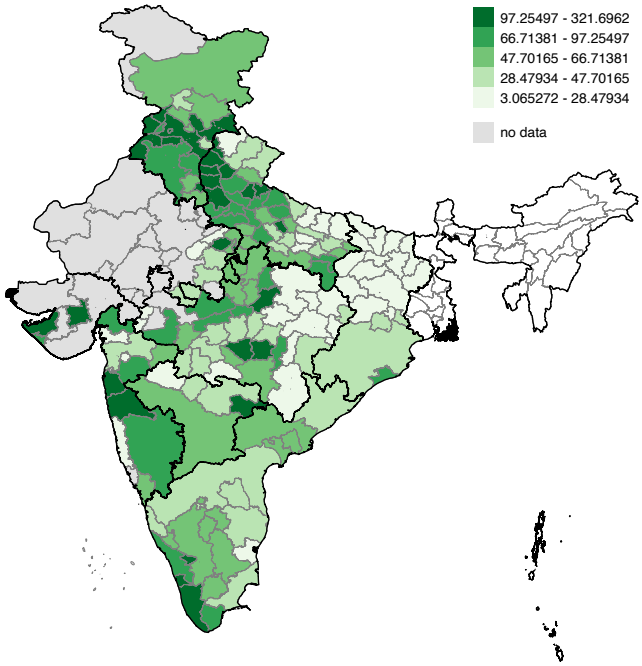
The "shares" in the shift-share are $\omega_{id,1931}$, employment in war-related industry i in district d, as a share of all employed people in district d (measured in the closest pre-war Census year, 1931). $\omega_{id,1931}$ measures the "exposure" of district d to war-related purchases in industry i. We calculate these $\omega_{id,1931}$ shares for each war-related industry (industries with non-zero World War II government purchases) for each district.

Taking the product of the shift S_i and the share $\omega_{id,1931}$ for each of a district's industries, and then summing across the district's industries, yields the shift-share variable $Shiftshare_d$: the predicted total value (in INR) of war-related purchases per worker in district d. The spatial distribution of the shiftshare variable is shown in Figure 1.

We estimate the following regression equation:

[6]We exclude some parts of British India from the total count of workers in the denominator of S_i. First, we exclude workers in the northeast region (which includes Bengal and Assam), since war procurement intentionally avoided that region due to fear of Japanese invasion from Burma (Raghavan, 2017). Second, we exclude Burma itself because in 1937 it became a separately administered colony from India.

Figure 1: Spatial Variation in Shift-Share Variable



Notes: Districts shown are consistent geographic units between 1931 and 2011 Census. Light grey lines demarcate district borders. Black lines demarcate larger-scale "regions" (author defined) of contiguous groups of districts (for estimation of region * time fixed effects). Green shading represents value of shift-share variable, expression (1). Grey shading indicates districts for which we cannot currently calculate the shift-share variable due to availability of Indian Census data. Districts in white (in northeast) are not included in analysis, due to proximity to Japanese military advance in Burma. Andaman and Nicobar Islands also not included in analysis since they were occupied by Japan during the war.

$$y_{dt} = \alpha_d + Post_t + \beta(Shiftshare_d \times Post_t) + \boldsymbol{\delta}(\boldsymbol{X_{d,1931}} \times Post_t) + \epsilon_{dt} \qquad (2)$$

y_{dt} is the dependent variable, the share of employment in the modern sector (industry and services, or non-agriculture) of district d in year t. Our data will be a short two-period panel of districts in one pre-war year (1931) and one post-war year.

$Shiftshare_d$ is the shift-share variable (expression (1)). This is interacted with $Post_t$, an indicator for post-war periods. For ease of interpretation of the regression coefficient, we normalize the shift-share variable to have mean zero and standard deviation one when including it in the regression.

α_d are district fixed effects, which account for any time-invariant differences across districts. $Post_t$ is the time fixed effect (an indicator for the post-war period), and

accounts for any changes over time common to all districts. ϵ_{dt} is a mean zero error term.

$\boldsymbol{X_{d,1931}}$ is a vector of 1931 controls in district d. These are interacted with the $Post_t$ dummy. First of all, the vector includes the "sum of shares" (sum of $\omega_{id,1931}$ across war-related industries within districts). This sum of shares varies across districts (and is never equal to 1), making this an "incomplete shares" case in the Borusyak et al. (2022) framework. Conceptually, the sum of shares represents the share of employment in some war-related industry; inclusion of this variable as a control interacted with $Post_t$ controls for differential trends related with a district's pre-war employment in war-related industries.

In addition, $\boldsymbol{X_{d,1931}}$ includes controls for baseline (pre-war or time-invariant) economic, historical, and geographic characteristics of districts. Interacting $\boldsymbol{X_{d,1931}}$ with $Post_t$ accounts for differential time trends associated with baseline characteristics of districts. Economic controls include share of employment in industry and share of employment in services (share of employment in agriculture is the omitted category). These controls account for any differences in trends across districts related to their pre-war economic characteristics (e.g., if areas that were already more industrialized prior to the war were on different time trends). In addition, economic characteristics include log population, share of population employed, and population density as key pre-war characteristics that may also be associated with differential time trends. Historic controls include share of population under British direct rule, years of prior railroad access, and historical conflict within 250 km (years 1000-1757), from Dincecco et al. (2022).

The vector $\boldsymbol{X_{d,1931}}$ includes region fixed effects (for 11 regions); with this interacted with $Post_t$, estimates will be based only on variation in $Shiftshare_d$ within (and not across) regions. Geographic controls include mean temperature, mean precipitation, mean slope, mean elevation, land area, and maximum caloric yield in agriculture. Finally, to assess whether military service helps explain effects, the vector includes WWII casualties per million, martial castes per thousand, and indicator for non-missing military controls (from Jha and Wilkinson (2012)).

β is the coefficient of interest, and is interpreted as the causal impact of a one-standard-deviation increase (INR 45) in the shift-share variable on the share of employment in the modern sectors of the economy. It is identified from changes in the dependent variable for a district over time that are associated with the district's value

of the shift-share variable, net of time trends associated with the vector of controls $\boldsymbol{X}_{d,1931}$.

In the Borusyak et al. (2022) shift-share approach, causal identification depends on the exogeneity of the shifts (shocks), rather than the shares. Our identification assumption is that World War II purchases from industry i are as good as randomly assigned (conditional on district-d-level pre-war controls). Shares $\omega_{id,1931}$ can actually be endogenous.

We provide a partial test of the identification assumption by showing a pre-trend ("placebo" or "false" experiment) regression analysis alongside the main regression results. This is analogous to tests of "parallel trends" in difference-in-difference research designs. The pre-trend test will show that the pace of structural transformation (the change in the share of employment in the modern sectors) was not faster in the pre-war decades (between 1921 and 1931) in districts that *would in the future receive* higher World-War-II-related government purchases (districts that would have higher $Shiftshare_d$.) This test rules out that government World-War-II purchases were targeted (intentionally or inadvertently) towards districts that were already on steeper economic growth trajectories prior to the war.

4.2 Data

Our most unique data source is the reference we use to construct our shift-share "shifts", S_i (government wartime procurement in each industry i). The data come from the book *History of the Supply Department* (Aggarwal, 1947). This source reports the value of World-War-II-related procurement by the British colonial government of India, in Indian rupees (INR), for 384 detailed product categories from 1939 to 1946. These so-called "supply orders" were placed by the Supply Department of the colonial government of India, which was responsible for sourcing goods for the World War II effort from India. The supply order data are reported at the national (India) level, by product.

Data on the shift-share "shares" $\omega_{id,1931}$ of employment by industry are from the 1931 Indian Census (the last Indian Census before World War II). We use data from this pre-war Census to ensure the shares are predetermined with respect to World War II. We create a concordance between the 384 product groups in Aggarwal (1947) and the 195 occupations in the 1931 Indian Census.

The value of the shift S_i (total purchases over 1939-1945 per worker in the industry,

in nominal INR) is largest in the following three industries: making, assembling or repairing motor vehicles or cycles (INR 60,611); ship, boat, aeroplane builders (INR 32,705); makers of arms, guns, etc. (INR 22,907); and manufacture of matches, fireworks, and other explosives (INR 22,519). On the other end of the scale, S_i takes very small values for potters and makers of earthenware (INR 11) and cabinet makers, carriage painters, etc. (INR 6), and is zero for other industries (e.g., jewelry, musical instruments).[7]

To get a sense of the variation in the shares $\omega_{id,1931}$ (share of pre-war employment in industry i in district d), consider the cotton spinning, sizing, and weaving industry. The standard deviation of $\omega_{id,1931}$ for this industry across districts is 0.015. The maximum of $\omega_{id,1931}$ for this industry is 0.089, for a district consisting of Bijnor (Uttar Pradesh) and its surrounding rural area. Surguja district (Chhattisgarh) is at the median, with $\omega_{id,1931}$ of 0.0126. At the other extreme, the district of Dang (Gujarat) has an $\omega_{id,1931}$ of zero for this industry.

Since district borders change over time, we use the Dincecco et al. (2022) concordance to define districts that are consistent geographical units between 1931 and any post year that we consider in our regression analysis. We refer to these consistent geographical units as "districts". These are shown with grey borders in Figure 1 for the 1931-2011 sample. We also combine multiple districts to form geographically contiguous areas which we call "regions" (the areas surrounded by black borders in Figure 1). These 11 regions are the basis of the region * $Post_t$ fixed effects included in the regression.

For data on our outcome variable (share of employment in modern sectors), as well as 1931 economic controls, we conducted data entry of tabulated district-level variables from the 1921, 1931, and 1951 Indian Censuses. Creation of the exposure shares $\omega_{id,1931}$ also required us to conduct data entry for employment by industry from the 1931 census. Census data for 1991, 2001 and 2011 were already available in electronic form.

The summary statistics for key variables are shown in Table 1. The share of employment in the modern sectors (non-agriculture) rises between 1931 and 2011 by 10 percentage points, indicating some structural transformation over the course of 80 years. There is considerable variation in the shift-share variable $Shiftshare_d$: it has mean INR 63 and standard deviation INR 51 (nominal INR). A point of reference

[7] One INR in 1943-1945 is INR 65.39 (PPP US$4.21) in real 2011 terms (Sivasubramonian, 2000).

Table 1: Summary statistics for 1931-2011 sample

Variables	Mean	SD
Dependent Variables		
Share of employed in modern sector (2011)	.379	.178
Share of employed in modern sector (1931)	.279	.153
Share employed in production (2011)	.141	.073
Share employed in services (2011)	.238	.116
Shift-share Variable		
$Shiftshare_d$	63.234	50.828
Sum of shares ($\sum_i \omega_{id,1931}$)	.077	.042
Economic Controls (1931)		
Share of employed in production	.106	.061
Share of employed in services	.173	.127
Population (000)	1395.251	1569.414
Share of population employed	.481	.088
Population density	5.529	65.273
Historic Controls		
Direct British rule	.739	.431
Historical conflicts within 250km (1000–1757)	.129	.138
Years of prior railroad access (to 1934)	50.604	20.876
Geographic Controls		
Mean precipitation	1182.599	534.315
Mean temperature	24.877	3.528
Mean slope	.508	.885
Mean elevation	410.163	598.445
Total land area (sq km)	31.361	125.851
Mean max caloric yield (000)	6653.65	1140.778
Military Controls		
WWII casualties per million	471.331	1315.804
Martial castes per thousand	41.559	141.888
Non-missing military controls	.811	.371

Notes: Number of districts in 1931-2011 sample is 164. "Modern sectors" are industry and services (i.e., non-agriculture). "Sum of shares" is equivalent to 1931 share of employment in war-related industries. Sum of shares and control variables are interacted with post-war indicator ($Post_t$) when included in regression to account for time trends associated with pre-war characteristics. All control variables are measured in the pre-World-War-II period (from the 1931 Census or other sources) or are time-invariant (in the case of the geographic controls). Historic controls are from Dincecco et al. (2022). Military controls are from Jha and Wilkinson (2012).

for these magnitudes is Indian GDP per capita in nominal INR, 169; so the standard deviation of $Shiftshare_d$ is about 30% of per capita GDP at the time.[8]

4.3 Results

We now present regression estimates of the impact of wartime mobilization on long-run structural transformation.

In Table 3, we present estimates for the 1931-2011 sample in the first five columns. The dependent variable is share of employment in the industry and services sectors (the modern sectors). We present β estimates from equation (2) with different sets

[8]This GDP per capita figure is the 1936-44 average, expressed in 1943-1945 INR (Sivasubramonian, 2000).

Table 2: War-related orders per worker

Census Occupations 1931	Order per worker (INR)	Value of Supply Orders (INR)	Total number of workers
Making, assembling or repairing motor vehicles or cycles	60,661	580,161,000	9,564
Ship, boat, aeroplane builders	32,705	62,761,000	1,919
Makers of arms, guns, etc	22,907	118,357,904	5,167
Matches, fireworks and other explosives	22,519	293,915,533	13,052
Architects, surveyors, engineers and their employees	20,927	175,427,572	8,383
Others (Food industry)	20,291	720,203,118	35,493
Others (Chemical products)	13,445	187,180,687	13,922
Heat, light, electricity, motive power, etc	10,571	220,736,938	20,881
Jute pressing, spinning and weaving	8,869	89,640,244	10,107
Wool carding, spining and weaving	6,351	689,586,383	108,575
Makers of sugur, molasses and gur	5,787	148,448,006	25,654
Upholsterers, tent-maker, etc.	4,582	14,610,535	3,189
Makers of clocks and surgical or scientific instruments, etc	3,973	28,785,928	7,245
Embroiderers, hat makers and makers of other articles of wear	2,718	46,999,396	17,294
Rice pounders and huskers and flour grinders	2,039	700,650,005	343,708
Tailors, milliners, dress makers and darners	1,616	886,741,557	548,663
Carriage, cart, palki, etc. makers, and wheelwrights	1,362	6,441,596	4,731
Manufacturers of Tobacco	1,267	128,667,003	101,564
Working in leather	1,259	366,878,951	291,390
Sweetmeat, and condiment makers	1,244	122,627,997	98,595
Workers in brass, copper and bell metal.	1,038	91,577,806	88,204
Butchers	608	63,128,003	103,911
Tea	595	70,169,000	117,867
Lime burners, cement workers ...	594	324,011,903	545,735
Cotton ginning, cleaning and pressing	489	122,740,179	250,984
Cotton spinning, sizing and weaving	489	1,123,056,692	2,296,471
Coconut	457	59,796,642	130,821
Rope, twine, string and other fibres	434	136,886,342	315,128
Carpenters, turners and joiners, etc.	423	328,790,498	776,654
Sawyers	423	22,894,354	54,080
Smelting, forging and rolling of iron and other metals	318	9,513,294	29,917
Silk spinning and weaving	308	20,720,417	67,342
Boot, shoe, sandal and clog makers	288	203,823,097	707,888
Coffee	264	13,686,000	51,868
Manufacture and refining of mineral oils.	238	786,393	3,304
Blacksmiths, other workers in iron, makers of implements	214	103,555,464	484,388
Dying, bleaching and preparation of textiles	138	14,150,266	102,392
Railway construction and maintenance	117	27,550,154	235,944
Manufacture and refining of vegetable oils	94	47,557,890	508,084
Post Office, Telegraph and Telephone services	50	3,242,282	65,068
Rubber	48	551,884	11,559
Basket makers and other industries of woody materials	33	17,547,039	528,321
Ganja	13	982	77
Potters and makers of earthenware	11	9,094,961	807,975
Cabinet makers, carriage painters, etc.	6	86,133	13,766

Notes: We concord the products that received war-related orders according to Aggarwal (1947)'s *History of the Supply Department* with occupations from 1931 Indian Census. 45 out of 195 occupations that were included in the 1931 census received non-zero war-related orders.

Table 3: Regression Results: Impact of World-War-II-Related Government Purchases on Structural Transformation in Indian Districts, 1931-2011

	1931-2011 Sample					1921-1931 Sample (Pre-Trend Test)
	(1)	(2)	(3)	(4)	(5)	(6)
Shiftshare $\times 1\{PostYear_t\}$	0.07879*** (0.02070)	0.06055*** (0.02048)	0.06335*** (0.02132)	0.05252*** (0.01851)	0.05337*** (0.01935)	-0.01934 (0.01537)
District F.E.	YES	YES	YES	YES	YES	YES
Year F.E.	YES	YES	YES	YES	YES	YES
1931 Economic Controls $\times PostYear_t$	YES	YES	YES	YES	YES	YES
Historic Controls $\times PostYear_t$	NO	YES	YES	YES	YES	YES
Region FE$\times PostYear_t$	NO	NO	YES	YES	YES	YES
Geographic Controls$\times PostYear_t$	NO	NO	NO	YES	YES	YES
Military Controls$\times PostYear_t$	NO	NO	NO	NO	YES	YES
Num. Obs	328	328	328	328	328	286

Notes: **Dependent variable** is employment in modern sectors (industry and services) as share of total employment. 164 districts observed in 1931 and 2011. All regressions include district and year fixed effects. Controls interacted with $Post_t$ are all from pre-WWII period or time-invariant. **Economic controls** (from 1931 Census) are log population, share population employed, production workers as share of employment, service workers as share of employment, population density, and shift-share "sum of shares" (share of workers in any war-related industry). **Historic controls** (from Dincecco et al. (2022)) are share of population under British direct rule, years of prior railroad access, and historical conflict within 250 km (years 1000-1757). **Region fixed effects** are for 11 regions. **Geographic controls** are mean temperature, mean precipitation, mean slope, mean elevation, land area, and maximum caloric yield in agriculture. **Military controls** (from Jha and Wilkinson (2012)) are WWII casualties per million, martial castes per thousand, and indicator for non-missing military controls. Standard errors are exposure-robust, accounting for correlation of shocks across districts, based on estimation of shock-level (industry-level) regressions (Borusyak et al., 2022).

of controls. Column 1 includes district and period fixed effects and 1931 economic controls interacted with $Post_t$. In column 2, we add interactions of historical controls with with $Post_t$. In column 3, we include region fixed effects interacted with $Post_t$, which allows different regions to be on different time trends (capturing spatially-correlated time-variant factors such as weather shocks, or region-specific economic trends or government policies); in this regression, the coefficient estimate exploits only variation in the shift-share variable across districts within the same region. In column 4, we add geographic controls interacted with $Post_t$. In column 5, we add controls proxying for military service in World War II interacted with with $Post_t$.

The coefficient on the shift-share variable declines in magnitude slightly between columns 1 and 2 (from 0.079 to 0.061), but remains relatively stable thereafter as additional controls interacted with $Post_t$ are added to the regression. In the column 5, with all sets of controls interacted with $Post_t$ included, the coefficient is 0.054 (5.4 percentage points). The magnitude of this effect in not small, amounting to 31% of a standard deviation of the outcome variable.

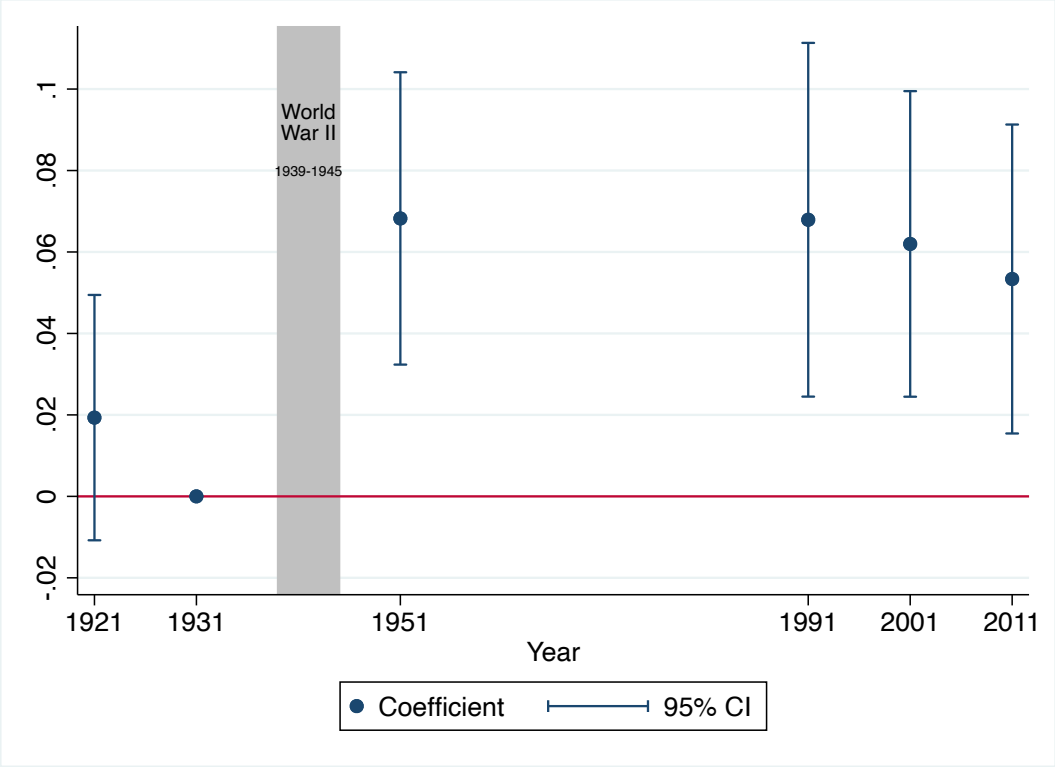
In column 6, we present results of the pre-trend test ("placebo" or "false" experiment) regression. The regression specification is the same as in column 5, but each district's data are from the two pre-war decades (1921 and 1931), and we let $Post = 1$ in 1931. (Due to missing 1921 data, the sample size of this regression is smaller than in the first three columns. Results in the first three columns are robust to restricting the sample to the same districts included in the regression of column 6.) The pre-trend test provides no indication that districts that were to receive higher World War II product demand were on a faster growth trajectory in the pre-war 1921-1931 period. In fact, the coefficient estimate in this pre-trend regression is slightly negative, indicating that structural transformation from agriculture to the modern sectors in such districts was actually trending somewhat negatively relative to districts that were to experience less World-War-II-related demand.

4.3.1 Dynamics of Effect Over Time

We have also conducted similar analyses for other decades for which we have electronic data. Outcome data (share of employment in industry and services) were already available electronically for 1991 and 2001, and we also conducted data entry for outcome data for 1951. We run regressions analogous to those of column 5 of Table 3. For the post-war years, regressions take 1931 as the pre-war year and either 1951, 1991, 2001, or 2011 as the post-war year (the latter estimate will be identical to the estimate in column 5 of Table 3). We also show the pre-trend test using data from 1921 and 1931 (where the reference year is taken to be 1931 for the purpose of this figure; the coefficient is therefore identical to the coefficient in column 6 of Table 3, but opposite in sign).

We present all these coefficient estimates in an event study diagram, Figure 2. The World War II years are depicted as a vertical gray rectangle. The coefficient estimate in the post-war regressions is positive in all post-war time periods, only slightly diminishing between 1991 and 2011. Districts that received one standard deviation higher orders per worker have about 7 percentage points higher share of employment in the modern sectors in 1951; the effect is similar in 1991, and falls a bit to 5.4 percentage points in 2011. The figure also makes clear that districts receiving higher orders per worker during World War II were on a slightly negative differential trend in the pre-war period. This trend reversed after World War II, which we interpret as due to wartime procurement by the British colonial government.

Figure 2: Event Study: Coefficients in Different Post-War Years (and Pre-Trend Test)



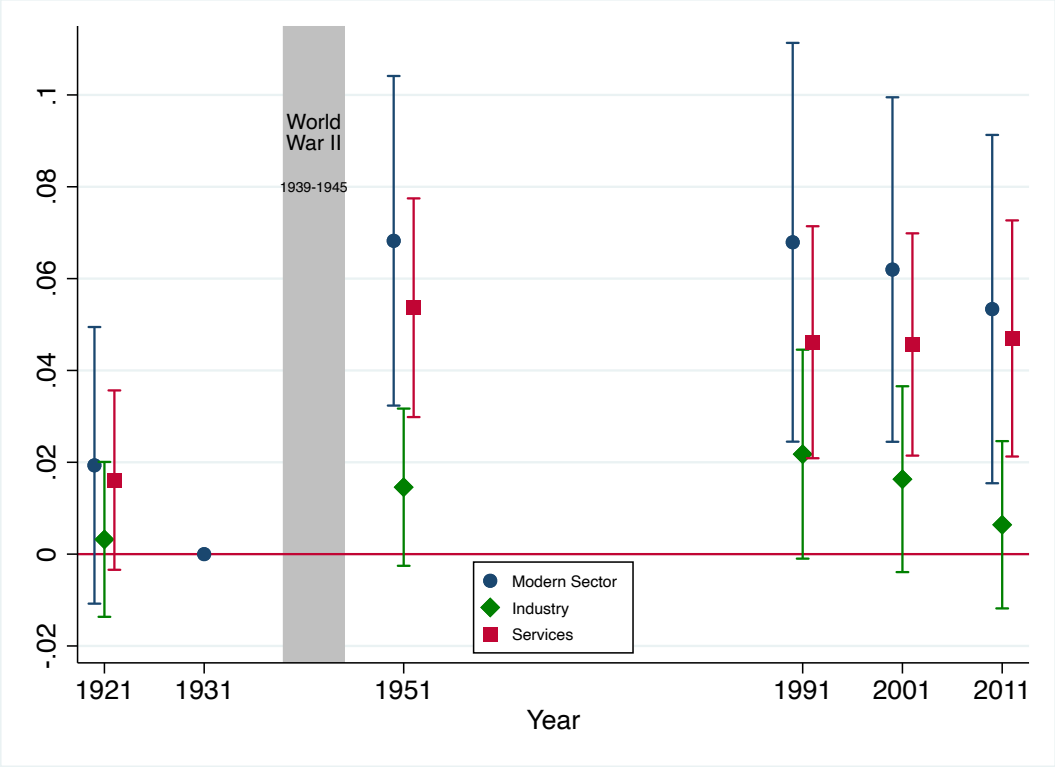
Notes: Coefficient estimates using specification of column 5, Table 3, for different time periods (with 95% confidence intervals). For list of control variables and other details, see Table 3. In regressions for post-war periods, pre-war (reference) year is 1931, and post-war year is either 1951, 1991, 2001, or 2011. Figure also shows "pre-trend" test using data from 1921 and 1931, with 1931 as reference year for purpose of this figure (coefficient is identical to but opposite in sign of coefficient in column 6 of Table 3).

4.3.2 Effects on Industry and Services Separately

The estimates we have presented so far are effects on total modern sector employment (industry and services). It is also of interest to examine effects on industry and service sector employment separately. This analysis can shed light on cross-sector spillovers, since the vast majority of war procurement is in industrial (not services) sectors.

We run regressions analogous to those in Figure 2, but separately for share of employment in services and share of employment in industry. Figure **??** is the event study figure capturing these regression results. The coefficient (and 95% confidence interval) for employment in industry is displayed in green, and corresponding estimates for services are displayed in red. For comparison, the estimates for the total modern sector (industry plus services) are shown in blue (which replicates the results in Figure 2).

Figure 3: Event Study: Coefficients in Different Post-War Years (and Pre-Trend Test)



Notes: This figure replicates estimates of Figure 2 (in blue), and adds coefficient estimates for regressions run separately for share of employment in industry (in green) and share of employment in services (in red). All other details are as in notes of Figure 2.

The majority of effects on modern sector employment are driven by the services sector. In each time period, the coefficient estimate for services is at least twice the magnitude of the corresponding coefficient for industry. These results reveal quite substantial spillovers of wartime procurement to other industries not directly subject to the war-related procurement.[9]

In future analyses using data yet to be converted to digital format, we will examine effects on more detailed services occupations. It will be of interest to examine the extent to which the effects on services employment is driven by services mainly representing downstream consumer demand (e.g., domestic service, restaurants, retail), as opposed to services further upstream that may be directly serving production activities (e.g., transport, logistics, office work).

[9]We have run this analysis excluding the very small amount of services procurement from the shift-share variable, and the results are virtually identical.

5 Conclusion

Mobilization for war is one of the most prominent and costly activities undertaken by governments. Public decisions to mobilize for war must take into account a wide range of considerations – in, for example, the ethical, political, and social realms. This research deepens our understanding of the *economic* consequences of mobilizing for war, which should also inform decisions to mobilize for war. We shed light on these issues in an important context: the world's most populous country, India. That India is a developing country is also important, as there is very little empirical research on the consequences of war mobilization in developing countries. Our analysis also reveals very long-run impacts, over several decades. Our findings revealing the long-run economic impacts of war mobilization in a developing country can help guide debates and decision-making about participation in war in developing countries around the world.

Economic policies to mobilize for war have substantial overlap with "industrial policies" undertaken by governments, in that they both seek to shape the industrial composition and output of an economy. Our study therefore also contributes to our understanding of the long-run impacts of a type of industrial policy on economic development: in particular, industrial policies that seek to promote the development of industrial sectors. Policy-makers should take account of our findings that temporary policies that seek to promote industrial sectors in the short run can have quite lasting impacts in the long run, persistently altering the industrial structure of the economy.

Our work also has relevance for economics research on colonial India. No prior work has examined the impact of British mobilization of India for World War II on India's subsequent economic development. In addition, we are creating new electronic datasets spanning 1921 to the present on economic policy; international trade; firms and industry; and detailed district-level employment by industry. For outcomes at the district level, we are creating updated concordances (building on the work of others) that allows tracking of outcomes over time in well-defined geographic units. We aim to make all these data resources available to the public, facilitating others' research in Indian economic history.

Our findings so far suggest important avenues for future research, which we are currently pursuing. First, we will conduct data entry for the 1961, 1971, and 1981 Censuses that will allow us to estimate effects of the shift-share variable for those Cen-

sus years, filling in the missing middle decades in Figure 2. These additional analyses could reveal additional heterogeneity in treatment effects across decades. 1961-1981 spans an era of Indian economic policy characterized by state-led planning, large industrial state-owned enterprises, import trade protection, and extensive regulation of the private sector (the "License Raj"). It is possible that coefficient estimates (effects of World War II product demand) may be attenuated in those decades, compared to 1951 (before the initiation of state-led planning) and 1991-2011 (when the economy was substantially liberalized).

It is also of great interest to examine impacts of war mobilization at the industry and product levels. Analysis of data from firm surveys will shed light on the extent to which long-run impacts occur at the industry level. We will examine impacts on firm productivity levels, using simple measures such as output per worker. Other outcomes such as employment, firm entry, and firm exit are also of interest. We will also investigate whether war mobilization affected total Indian exports in affected industries. These analyses will be conducted at the level of exported products. In panel regression analyses, we will examine whether industries subject to higher wartime purchases experience higher increases in exports from before to after World War II.

We will also investigate the extent to which effects of wartime mobilization extend to other industries (beyond those subject directly to the original World-War-II-driven demand). In particular, we will seek evidence of upstream and downstream linkages – indirect effects extending from industries experiencing World-War-II-related demand to other industries that either supply the directly affected industry (upstream linkages) or that demand intermediate goods from the directly affected industry (downstream linkages). Such linkages were first emphasized by Hirschman (1961) as a rationale for industrial policy, and empirical evidence for such linkages has been found by Choi and Levchenko (2021) and Lane (forthcoming).

References

Acemoglu, D. and F. Zilibotti (1997): "Was Prometheus Unbound by Chance? Risk, Diversification, and Growth," *Journal of Political Economy*, 105, 709–751.

Aggarwal, S. C. (1947): *History of the Supply Department (1939-1946)*, Manager of Publications.

Aghion, P., J. Cai, M. Dewatripont, L. Du, A. Harrison, and P. Legros (2015): "Industrial Policy and Competition," *American Economic Journal: Macroeconomics*, 7, 1–32.

Alder, S., L. Shao, and F. Zilibotti (2016): "Economic Reforms and Industrial Policy in a Panel of Chinese Cities," *Journal of Economic Growth*, 21, 305–349.

Amsden, A. H. (1989): *Asia's Next Giant: South Korea and Late Industrialization*, Oxford University Press, USA.

Arrow, K. J. (1962): "The Economic Implications of Learning by Doing," *The Review of Economic Studies*, 29, 155–173.

Baldwin, R. E. (1969): "The Case against Infant-industry Tariff Protection," *Journal of Political Economy*, 77, 295–305.

Banerjee, A. and L. Iyer (2005): "History, Institutions, and Economic Performance: The Legacy of Colonial Land Tenure Systems in India," *American Economic Review*, 95, 1190–1213.

Banerjee, A., L. Iyer, and R. Somanathan (2005): "History, social divisions, and public goods in rural India," *Journal of the European Economic Association*, 3, 639–647.

Barwick, P. J., M. Kalouptsidi, and N. B. Zahur (2019): "Chinaâs Industrial Policy: An Empirical Evaluation," Working paper, National Bureau of Economic Research.

Beason, R. and D. E. Weinstein (1996): "Growth, Economies of Scale, and Targeting in Japan (1955-1990)," *The Review of Economics and Statistics*, 286–295.

Bencivenga, V. R. and B. D. Smith (1991): "Financial Intermediation and Endogenous Growth," *The Review of Economic Studies*, 58, 195–209.

Bharadwaj, P. and J. Fenske (2012): "Partition, migration, and jute cultivation in India," *Journal of Development Studies*, 48, 1084–1107.

Bharadwaj, P., A. I. Khwaja, and A. Mian (2015): "Population exchange and

its impact on literacy, occupation and gender–evidence from the partition of India," *International Migration*, 53, 90–106.

Bharadwaj, P. and R. A. Mirza (2019): "Displacement and Development: Long Term Impacts of Population Transfer in India," *Explorations in Economic History*, 73, 101273.

Bo, S., C. Liu, and Y. Zhou (2023): "Military investment and the rise of industrial clusters: Evidence from China's self-strengthening movement," *Journal of Development Economics*, 161.

Bonfatti, R. and B. Brey (forthcoming): "Trade disruption, Industrialisation, and the Setting Sun of British Colonial Rule in India," *Journal of the European Economic Association*.

Borusyak, K., P. Hull, and X. Jaravel (2022): "Quasi-experimental Shift-share Research Designs," *The Review of Economic Studies*, 89, 181–213.

Buera, F. J., H. Hopenhayn, Y. Shin, and N. Trachter (2021): "Big Push in Distorted Economies," Tech. rep., National Bureau of Economic Research.

Castelló-Climent, A., L. Chaudhary, and A. Mukhopadhyay (2018): "Higher Education and Prosperity: From Catholic Missionaries to Luminosity in India," *The Economic Journal*, 128, 3039–3075.

Chaudhary, L. and J. Fenske (2022): "Did Railways Affect Literacy? Evidence from India," Working paper, University of Warwick Department of Economics.

Choi, J. and A. A. Levchenko (2021): "The Long-term Effects of Industrial Policy," Working paper, National Bureau of Economic Research.

Cox, L. (2023): "The Long-term Impact of Steel Tariffs on US Manufacturing," Working paper.

Criscuolo, C., R. Martin, H. G. Overman, and J. Van Reenen (2019): "Some Causal Effects of an Industrial Policy," *American Economic Review*, 109, 48–85.

Dell, M. and B. Olken (2020): "The Development Effects of the Extractive Colonial Economy," *Review of Economic Studies*, 87, 164–203.

Dincecco, M., J. Fenske, A. Menon, and S. Mukherjee (2022): "Pre-colonial Warfare and Long-run Development in India," *The Economic Journal*, 132, 981–1010.

Donaldson, D. (2018): "Railroads of the Raj: Estimating the impact of transportation infrastructure," *American Economic Review*, 108, 899–934.

Evans, P. B. (1995): *Embedded Autonomy: States and Industrial Transformation*, Princeton University Press.

Fan, Jingting; Zou, B. (2021): "Industrialization from Scratch: The âConstruction of Third Frontâ and Local Economic Development in Chinaâs Hinterland," .

Field, A. J. (2008): "The Impact of the Second World War on US Productivity Growth," *The Economic History Review*, 61, 672–694.

——— (2022): *The Economic Consequences of US Mobilization for the Second World War*, Yale University Press.

Fishback, P. V. and J. A. Cullen (2013): "Second World War Spending and Local Economic Activity in US Counties, 1939â58," *Economic History Review*, 66, 975–992.

Galor, O. and J. Zeira (1993): "Income Distribution and Macroeconomics," *The Review of Economic Studies*, 60, 35–52.

Garin, A. and J. Rothbaum (2022): "The Long-Run Impacts of Public Industrial Investment on Regional Development and Economic Mobility: Evidence from World War II," *NBER Working Paper*.

Giorcelli, M. and B. Li (2021): "Technology Transfer and Early Industrial Development: Evidence from the Sino-Soviet Alliance," Working paper, National Bureau of Economic Research.

Gordon, R. (2017): *The Rise and Fall of American Growth: The US Standard of Living since the Civil War*, Princeton University Press.

Gordon, R. J. (1967): "Problems in the Measurement of Real Investment in the US Economy," *Ph.D. Dissertation, Department of Economics, MIT*.

Greenwood, J. and B. Jovanovic (1990): "Financial Development, Growth, and the Distribution of Income," *Journal of Political Economy*, 98, 1076–1107.

Gross, D. P. and B. N. Sampat (2023): "America, Jump-Started: World War II RD and the Takeoff of the US Innovation System," *American Economic Review*, 113, 3323–3356.

Gupta, B., D. Ma, and T. Roy (2016): "States and Development: Early Modern India, China, and the Great Divergence," *Economic History of Warfare and State Formation*, 51–69.

Hanlon, W. W. (2020): "The Persistent Effect of Temporary Input Cost Advantages in Shipbuilding, 1850 to 1911," *Journal of the European Economic Association*, 18, 3173–3209.

Harrison, A. and A. Rodríguez-Clare (2010): "Trade, Foreign investment, and Industrial Policy for Developing Countries," *Handbook of Development Economics*, 5, 4039–4214.

Hausmann, R. and D. Rodrik (2003): "Economic Development as Self-Discovery," *Journal of Development Economics*, 603–633.

Head, K. (1994): "Infant Industry Protection in the Steel Rail Industry," *Journal of International Economics*, 37, 141–165.

Higgs, R. (2004): "Wartime Socialization of Investment: a Reassessment of US Capital Formation in the 1940s," *The Journal of Economic History*, 64, 500–520.

Hirschman, A. O. (1961): *The Strategy of Economic Development*, Yale University Press.

Irwin, D. A. (2000): "Did Late-nineteenth-century US Tariffs Promote Infant Industries? Evidence from the Tinplate Industry," *The Journal of Economic History*, 60, 335–360.

Iyer, L. (2010): "Direct versus Indirect Colonial Rule in India: Long-term Consequences," *The Review of Economics and Statistics*, 92, 693–713.

Jaworski, T. (2017): "World War II and the Industrialization of the American South," *Journal of Economic History*, 77, 1048â–82.

Jha, S. and S. Wilkinson (2012): "Does Combat Experience Foster Organizational Skill? Evidence from Ethnic Cleansing during the Partition of South Asia," *American Political Science Review*, 106, 883–907.

Juhász, R. (2018): "Temporary Protection and Technology Adoption: Evidence from the Napoleonic Blockade," *American Economic Review*, 108, 3339–3376.

Kalouptsidi, M. (2018): "Detection and Impact of Industrial Subsidies: The Case of Chinese Shipbuilding," *The Review of Economic Studies*, 85, 1111–1158.

Kamtekar, I. (2002): "A Different War Dance: State and Class in India 1939-1945," *Past & Present*, 187–221.

Kim, M., M. Lee, and Y. Shin (2021): "The Plant-level View of an Industrial Policy: The Korean Heavy Industry Drive of 1973," Working paper, National Bureau of Economic Research.

Kline, P. and E. Moretti (2014): "Local Economic Development, Agglomeration Economies, and the Big Push: 100 Years of Evidence from the Tennessee Valley Authority," *The Quarterly Journal of Economics*, 129, 275–331.

Krueger, A. O. (1990): "Government Failures in Development," *Journal of Economic Perspectives*, 4, 9–23.

Lane, N. (forthcoming): "Manufacturing Revolutions: Industrial Policy and Industrialization in South Korea," *Quarterly Journal of Economics*.

Lederman, D. and W. Maloney (2012): *Does what you Export matter?: In Search of Empirical guidance for industrial policies*, World Bank Publications.

Lee, A. (2019): "Land, State Capacity, and Colonialism: Evidence from India," *Comparative Political Studies*, 52, 412–444.

Lee, J.-W. (1996): "Government Interventions and Productivity Growth," *Journal of Economic Growth*, 1, 391–414.

Liu, E. (2019): "Industrial Policies in Production Networks," *The Quarterly Journal of Economics*, 134, 1883–1948.

Manelici, I. and S. Pantea (2021): "Industrial Policy at Work: Evidence from Romaniaâs Income Tax Break for Workers in IT," *European Economic Review*, 133, 103674.

McNeill, W. H. (1982): *The Pursuit of Power: Technology, Armed Force, and society since AD 1000*, University of Chicago Press.

Mitrunen, M. (2021): "Structural Change and Intergenerational Mobility: Evidence from the Finnish War Reparations," *Unpublished. IIES Stockholm*.

Moretti, E., C. Steinwender, and J. Van Reenen (2021): "The Intellectual Spoils of War? Defense R&D, Productivity and International Spillovers," *NBER Working Paper*, 26483.

Morris, M. D. (1983): "The Growth of Large-scale Industry to 1947," *The Cambridge Economic History of India*, 2, 553–676.

Murphy, K. M., A. Shleifer, and R. W. Vishny (1989): "Industrialization and the Big Push," *Journal of Political Economy*, 97, 1003–1026.

Naya, S. (1971): "The Vietnam War and some Aspects of its Economic Impact on Asian Countries," *The Developing Economies*, 9, 31–57.

Nunn, N. and D. Trefler (2010): "The Structure of Tariffs and Long-term Growth," *American Economic Journal: Macroeconomics*, 2, 158–194.

Nurkse, R. (1953): *Problems of Capital Formation in Underdeveloped Countries*, B. Blackwell.

Pack, H. (2000): "Industrial Policy: Growth Elixir or Poison?" *The World Bank Research Observer*, 15, 47–67.

Raghavan, S. (2017): *Indiaâs War: The Making of Modern South Asia 1939-1945*, Penguin UK.

Rasler, K. and W. R. Thompson (1985): "War and the Economic Growth of Major Powers," *American Journal of Political Science*, 513–538.

Rhode, P. W. (2003): *After the War Boom: Reconversion on the Pacific Coast, 1943â1949*, Stanford University Press.

Ristuccia, C. A. and A. Tooze (2013): "Machine Tools and Mass Production in the Armaments Boom: Germany and the United States, 1929–44," *The Economic History Review*, 66, 953–974.

Rockoff, H. (2012): *America's Economic Way of War: War and the U.S. Economy from the Spanish-American War to the Persian Gulf War*, Cambridge University Press.

Rodrik, D. (1995): "Getting Interventions Right: how South Korea and Taiwan Grew Rich," *Economic Policy*, 10, 53–107.

——— (2007): *Industrial Policy for the Twenty-first Century*, Princeton University Press.

Rosenstein-Rodan, P. (1943): "Problems of Industrialisation of Eastern and South-eastern Europe," *Economic Journal*, 202–211.

Rotemberg, M. (2019): "Equilibrium Effects of Firm Subsidies," *American Economic Review*, 109, 3475–3513.

Roy, K. (2016): *India and World War II: War, Armed Forces, and Society, 1939–45*.

Ruttan, V. W. (2006): *Is War Necessary for Economic Growth?: Military Procurement and Technology Development*, Oxford University Press.

Sinha, N. C. and P. N. Khera (1962): *Indian War Economy: Supply, Industry & Finance*.

Sivasubramonian, S. (2000): "The national income of India in the twentieth century," *(No Title)*.

Stubbs, R. (1999): "War and Economic Development: Export-oriented Industrialization in East and Southeast Asia," *Comparative Politics*, 337–355.

Tomlinson, B. R. (1996): *The Economy of Modern India, 1860-1970*, vol. 3, Cambridge University Press.

Townsend, R. M. (1979): "Optimal Contracts and Competitive Markets with Costly State Verification," *Journal of Economic Theory*, 21, 265–293.

Wade, R. (1990): *Governing the Market: Economic Theory and the Role of Government in East Asian Industrialization*, Princeton University Press.

Weinstein, D. E. (1995): "Evaluating Administrative Guidance and Cartels in Japan (1957-1988)," *Journal of the Japanese and International Economies*, 9, 200–223.