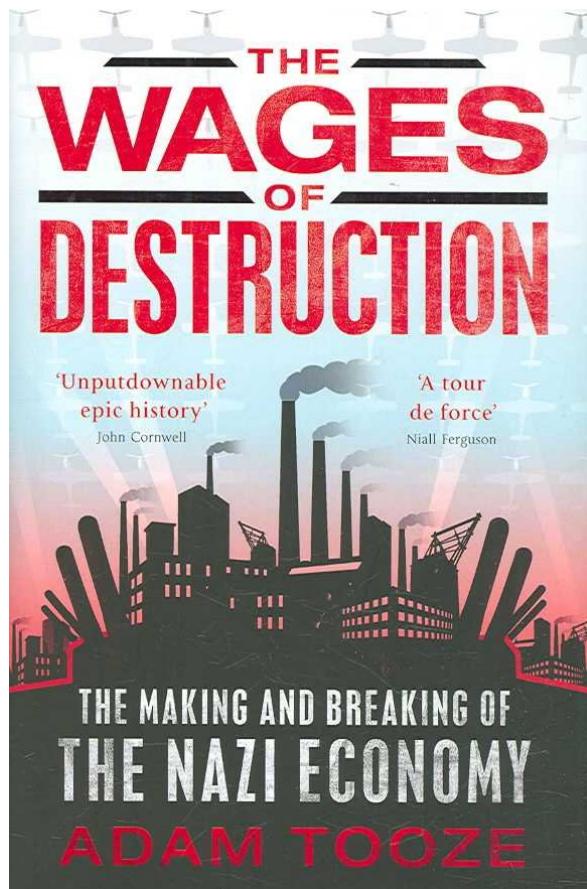


Adam Tooze's *Wages of Destruction*:

a /kc/ summary



By Bernd #1 with collaboration from Bernd #2 and Bernd #3

2019-20

INDEX

Introduction

This book does two things: present Tooze's arguments on several historiographical debates and provide a picture of how the Third Reich's economy functioned in the process. I took it up for the latter to satisfy my curiosity, and only then even heard of some of the controversies.

It is well researched and presents well the historical actors, what was at stake, why they acted the way they did and the logic of the system they built. With the exception of some parts about trade, it isn't dense and I, an economic layman, could assimilate it. I write what I understand.

My summary doesn't strictly follow chapter after chapter but is more thematic, as Hitler himself suggests in *Mein Kampf* for how one should mentally organize knowledge. The pre-war and wartime periods are first covered by theme and then by year, with the exception of the first years of war.

Weimar prelude and the alternative to Hitler's strategy

The book's introduction presents two conflicting paths interwar Germany could pursue to leave the abyss it found itself in: the one it historically followed after 1933, represented by Hitler, and an "Atlanticist" geopolitical strategy implemented to a large extent in 1924-1933, represented by Gustav Stresemann, foreign minister from 1923 to 1929. Hjalmar Schacht is the middle ground.

Firstly, what did they have in common?

Both were keenly aware of America's rise to superpower status and the importance it would play in European geopolitics. This game-changing American rise is one of the book's major themes. Hitler and Stresemann knew that America's population, land area and resources allowed it to outcompete any individual European state through economies of scale. Their strategies centered on how to preserve German and European relevance in light of this development.

Both understood the Great War as the result of imperial competition, with Great Britain as the Second Reich's nemesis.

Both pursued a revision of the burdens imposed by the winners: reparations, the occupied Rhineland and the new borders.

Hitler's vision of history was not deterministic, and he thus believed it was possible for Europe to achieve parity with America by forming a market of similar size and population, which would be created not through something along the lines of the EU but through a dominant state's hegemony, as Prussia had done in its unification of Germany. This state would, of course, be Germany itself.

The primary purpose of this hegemony would be the acquisition of "means of sustenance", the struggle for which he considered the engine of history. It is for this reason he calculated Great Britain would have no inherent geopolitical reason to oppose his policies. Wilhelmine Germany's rising exports and market dominance brought it into direct competition with Britain, and hence, its allies, cementing its destruction in the Great War.

He would not repeat the same mistake: Germany would not seek primacy through economics, avoiding a commercial confrontation with Britain, and would only seek to secure its means of sustenance on the continent, where the British wouldn't lose any means of sustenance as theirs were on the empire. It would thus be possible to have a neutral or friendly London. This was one cornerstone of his vision: Britain as a counterweight to America.

The logical conclusion was that war would happen sooner or later, allowing Germany to settle scores with the French and assert its hegemony to the East. As risky as it could be, Hitler saw Germany's confrontations with the other great powers as an existential struggle and thus accepted the risk.

Stresemann, a bourgeois optimist who had no active service in the war due to ill health, was not as apocalyptic as Hitler. He refused to accept the border with Poland and embraced dreadnought building, U-boat usage and territorial expansion, all views he never retracted, but believed a military solution was no longer possible to Germany's issues. Instead, it could still be relevant in the sphere of economics.

His worldview encompassed not just great power competition but also the interconnectedness of the global economy, which meant Germany's enemies still depended on it. America, in particular, could be turned into a counterweight against Britain (the opposite of Hitler's belief) by giving it a stake in

the German economy, and thus, an interest in its stability. This would pave the way for a negotiated removal of the winners' burden and a return to the concert of nations.

It bears noting that this strategy is close to that followed by West Germany.

This was implemented in practice through a non-confrontational diplomacy with France, the sale of shares in German firms to Americans and the use of American credit to pay reparations to France and Britain.

Interwar Germany owed reparations to those two, who in turn owed war debts to America. German reparations to America didn't matter much. Germany could pay reparations by running an export surplus (with unspent surplus staying at the Reichsbank's foreign exchange reserves) or by borrowing. It chose the latter option, though it just meant replacing a debt towards France&Britain with a debt towards America.

This had the side advantage of guaranteeing a higher standard of living as the balance of trade wasn't a concern (fig. 7). The Weimar Republic had a brief period of stability in 1924-1929, with the NSDAP receiving little of the vote in 1928. But its primary aim was to expand this American debt so much America would have to intervene to secure more lenient terms on reparations in order to let Germany pay the new debt.

It worked. The Dawes (1924) and Young (1929) Plans alleviated reparations demands and provided credit, the former also providing for an American middleman, the Reparations Agent, who, although damaging to national prestige, could halt payments if they destabilized the Mark and insulated the German government from external pressure on this matter.

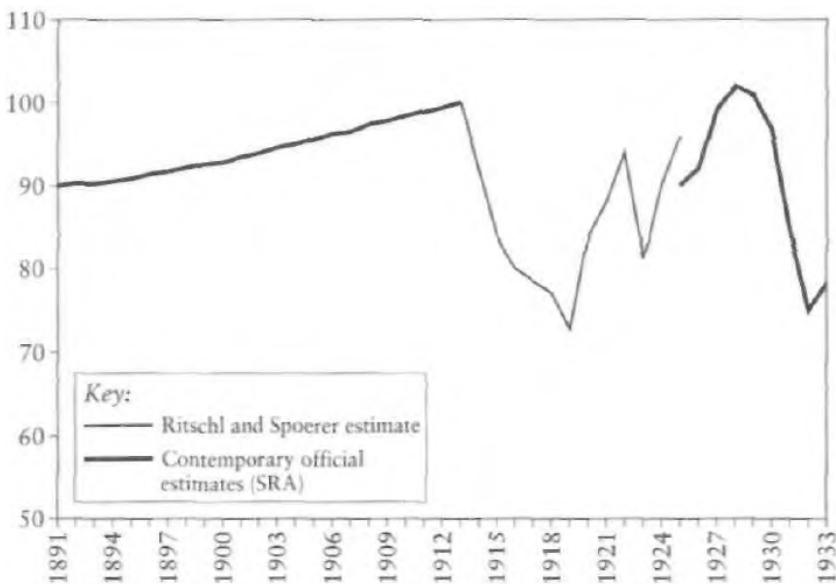


Figure 7. Forty-two years of German economic progress as seen from 1933 (national income per capita, 1913 = 100)

But by 1929 the situation began to veer off the rails. The Young Plan was not as generous as expected, the "neutral" Reparations Agent was gone and America's new Smoot-Hailey tariff made it harder for European debtors to fund their payments. American lenders found this new environment

unsafe and their credit dried up. With American aid weakened Germany could seek confrontation or European integration, though for the moment it mostly remained in its Atlanticist path.

Political instability brought to power a string of conservative minority governments, starting with Bruening in 1930. He veered foreign policy in a nationalist direction, ordering two cruisers for the Navy, seeking bilateral trade deals in southeast Europe and proposing a customs union with Austria. The latter was received positively in America –proof the Atlanticist strategy had tangible geopolitical effects- but all three antagonized France.

As the French were by 1931 willing to lend to Germany, this was a great blunder. Since 1930 Germany couldn't borrow enough and Bruening had to achieve a trade surplus to pay off debt. In the economic orthodoxy of the time this could only be done by reducing imports through austerity.

Massive budget cuts and tax increases skyrocketed unemployment and forced the government to nationalize a number of ailing industries. Fringe parties found fertile ground. But an export surplus of 2,8 billion RM (1931) was achieved, Germany was paying its debts and Atlanticism was still bearing fruits. In 1932 both reparations and inter-Allied war debts were frozen, leaving Germany only with its non-Versailles debts to deal with.

Previously, in June 1931 Bruening had aggressively demanded an end to reparations, setting off a chain reaction through the fragile world economy. In the end the Reichsbank's foreign exchange reserves were precariously low, the pound sterling devalued and the franc and reichsmark lost their free convertibility. The Reichsbank tightly controlled all foreign currency in Germany and rationed it among importers, reducing the import side of the trade surplus.

But now the Reichsmark was valued higher than other currencies, lowering German exports as they became uncompetitive. The trade surplus was reduced to almost nothing. One solution was to devalue it. This option was repeatedly considered in the following years, so why was it avoided?

- Devaluation was associated with inflation, which Weimar-era Germans were wary of.
- It was risky given the Reichsbank's limited reserves.
- A strong currency reduced the value of debts in terms of Reichsmarks.
- Under Hitler and Schacht both had pledged not to devalue, so there was prestige and political capital invested in the status quo.

So with Lausanne reparations were gone. The Atlanticist strategy was now spent. It could no longer go further for a series of factors:

- Under Roosevelt's first years in office America turned inwards and didn't exert influence in Europe
- America's trade balance with Europe was unfavorable to Europeans
- The international scene was unfavorable to globalization, with increasing protectionism and political radicalism

The stage was set for Hitler.

Unemployment

You know the story. It's 1933 and the new Chancellor has on his hands a ruined nation with millions unemployed. Through work creation drives and other Keynesian stimuli he builds autobahns and reduces unemployment to almost zero in a handful of years without the rise of inflation. What happened?

First, it's important to know the peak of the crisis had already been overcome. The highest level of unemployment, exceeding 6 million, was in winter 1931/32. The following winter already had a lower figure (fig. 1). Observers were optimistic about the future. There would have been some recovery even if policies remained exactly as they were.¹

Under a number of different policies and governments, too, there would have been recovery, perhaps better than what was achieved. But that is speculative.

GDP statistics show private investment boomed in 1933 but was offset by a decline in private consumption (wages stagnated and prices rose), so the public sector did carry the recovery (table 2).

THE WAGES OF DESTRUCTION

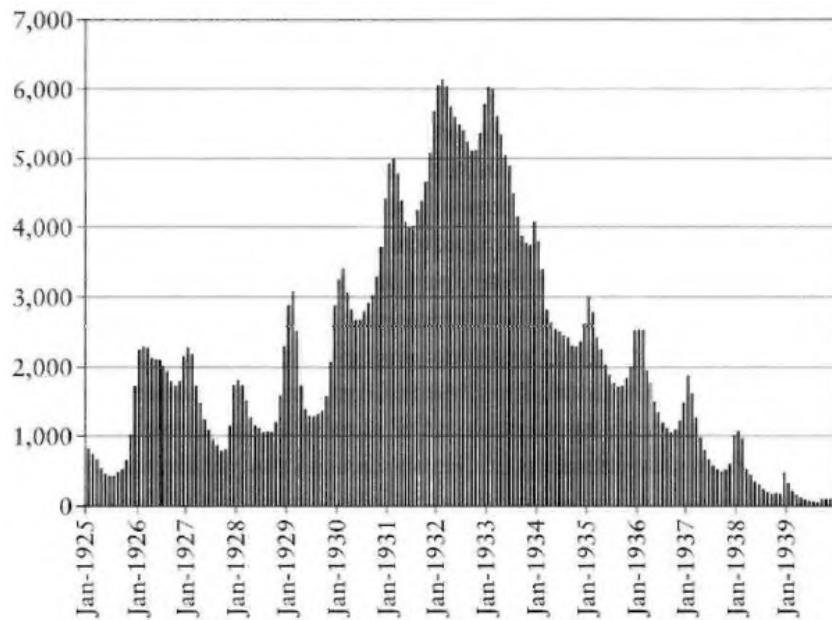


Figure 1. Unemployment in Germany, pre-1938 territory (1,000s)

Table 2. Accounting for economic growth in Nazi Germany

	1932	1933	1934	1935
GDP prices 1913	43.1	46.3	51.5	57.8
of which:				
Reich military	0.3	0.5	2.9	5.5
Reich civilian	1.3	2.1	2.8	2
local government	4.7	5.5	5.7	5.2
private consumption	39	37.6	38.2	40.5
private investment	1.1	3.6	5.5	7
foreign account	-3.2	-2.9	-3.6	-2.4
Year on year changes in GDP and components of demand, billion RM				
GDP	3.2	5.2	6.2	
Reich military	0.1	2.5	2.6	
Reich civilian	0.9	0.7	-0.8	
local government	0.8	0.2	-0.5	
private consumption	-1.5	0.6	2.3	
private investment	2.5	2	1.5	
foreign account	0.4	-0.7	1.1	
Share of GDP growth due to (%)				
Reich military	4.2	47	41.6	
Reich civilian	27	13.1	-13.1	
local government	24.6	4.1	-7.4	
private consumption	-45.9	11.7	37.1	
private investment	79	37.4	23.6	
foreign account	11.2	-13.4	18.2	
Total public sector contribution	55.7	64.3	21.1	
Total private sector contribution	44.3	35.7	78.9	

Source: A. Ritschl, Deutschlands Krise und Konjunktur 1924-1934 (Berlin, 2002), appendix. A. Ritschl, 'Deficit Spending in the Nazi Recovery, 1933-1938', Working Paper No. 68, Institute for Empirical Research in Economics, University of Zurich (December 2000).

Work creation wasn't a central pillar of NSDAP policy. It was brought to power by the farmer's lobby (an important force with its own chapter), the military and some leaders in the nationalist right. Its priorities were protecting the rural population, rejecting the impositions of Versailles and, most importantly, rearmament. Its Strasserist wing did care about work creation but for the mainstream that topic was on the table only around 1932-1934.

Hitler's predecessor, General Schleicher, had already planned a work creation drive of his own and had earmarked 600 million credit-financed Reichsmarks for it. Why credit-financed?

Contemporary economists debated the feasibility of state-conducted work creation and economic stimulus. One consensus was that it couldn't be funded by raising new taxes, as that would offset any gain in demand. So debt was the alternative for funding such programs; they were financed from unspent household savings, whereas taxes just transferred circulating money from private hands to the state. But the government couldn't simply borrow from the banks, as that could make it harder for private investors to get loans; instead, it'd need "new credit".

Stimulus spending in Germany was paid not directly in Reichsmarks but in IOUs, with the promise that ultimately the Reichsbank would later repay them with loans or the increased tax revenue of a recovered economy.

To Hitler's joy, none of this money had been spent. His government thus spent a third of it on the military, a third to local government and a third on agricultural land amelioration.

His own spending began with the 1 billion Reichsmark Reinhardt programme of June 1933. A further 800 million Reichsmarks were designated in September. Those were substantial sums given

the size of the German economy, but the funding stopped there. Programs continued with the resources still available and the state focused on its true priorities, chiefly rearmament. Even of this sum, 230 million were siphoned off to military ‘special measures’ –airfields, barracks and so on.

Initially this stimulus took the form of a work creation drive, the Battle for Work. Its first target was East Prussia, where by July nearly all unemployed had been put to work on improving rural land and infrastructure. Behind this spectacular success, intensely covered in public media, lay two facts: the province received disproportionately high funds given its population and its agrarian society made it easy to employ idle hands in simple earth-moving work.

Once the program moved into more industrialized regions, it found clerks, secretaries, metalworkers and even bricklayers and plumbers demanded more complex work that was harder to set up.

Nonetheless, unemployment was steadily decreasing. It only lingered on within export-oriented industries, as the problem of the uncompetitively high Reichsmark had still not been solved. At their peak work creation initiatives were only directly responsible for 30% of the reduction in unemployment, so they were merely part of a wider recovery.

Though poor Germans could finally find work, their living standards were still stagnant and private consumption shrank in 1933. For this reason the government’s initiatives against unemployment gradually shifted towards indirect methods, such as financing mortgages.

The Battle for Work received disproportionate attention in propaganda given its relative importance within economic recovery and priorities in Berlin, where critical decisions on debt and rearmament were being made.

A famous achievement of this period is the Autobahn network. It was the responsibility of Fritz Todt, a capable civil engineer deeply loyal to Hitler, who was now general inspector for German roads. The highways were conceived firstly as a military asset for rapid movement of troops (Tooze doesn’t mention it, but their actual military usefulness would prove limited during the war). Todt did a competent job with them, particularly given he didn’t receive the budget he expected –and prestige projects like Autobahns were severely constrained by the raw materials rationing enforced some years later-, but they didn’t employ a lot of workers.

A curious fact about German infrastructure was that railways were underinvested on due to the focus on highways and other projects. Few freight cars were bought and those in service were in a bad condition. By 1938 the rail system was in crisis, with bottlenecks, jams, and, funnily enough, delays.

1. The analysis of trade cycle indicators provides no support for the thesis that the crisis had been essentially overcome at the time of the National Socialist (NS) seizure of power, and that the recovery would have occurred without the National Socialists. There is, on the contrary, much to suggest that the real task of overcoming the crisis was still to be faced.

From Werner Abelshauser’s “Germany: Guns, Butter and Economic Miracles” in Mark Harrison’s The Economics of World War II: Six great powers in international comparison. This seems one place in which Tooze diverges from other historians. Abelshauser and Harrison have the more mainstream view. In this same topic they give a greater role to work creation in economic recovery, and later on are far more positive on Speer.

Inflation

How was inflation kept in check as unemployment decreased by the millions? In fact, there was inflationary pressure. It picked up by 1938, not at the beginning of recovery.

Returning to the contemporary economists who debated work creation: many objected to it on the ground that government stimulus would just increase inflation, negating any benefit it could provide. Others argued that this held true in conditions of full employment, but not when there was idle capacity, and therefore, governments could spend but only as much as necessary to get rid of unemployment, with too much spending causing inflation.

From 1933 onwards the German economy grew while the unemployed found work and there was little inflation. By 1938 the military-industrial complex and related sectors were still booming while the workforce was almost fully employed. Workers wanted better pay and employers were willing to provide it to continue expanding their businesses. All the conditions for inflation were there.

It was contained by growing bureaucratic barriers: the suppression of wage growth at 1933 levels, which was already in place for years and extensive price controls. The wage freeze was partially circumvented in industries with less central oversight (ironically favoring subcontractors and suppliers over immediate producers of armaments) through *accelerated promotion, high-status apprenticeships, retraining schemes, hiring bonuses, improved working conditions and a variety of supplementary social benefits* (p. 262).

Wage and price suppression had the side effect of nullifying market mechanisms for reassigning labor between industries, demanding more bureaucratic oversight to replace those mechanisms. Detailed information was gathered on every worker. Regional migration was restricted. Rural workers were prohibited from taking industrial jobs; this backfired when farmers found a loophole by no longer employing their sons at all. And the state gained the power to conscript labor.

So under conditions expected not to produce inflationary pressure, there was none, and under conditions expected to produce it, it existed. No surprise here.

Besides the simultaneous presence of an economic boom and a fully employed population, there were two other threats of inflation: the import rationing system (see Trade), dealt with by raw materials rationing, and government spending (see Budgets). The latter did produce an undesired increase in the volume of money in circulation.

Budgets

The Reich dealt with funding of two kinds: safe, from taxation and long-term borrowing, and risky (for inflation, debt and so on) from short-term borrowing and money creation.

Taxation was, by the late 30s, the heaviest in Europe. Of note were taxes on Jews, taxes on imported oil, a part of the autarky programme, and the elimination of the car tax.

Long-term borrowing came from retained business profits and household savings in the banks. This money was also used by private investors and so measures were taken to ensure more of it went to the state, with banks being pressured to invest in government bonds and private construction constrained by a ban on new mortgage borrowing in autumn 1938. Businesses were discouraged to use this funding and directed to employ their own profits instead.

More funds were made available to Berlin by taking resources from local governments. Hitler had promised to rationalize the relationship between central and local government and did so by centralizing public finance.

Off-budget IOUs helped fund rearmament and the Battle for Work.

Safe funding was enough at first. Then it failed to keep up with surging spending and the Reich increasingly had to rely on unsafe funding, with the threat of inflation appearing (fig. 9). An emergency measure was the New Finance Plan of March 1939, which forced the Reich's suppliers to accept 40% of their payment in credits with promises of tax exemption, but the problem as a whole was not solved. Short-term credit had to be taken, which amounted to printing money, and the volume of money in circulation doubled in the two years before the war.

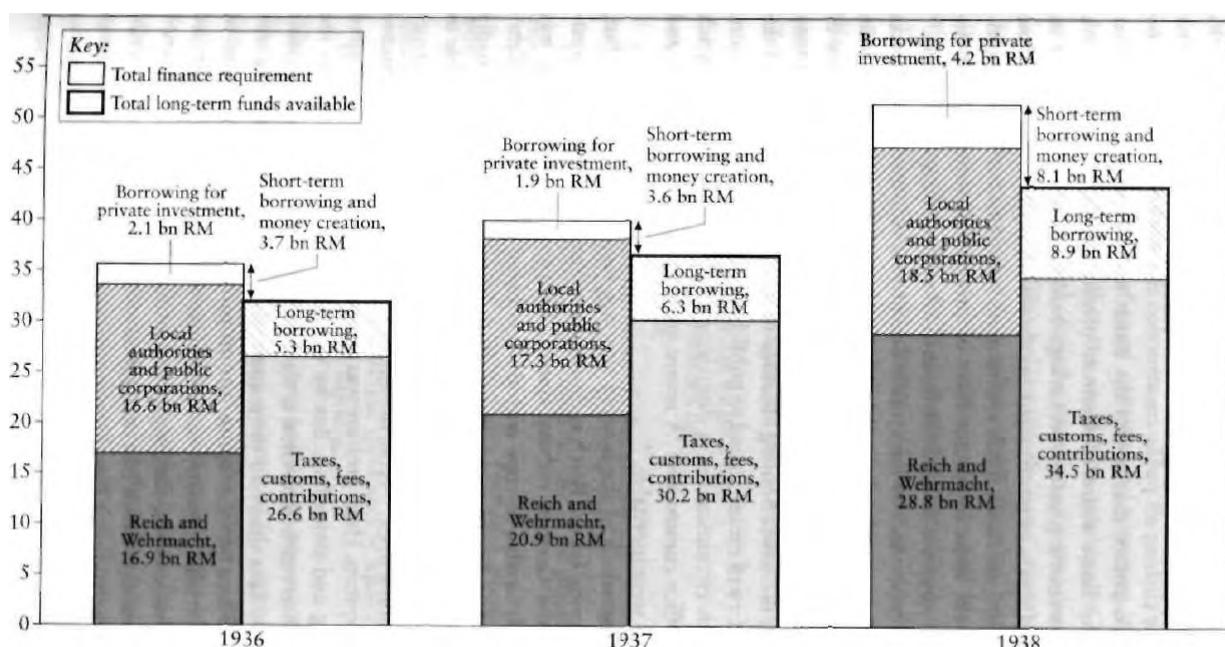


Figure 9. Inflationary imbalance between financing requirements and available funds, a contemporary view (billion Reichsmarks)

Trade

Germany had naturally high imports. Though strong in manufacturing (the basis of its export sector), on the raw materials side its only plentiful resource was coal. Cotton and wool for the textile industries, coffee and food for consumption, oil for fuel, rubber for automobiles, iron ore for the steel industry and other commodities all had to be brought from abroad. There could be no production and consumption without foreign goods.

Imports shrank due to the crisis, and by 1933 they were 50% lower than in 1928. Now they were on the rise, a sign of a recovering economy but also a pressure against the balance of trade.

Just as imports rose, exports were falling. The international environment was hostile, with widespread protectionism. But the main reason for this was that by 1933 both the pound sterling and the dollar had devalued while the Reichsmark remained in its value, making German goods comparatively more expensive (fig. 4). In 1936 France also devalued, followed by Switzerland, the Netherlands, Czechoslovakia and Italy.

Compounding this problem, the Reichsbank could fund a trade deficit by running down its foreign exchange reserves but those were very limited.

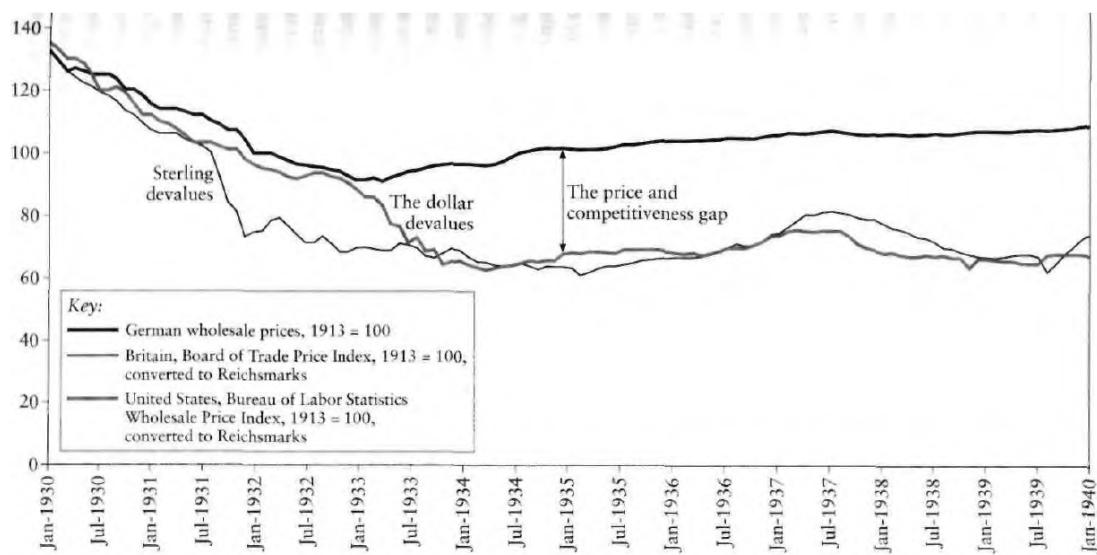


Figure 4. The competitiveness gap: the price of not devaluing

Note: To show the effect of the devaluation, this chart compares the German price level to the British and American price levels translated into Reichsmarks. As the value of the dollar and pound sterling fell against the Reichsmark, which remained fixed in terms of gold, a given level of the price index in the United States and Britain was lower relative to that prevailing in Germany.

And yet Germany absolutely needed an export surplus to pay debt and imports. Hence, the balance of trade was the most important limiting factor to the Nazi economy and played a central role in policy. Great pains were taken to lower imports and boost exports.

On the import side, Bruening's government had successfully lowered purchases at the cost of mass unemployment and Hitler did not repeat his mistakes. One legacy the Weimar period did leave was the system of foreign exchange rationing: exporters handed the foreign currency they gained to the Reichsbank, which repaid them in Reichsmarks and distributed it to importers. Germany thus had a mechanism to reduce imports by handing out less currency, which it extensively did. And in 1934 the

RWM (Business Ministry) set up surveillance agencies (Ueberwachungsstellen) to organize the rationing of commodity imports in some sectors, such as wool, cotton and nonferrous metals.

Those were still ad hoc measures and importers found loopholes around them, so a bureaucracy had to be set up to institutionalize the system. From August 1934 the Reichsbank would allocate foreign currency based on export returns, keep some to pay debt and hand over the rest to 25 supervisory agencies, one for each kind of commodity. Prospective importers would file applications to their agency, which then doled out its limited funds to imports deemed of higher priority. Successful applications resulted in Exchange Certificates (Devisenbescheinigungen), without which imports were banned.

Besides lowering imports, this structure was used to direct resources to key industries at the expense of those of lesser importance to the state's goals. Hence, through the 30s the textile industry stagnated while the military-industrial complex boomed (fig. 5). It also magnified the dominance of raw materials within the composition of German imports. As a side effect, industrialists no longer had to worry about competition with foreign manufactured goods within the internal market.



Figure 5. The Third Reich's lopsided recovery:
the production of textiles and investment goods (1929 = 100)

Germany's commercial relations were revised to improve the balance of trade. What resulted was not "autarky" in the full sense of the word: mercantile disengagement happened just with France, Britain, and, primarily, America. A trade deficit with the USA existed and remained, but the total volume of trade shrank from a few billions to just hundreds of millions of Reichsmarks. Transatlantic diplomatic relations deteriorated at the same rate.

With other trading partners, Germany rejected multilateralism and sought bilateral deals with each. In Western Europe, threats of moratorium broke European-American coordination and allowed

agreements with the Netherlands, Switzerland, and even Britain; a trade war with the latter would have been damaging for both parties.

To replace raw materials no longer provided by America and Britain, German trade made inroads in Latin America and Southeast Europe. Copper and saltpetre came from Chile, wheat and maize from Romania, Hungary and Yugoslavia, bauxite from Hungary and Yugoslavia, oil from Romania, cotton from Brazil and Peru and coffee from Brazil. This had geopolitical consequences: Southeast Europe was drawn into a German sphere of influence and Brazil found itself in a better position to handle its American debt.

Another aspect of import reduction was investment in technologies such as synthetic fuel and rubber.

Imports were thus squeezed as much as possible. Nonetheless, some (not all) industries were still expanding through the 30s and demanding more and more imported raw materials. With supply restricted and booming demand, there was a tendency towards inflation. To prevent this, rationing was implemented for commodities themselves and not just the foreign currency to buy them. Most importantly, steel was rationed from 23 January 1937.

Initially rationing was balanced and rearmament didn't receive as much steel as one would expect, but later on this, too, became a mechanism for focusing resources on the military-industrial complex. But raw materials rationing did not reallocate efforts towards desired sectors as smoothly as expected; by 1938 there were all across the country half-finished building sites with idle workers and machinery awaiting a new steel assignment.

On the export side, the simplest solution was to devalue the Reichsmark. This was debated in the Weimar era and, behind closed doors (as a politically sensitive topic), in 1934 and 1936, but ruled out for aforementioned reasons (debt, fear of inflation and prestige). This forced Germany to come up with creative methods to lower the price of German exports.

The first was, starting in 1933, a complicated system of bond buy-backs (I, for one, didn't understand it; it's described in page 77) which essentially subsidized exporters at the expense of Germany's foreign creditors.

As this wasn't enough, in 1935 exports were subsidized by a new tax levied on industry as a whole. A progressive tax rate of 2 to 4 percent on turnover raised tens of millions of Reichsmarks every month. The largest payers of this tax were in the booming armaments industry, which ultimately propped up the export sector and the balance of trade. The tax was unpopular with businessmen, particularly since it left some industries in the red, but it was effective at least in the short term.

On the long term it began to draw hostility from trade partners as it was essentially state-subsidized dumping, a point made in a memorandum written by Carl Goerdeler in 1936.

The objective of a positive balance of trade was contradicted by another policy, the encouragement of Jewish emigration. As emigrants left with their property and had to be provided with foreign currency by the Reichsbank, they constrained Germany's limited supply of foreign currency. The Haavara Agreement was one workaround to this: as Jews leaving for Palestine paid German goods, they compensated their departure with an increase in exports.

Kristallnacht was a setback, as replacements for vandalized goods had to be imported at a steep price. Goering was incensed, not about the events themselves but of their financial effect.

By the late 30s growing imports from the defense sector could no longer be backed by the export sector and the need for foreign currency had to be satisfied with emergency measures: tight controls on foreign currency and one-time acquisitions such as Austria's reserves.

The whole system of import rationing and export subsidies, imperfect as it was, is called remarkable by Tooze. It allowed Germany to survive and trade with foreign exchange reserves much smaller than those of most countries today. Though before the war it was already strained by neverending rearmament, it was still the same framework of German trade well into the war.

Agrarianism

Interwar Germany was still in transition to an urbanized society. In the 1933 census there were 9 million agricultural workers, with 32.7% of the population in communities of less than 2,000 inhabitants and 56.8% in settlements of less than 20,000. Every party sans the KPD and SPD catered to the agrarian lobby, which was one of the players in Hitler's rise to power and a significant faction within the NSDAP in the years to come.

Tooze stresses to his liberal readers that, though Nazi agrarians seem "atavistic", "archaic" and "backwards-looking", they had their feet firmly on the ground of the grave and real problems faced in the German countryside.

Long processes in the previous centuries of agricultural history are the backdrop to this story. Leaving their overcrowded continent, Europeans with an "insatiable urge to overcome scarcity" had conquered much of the Americas, Africa, Asia and Oceania, decimated several native populations, overseen a demographic transfer of 70 million slaves and settlers to the New World and created a global commodity economy supplying their continent, where peasant populations continued to skyrocket. Productivity leapt with technological advances. Large monocultural estates in the Third World and farmer homesteads in America, both geared towards maximum capitalistic efficiency, outcompeted self-sufficient peasant economies, including in Europe, once transportation costs cheapened.

As a legacy of these conquests, several European states still had vast swathes of land in their colonial empires, but Germany had just been stripped of what little it had.

Liberalism, starting with the French Revolution, uprooted the old feudal order and made land into a commodity.

Urbanization and declining birthrates happened everywhere industrialization took hold.

German peasants were not the main winners of this. Their living conditions were poor: *class photographs from rural elementary schools routinely captured images of row upon row of barefoot children, whose parents were too poor to afford shoes, at least for the summer months. Images of fieldwork show broken old people bent double over primitive ploughs pulled by worn-out cattle* (p. 167). They were often overworked, some with over 12 hours of daily labour for six days a week for both men and women. Their income per hour was lower than urban workers; agrarians deemed this an injustice but it reflected lower rural productivity. Production methods were primitive and technology limited, with much labour still done by hand.

Birthrates, already declining in the cities since the 1870s, began to plunge in the fields after the Great War, reaching 20 per thousand in the 30s.

Urbanization reduced the rural workforce with every passing year and heightened the fertility reduction.

The food supply was not secure. As elsewhere in Europe, the lowest strata of society suffered chronic malnutrition even in times of affluence. The past century had seen many famines through the world as the global food economy was rearranged, but mass hunger and death weren't far away in space and time, taking place in Eastern Europe through the 20s and 30s.

Food had to be imported and hostile powers could block its maritime trade routes, which is exactly what Britain did in the Great War, creating an epidemic of malnutrition blamed for 600,000 deaths.

The distribution of food production favored Great Britain, France and the United States and they would rather see Germany remain just as a food importing economy.

Besides direct food imports, many inputs were of foreign origin, particularly animal feed, where maize, oilseeds and other items allowed some dairy and pig farmers to achieve high yields and profit. This was an issue for the balance of trade.

Properties were stratified according to size ownership in large estates (>100 ha), viable medium farms (10-100 ha) and poor marginal farms (<10 ha). Junkers employed conventional wage labour and supporting personnel. Medium farms in the 20-100 range employed servants and maids who received part of their pay in kind. 20 hectares was the minimum farm size for a guaranteed livelihood but estates of 10-20 ha were viable with good soil and close markets. Below 10 ha, some peasants could supplement their income with other activities but full-time labourers were overworked paupers.

Land was concentrated, with estates in excess of 500 ha representing 0,2% of the farms and 25% of the farmland. 88% of the farming population had less than the critical 20 ha threshold.

Marginal farmers would see their life improve if they had more land. One solution would be land reform, and for decades one plan for land reform had been proposed by many from centrists to the radical right: the breaking up of eastern Junker estates and settlement of East Prussia with small viable peasant farms, which would alleviate poverty, expand food production and provide a demographic bulwark against the Poles. The Weimar Republic accepted this and had a land reform program. It didn't go far because of Junker resistance and high costs. But its more fundamental problem was arithmetic. Even if all cultivated land were equally divided among the rural population, every family would receive 13 hectares, less than the minimum viable size.

So "land hunger" wasn't jingoistic Nazi rhetoric but a reality. As a topic it wasn't an exclusivity to Germany, as it was a prime motivation for the conquest of the Americas and the still ongoing settlement of Russian Asia. Germany really had a ratio of rural population to land far higher than France, Britain and America (table 4).

Table 4. Farm labour and land

	Farming population 000s	Arable land 000 ha	Arable ha per farmer	Arable ha per farmer, Germany = 100
Canada	1,107	23,120	20.9	1009.5
United States	10,752	137,333	12.8	617.4
Denmark	561	2,663	4.7	229.4
Britain	1,413	5,32.9	3.8	182.3
Soviet Union	71,734	223,916	3.1	150.9
France	7,709	21,386	2.8	134.1
Irish Free State	678	1,484	2.2	105.8
Germany	9,388	19,422	2.1	100.0
Poland	10,269	18,557	1.8	87.3
Italy	8,008	12,753	1.6	77.0
Romania	9,207	13,866	1.5	72.8
Bulgaria	2,464	3,711	1.5	72.8
British India	179,947	125,397	0.7	33.7

Source: SRA, Statistisches Jahrbuch fuer das Deutsche Reich 1937 (Berlin, 1937), 3⁸* and 41*

In light of this, Nazi agrarianism sought not to set back the clock all the way to the 18th century but a rebirth or renaissance of the countryside. Their target audience was neither the most marginal farmers nor the Junkers, the latter calling them “agrarian bolshevists”, but the medium peasants. They occupied the Ministry of Food and Agriculture, organized assemblies and festivals, made peasant courts, defined law and policy –but not to the full desired extent, as their interests clashed with those of other constituencies- and formed a powerful organization, the Reichnaehrstand (RNS). Funded by a tax on every farm, it had over 20,000 employees and overwhelming economic powers, controlling 40% of the workforce and influencing the life of even the urban population. Its oversight reached even cooperatives, merchants and food industries and covered “every nook and cranny” of the countryside with an Orstbauernfuehrer in every one of the country’s 55,000 villages, and above, 500 Kreisbauernfuehrer and 19 Landesbauernfuehrer, with 3 divisions for ideology, farmyard and market issues.

Much effort was spent to propagate information and make the peasantry adopt modern farming methods.

Increasing yields and saving the balance of trade were contradicting aims but imported inputs in animal nutrition were successfully replaced without a drop in production.

Protectionism, gradually implemented since Bismarck’s time, and import quotas set up in the last Weimar years were continued and expanded.

Prices for agricultural produce were now determined by the RNS rather than the market. It hoped to direct production and increase the rural standard of living with them. Price increases in 1934 were

met with widespread discontent (1934 was a crisis year), and from then on political pressure forced the RNS to keep them low. This backfired when demand rose as the economy recovered, leading to some shortages of meat and butter, not because of lack of production but because higher prices would have been necessary to stimulate production and lower demand. In 1938 higher prices would be paid to dairy suppliers but consumer prices weren't raised, stimulating production but doing nothing with demand. There was also some subtle rationing.

The RNS administered the food supply and stocks and took measures such as mixing bread flour with maize starch and potato meal.

An escape from land hunger was the addition of farmland to the Reich. An increment of 7-8 million ha to the existing 34 million would be enough. The existing distribution of agricultural land, lopsided and highly unfavorable to Germany, was rejected. Thus, with a rational basis, agrarians were enthusiastic supporters of military expansionism and the Drang nach Osten, which would serve the same purpose as previous European colonialisms and, in their mold, reserve a secondary status for the conquered populations. Herbert Backe, future Minister, mentioned in his 1926 dissertation "The Russian grain economy as the basis for the people and economy of Russia" an uplifting of Russia's farmland through '*the infiltration of foreign ethnic elements of higher quality that will form themselves into an upper class and do battle with the mass of the population. The reservoir [for this infiltration] will be "The People without Space"*'. (p.180) Walther Darré, who headed the Ministry for a long time, spoke to an audience of RNS officials in early 1936 directly of settlement all the way to the Urals: "*The natural area for settlement by the German people is the territory to the east of the Reich's boundaries up to the Urals, bordered in the south by the Caucasus, Caspian Sea, Black Sea and the watershed which divides the Mediterranean basin from the Baltic and the North Sea. We will settle this space, according to the law that a superior people always has the right to conquer and to own the land of an inferior people*". (p.198)

The agrarians' vision would be enshrined into law by the Reichserbhofgesetz, proposed in September 1933. In its first draft it created a new category of estate, the Erbhof, owned by physically able gentiles with a farmsize of 7.5-125 ha who applied in the Erbhofrolle. Erbhöfe were to be protected from the market: their sale and use as mortgage security were banned, providing both security and severe constraints, and the debt of their owners (6 – 9 billion Reichsmark) would be paid collectively through the Rentenbank Kreditansalt, which would tax all Erbhöfe. As this was harmful to those with little debt they'd be compensated with preferential treatment in the settlement of East Prussia.

This faced severe opposition, with the Ministry of Economic Affairs (RWM) complaining that excessive protection would sap the peasants' initiative and the Reichsbank refusing to accept the dismantling of conventional rural credit. A compromise was reached and the collective debt relief was abandoned. Though Schacht's Reichsbank obstructed credit for Erbhöfe, courts followed a loose interpretation of the mortgage restriction (and even the restriction on sales) and the Ministry of Food and Agriculture provided grants and loans, allowing rural financing to continue normally.

Another point of contention were the new rules of inheritance, which intimately intruded on old regional customs and infuriated the peasants themselves. Properties would be undivided and pass down to a male heir (Anerbenrecht), as was the custom in northern Germany, but there peasants had the freedom to make other arrangements and often compensated siblings who didn't receive the

main property. In south and western Germany, partible inheritance was the norm and the law was received with “blank hostility”. The restrictions on female inheritance, too, were unprecedented. Once again courts were lenient and agrarians compromised, accepting shared ownership within the first generation.

The principle of undivided inheritance also drew fears of a decline in fertility.

In spite of the Ministry’s best efforts, urbanization continued. It was a source of worry due to its effect on birthrates; in the Darwinist worldview where the nation’s death lay around the corner, infertility and food insecurity were things to fear. And birthrates were still falling in the countryside, as women were overworked due to the general high demand for labour in the mid 30s (with unemployment already very low) and the pressure to secure better harvests (from 1934 onwards the climate was unfavorable). In 1937 manpower shortages in the fields had to be supplemented by Labour Front draftees, soldiers, convicts and schoolchildren.

Through its meticulous regulations and oversight of farm life the RNS created resentment from peasants. Its centralization of milk deliveries was met in September 1935 with a “milk strike” and an increase in the black market. But Tooze says the peasants weren’t fully in the right: after receiving for decades lavish protection from the state, it now had the right to demand something back from them. The RNS did achieve an increase in rural living standards to above pre-Depression levels, higher food production and a more resilient rural economy. Tooze excuses some of its shortcomings on the difficulties of handling a society in transition.

Germany could, like the Soviet Union, have attempted a radical modernization of agriculture to free up millions of workers for the industries and alleviate the high demand for labour of the late years. It didn’t just because it postponed a full resolution to the matter, like several others, until after the impending war.

Capital and labour

A common interpretation of the Nazi regime, long espoused by the KPD and SPD, is that it was a “dictatorship of the bosses”. This has some truth: industrialists gained more with the new order than their workers. But the NSDAP was not put in power by the industrialists, ruled in its own benefit rather than theirs and made many decisions against their will.

As mentioned, the forces behind Hitler's rise were some nationalist politicians and agricultural and military interests, not the business class. Several industrialists funded Hitler after a meeting on February 1933, but key magnates were missing and the rest had nothing to say or discuss: Hitler just described what he was about to do, argued why it would benefit them and requested their monetary support. Later the regime could use direct coercion to assert its will but preferred cooption, taking advantage of the divisions within German industry and using voluntarily offered entrepreneurial initiative.

It is worth noting that IG Farben, a name now immediately associated with the regime, was a supporter of Stresemann's diplomacy. The German industrial class endorsed internationalism and free trade and was satisfied by the Weimar Republic in this regard. The Reich would not please them with its import and raw materials restrictions, export levy and severe expansion of bureaucratic burdens.

What the regime could satisfy was their conservative internal agenda. Industrialists were anti-communist, wished to run their factories as they saw fit and despised the Weimar Republic's welfare state and strong state unions. Hitler did not disappoint: as part of his seizure of power (Machtergreifung), communists and social democrats were wiped out of the political scene, unions were dismantled and a state of labour demobilization achieved. Bargaining power shifted towards employers and this was cemented by the national labour law of 1934. Firms were free to manage their internal affairs. The concepts of Fuehrertum and Unternehmertum (entrepreneurial leadership) blended well.

This doesn't mean there wasn't any programme for employees. Regional trustees of labour (Treuhäender der Arbeit) were set up to mediate workplace conflicts. The NSDAP had its own labour movement, the NSBO, but as it was too radical it got sidelined. What gained prominence was Robert Ley's German Labour Front (DAF), a large, self-supporting organization like the RNS. It was distinct from the Labour Ministry. The DAF ran the famous Kraft durch Freude, took measures to improve working conditions and was part of the funding for programs such as what would become the VW Beetle.

Wages were suppressed at their 1933 level, with any increases negotiated through the trustees. This seems like a strongly pro-business move as 1933 wages were lower than pre-Depression values, but prices, too, had lowered and the Depression wasn't a boon for businessmen. Prices, too, were eventually suppressed, but as demand rose they grew faster than wages. Combined with the absence of foreign competition enforced by the import system, firms made healthy profits (fig. 6). Worker incomes also increased but not as much.

Rather than personal consumption, the profits were mostly accumulated and reinvested. The Reich sought to direct household savings to banks and then to its own funding, while industries would fund their expansion with their own profits. Shareholders were forbidden from receiving more than 6% of

the capital, leading to companies piling up massive reserves. And the Reichsbank's oversight expanded while new legislation limited the provision of loans. Companies were thus obstructed from the banks and led to use the reserves for their investment.

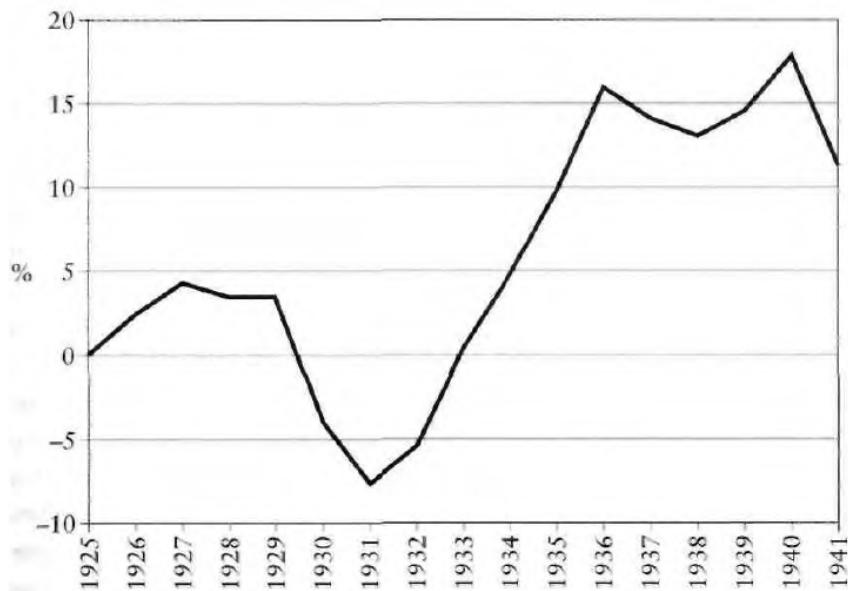


Figure 6. Rate of return on capital in German industry, 1925-1941

A hierarchy was set up. At the top was the Ministry of Economic Affairs (RWM), and then Reich Groups, Business Groups, Branch Groups and the firms themselves, whose participation was compulsory. The Groups were staffed by men suggested by the industry and vetted at the top. Standardized book-keeping and compulsory reports produced a lot of statistics now useful for historians. Like the RNS, guidelines and recommendations for production methods were distributed. And this bureaucracy was part of the trade system, providing staff for the import supervisory agencies and managing the export subsidy tax.

New regulations were inspired in measures taken in the Great War and ideas discussed since the 20s. But now the state was more powerful and independent than ever before. Bureaucrats no longer faced the formula "technically right but politically impossible".

Cartelization was encouraged. It was already happening for decades, forming giants, but industries like printing were still divided among thousands of local producers. The pace of consolidation heightened and the RWM even imposed a few compulsory cartels. Cartels set prices and could pursue independent firms in court to enforce them.

Foreign investors –American, British, Dutch and Luxembourgish- could succeed if they cooperated with the state, but sending back profits was difficult. General Oil and IG Farben shared some technology.

Jewish-owned companies gradually passed to gentile hands as part of "Aryanisation", but only in some sectors like retail, textiles and private banking Jewish presence was strong enough to mean a major change in ownership.

Synthetic production useful for autarky was expanded under state guidance. Typically funding would come from half-coerced industries, the state would block non-synthetic foreign competition,

guarantee a modest rate of profit for the company involved and keep the rest of the income. Later on it'd provide funding of its own and direct more resources through the Four Year Plan.

In banking, the “Great Banks” (Deutsche, Dresdner and Commerzbank) never fully recovered from the Depression and made profit, but not as much as other businesses.

In electricity, the market was shared (“Elektrofrieden”) between the RWE in the west and 3 state holdings. They competed with local producers, which were taken over by local NSDAP organizations. Those were in turn outmaneuvered, with the sector consolidated and the RWM given powers of oversight.

The steel sector had a number of powers. Vestag and Krupp should be familiar but five others are cited. They had different niches and political proclivities, some old guard conservatives and others fascist reformists. They fared well, Krupp reviving its military shipbuilding at the Germaniawerft (kept afloat specifically expecting a future rearmament) and Vestag landing positions in the industrial bureaucracy. Along with coal, production didn't grow as much as one would expect for fears of overinvestment, which had previously happened in the Great War. The Reich technologically excelled at cutting-edge electrically melted steel. A curious figure is Walter Rohland, who besides an industrialist served in the 11th Panzer Regiment to have first-hand experience of what he was producing.

Textile industries were losers in the 30s, but received attention in a drive to replace American cotton with synthetic fibers. Four regional syndicates were set up and textile producers, some voluntarily and some under pressure, provided capital for IG Farben and Vereinigte Glanzstofffabriken (VGF) to produce rayon.

In chemistry, IG Farben stood out. Hydrocarbons are versatile and the company was the key to sourcing more and more things out of Germany's plentiful coal. It and its predecessors had a long-term plan in the field of coal to fuel conversion: since the 20s it used profits from explosives, fertilizer and other sectors to fund research into coal hydrogenation, betting on a future shortage of oil. The gamble failed when new fields were found in Venezuela and the USA, bringing fuel prices far below the expensive price of any advanced synthetic alternative. With all its other businesses IG Farben would have prospered under any regime, but the Nazi autarky drive gave it a way to save this specific investment in coal hydrogenation. They reached a deal: with funding from the coal industry, IG Farben would expand its Leuna plant (working since 1928) and the Reich would tax imported oil, guarantee a 5% profit and keep any further profit. 5% seemed great when the technology was a gamble, but with Germany's oil shortage production turned out great profits and IG Farben regretted it. Leuna only produced 350,000 tons per annum; more plants were built and synthetic fuel came to play an important role.

In the Four Year Plan it also led the production of synthetic rubber (Buna), a more recent technology that was still experimental by the mid 30s.

IG Farben's symbiotic relationship with the state and the massive flow of capital it received changed its internal politics, with the central administration losing power to young technicians.

Overall Nazi rule was just a new reality German industry had to live with and it had several displeasures to quietly tolerate. But it adapted to the situation and found ways to gain handily from it.

Living standards

It's common to think of early 20th century Germany as an affluent country with a strong economy that carried it through two world wars. In reality, it had mediocre standards of living and a weak economy (table 3), and its economic limitations were a central fact in the 30s and 40s as both an incentive and an obstruction to the decisions taken by Hitler's regime. Ultimately this weakness was the reason it lost the war.

In common with the remainder of Europe, Germany was behind America. Though technologically both sides of the Atlantic were even, Europe lagged behind in mass manufacturing. America had a 2:1 productivity advantage on manufacturing in general and 4:1 to 5:1 in automobiles and radios. This was made possible by the scale of American markets and resources and symbolized by Ford.

Within Europe, Germany was still behind other economies, particularly Britain, which enjoyed a higher GDP per capita, a prosperous middle class and wealthier workers. German and British industries were evenly matched; what dragged down Germany was its large and outdated agricultural sector and small businesses in crafts and services. Wilhelmine Germany was catching up but that stopped in the Weimar era.

Table 3. Germany in the world economy in the 1930s (averages 1924–1935)

	As seen from the 1930s (Colin Clark)				As seen from 2001 (Angus Maddison)			
	Total National	Total International	Per capita International	Income relative to US = 100	Total GDP, million 1990	Total GDP per capita Geary-Khamis	Total GDP relative to United States	Per capita GDP relative to United States
	Income, million Units (\$)	Units		US = 100	income relative to US = 100	International	GDP per capita	United States
United States	66,203	542	100	100	727,803	5,963	100	100
Canada	5,084	494	8	91	44,787	4,347	6	73
Britain	21,854	477	33	88	242,385	5,287	33	89
Switzerland	1,917	476	3	88	23,877	5,922	3	99
New Zealand	691	468	1	86	7,142	4,839	1	81
Australia	2,543	399	4	74	32,395	5,091	4	85
Netherlands	2,624	335	4	62	41,443	5,289	6	89
France	12,480	302	19	56	177,404	4,287	24	72
Denmark	1,008	285	2	53	17,734	5,006	2	84
Germany	17,580	271	27	50	243,983	3,762	34	63
Belgium	2,033	253	3	47	38,842	4,832	5	81
Austria	1,613	242	2	45	22,103	3,314	3	56
Czechoslovakia	2,680	193	4	36	38,091	2,318	5	39
Hungary	1,205	177	2	33	19,975	1,796	3	30
Greece	922	145	1	27	14,304	2,261	2	38
Italy	5,320	131	8	24	119,207	2,934	16	49
Poland	3,428	122	5	23	51,620	1,204	7	20
Romania	1,471	104	2	19	17,027	1,239	2	21
Bulgaria	524	87	1	16	7,623	2,736	1	46
Soviet Union	14,710	87	22	16	255,719	1,461	35	25

Sources: A. Maddison, 'Quantifying and Interpreting World Development: Macromeasurement before and after Colin Clark', *Australian Economic History Review*, 44 (2004), 1–34; Maddison, *The World Economy: A Millennial Perspective* (Paris, 2001).

This economic inferiority translated to lower standards of living. In 1936, with full employment, blue-collar households could expect to earn 2,700 Reichsmarks a year, while Americans enjoyed living conditions that would take 5,380 to 6,055 Reichsmarks to replicate in Germany. Individual hourly earnings were measured not in Reichsmarks but in Pfennigs. Diets were monotonous (*bread and jam, potatoes, cabbage and pork, washed down with water and small amounts of milk and beer*) and food expensive; combined with drinks and tobacco, it could take up as much as 50% of household budgets. With another 12% on rent and 5% on utility bills, a four-person household was left with 67 Reichsmarks per month to spend on transport, education, healthcare, insurance and everything else. Common expenses like buying or resoling shoes took at least a tenth of that value, and buying a new suit could take nearly all of it.

Housing was particularly difficult. Blue-collar workers in Detroit took for granted a four and a half-room apartment with running water and separate kitchen and toilet, but in Germany that would cost 1,380 Reichsmarks a year in rent. More than one working-class family often shared the same rooms, and many lived in one room apartments, some even in attics and cellars. And this was before the crisis, which left tens of thousands in squatter camps outside major cities. This housing shortage was in large part the product of Weimar policy: in the immediate postwar years rent controls were imposed to prevent evictions, but they made the construction of further housing unprofitable. To remedy this a tax was levied on homeowners and used to fund public construction, but the new buildings were too expensive for working class families. This effort collapsed during the Great Depression.

In light of this, Hitler did want to bring material prosperity, to all social classes and as a central objective of his career. But he did not believe it could be achieved in peace. He rejected liberal and capitalistic notions of progress through technology and exports, as that would just lead to international competition, and instead focused on the acquisition of living space and the settling of scores with the Versailles powers. Given West Germany's later miracle this may seem outlandish, yet in the interwar context he had plenty of reasons to be pessimistic. But prior to war, the Reich could still take small measures to improve the standard of living.

One effort, following conventional notions of progress, rationalization and "productivism", was an investment into workforce qualification and human capital at the same time as industries, driven by the same ideas, were also heavily investing in modernization. Apprenticeships and on-the-job training were lavishly subsidized and youths encouraged to acquire skills. This paid off well: the number of male school leavers joining the workforce as unqualified labourers dropped from 200,000 in 1934 to 30,000 in 1939. Though blue-collar workers didn't rise to the middle class, they took on more complex tasks and a "deproletarianization" took place. This achievement outlasted the war and benefitted West Germany (table 8).

Table 8. Blue-and-white collar occupations, 1938 v. 1933
(000 workers)

	Census 1933	Workbook census 1938	Change	% Change
Farm labourers	2,494	1,981	-513	-21
Textiles and clothing	2,030	1,701	-329	-16
Food	1,207	953	-254	-21
Commerce	2,686	2,494	-192	-7
Health and social work	595	494	-101	-17
Woodworking	689	623	-66	-10
Mining	756	713	-43	-6
Entertainment	124	84	-40	-32
Transport	983	975	-8	-1
Total	11,564	10,018	-1,546	-13
Water, gas, electricity	188	195	7	4
Paper and printing	499	521	22	4
Building materials	587	632	45	8
Chemicals	353	453	100	28
Domestic service	1,280	1,438	158	12
Iron and steel	1,314	1,533	219	17
Construction and allied	1,745	2,071	326	19
Public service	725	1,226	501	69
Engineering, etc.	1,561	2,307	746	48
Total	8,252	10,376	2,124	26

Source: T. W. Mason, *Arbeiterklasse und Volksgemeinschaft* (Opladen, 1975), 1247-8

Measures were taken in the field of labour relations, and the DAF had its programs, but the book doesn't go into detail on those.

And the state sought to make some consumer goods more accessible. As industries hadn't yet embraced Fordist economies of scale the Reich's willpower would push for their implementation and cement the production of "Volksprodukte" at a low cost. Most Volksprodukte failed because raw materials were too expensive and German industry wasn't advanced enough to provide them at a price compatible with the population's low purchasing power. Examples are given in three fields: radios, housing and cars.

Radios were expensive and had limited penetration. At the Propaganda Ministry's initiative and the cooperation of a cartel of manufacturers, new models were produced with cheaper receivers, techniques of mass production and part-payment deals, the Volksempfänger (VE) 301 of 1933 and the Deutscher Kleinempfänger (DKE) of 1939. Prices, previously over 100 Reichsmarks, shrank to 76 in 1933, 59 in 1937 and 35 in 1939. Half of households had a radio in 1938 as opposed to a quarter in

1933. Though internal and international inequalities remained the VE 301 and DKE were very successful. They were, however, inferior in quality to American models of the same price.

Weimar public construction projects were not resurrected, but private housing was subsidized. A settlement programme built homesteads in the hinterland, but they were of little effect due to the buildings' poor quality. The Volksprodukte approach was taken in 1935 by the Labour Ministry in the form of Volkswohnungen, small working class apartments with central heating, proper bathrooms and hot running water. They were to be made accessible through economies of scale and government subsidy. However, only 5% of building components could be mass produced and apartments of the required size and infrastructure were still expensive to build. Production was far below targets and rents were much higher than what lower class families were willing to pay. Later in 1938, new mortgage borrowing was banned as part of budgetary efforts to keep bank credit with the state, intensifying the housing problem.

Cars were a luxury object in interwar Germany and Hitler, a motor enthusiast, wanted to change that. By lifting the car tax and building Autobahnen he made a great contribution, but taxes on imported fuel had the opposite effect. The main effort has left a legacy on the streets of your city today: the Volkswagen Beetle. Its story began on a motor show in March 1934, when Hitler announced his desire for a people's car priced at less than 1,000 Reichsmarks.

Daimler-Benz and Auto Union funded a research project led by Porsche but they were skeptical that the low price tag could be achieved, as the cheapest car -Opel's P4- was worth 1,450 Reichsmarks and 1,200 was considered the lowest possible price. A massive new factory was to be built to lower the price through economies of scale. By 1937 they gave up and the project was taken by the DAF as a not-for-profit social program. Funding was to come through a subscriptions system: prospective buyers made weekly deposits on a DAF account and received no interest, but were entitled to a VW after depositing 750 Reichsmarks. 340,000 savers signed the contract by the end of the war, of which only 5% were the desired demographic of blue-collar workers. The war disrupted the program and no private VWs were delivered. But it is likely it would have flopped without it: the production required to unleash sufficient economies of scale and achieve the desired price was far beyond what the entire German automobile industry produced, and any smaller production would force the DAF to sell the cars at a major loss.

By 1939 inflationary pressure from uncontrolled spending and the focusing of scarce imports away on the military-industrial complex led to a decline in the quality of consumer goods, though their price was kept low through administrative means. Children's clothing now lasted months instead of years. But curiously, Tooze explains that "guns vs. butter" is a false dichotomy in this case: guns were a form of butter. Rearmament contributed to national happiness much like consumer goods would be expected to do. *In any case, it would be a mistake to assume that the remilitarization of German society was something imposed from the top down, with the majority of Germans preferring butter to guns. For many millions, the reconstruction of the Wehrmacht was clearly the most successful aspect of the regime's domestic policy and the collective mass-consumption of weaponry was a more than sufficient substitute for private affluence.* (p.659)

Rearmament

Military buildup was, from 1933, the founding stone of Hitler's project, around which other topics would be organized and aims could be achieved. Domestically, it was a popular initiative and the spine of economic recovery. Internationally, at the cost of losing America's implicit security guarantee provided by the Atlanticist strategy Germany could return to great power status, revise its borders, solve the problem of land hunger, acquire means of sustenance (which would go a long way to save the balance of payments) and settle debt and other questions.

In 1932 the German aircraft industry was tiny, with 3,200 employees and a yearly production of less than a hundred planes. Under the regime's initiative an entire productive complex was essentially built from scratch. Industrialists were reluctant to invest as they'd have to rely on an unpredictable flow of government orders and the sector became overcrowded; Vestag even refused to buy Junkers. Thus the Reich was the ultimate source of funding and guaranteed a lion's share of raw material inputs and foreign exchange. Aeronautics companies catered entirely to its needs, unlike ship-, gun- and tank-makers who had some civilian production. The Reich, too, directed the whole process. But despite this dependence and command of the state entrepreneurial initiative and competition were fierce and harnessed to achieve technological advancement. This allowed the Reich to struggle, not with absolute success, against the huge challenges of aeronautics in the 30s and 40s: technological leaps from biplanes to jet fighters and uncertainty about how the war in the air would be fought.

A Ministry of Aviation (RLM) was created and served as an intermediary between businessmen in the autarchic sector and political decision-makers. It mediated funding through the Aerobank. A large, specialized new workforce was trained.

Giants of aviation arose, of which the crown jewel, Junkers, was already among the largest pre-1933 producers. Its head, Hugo Junkers, is claimed to have been a socialist and a pacifist but Tooze states he was a nationalist in favor of rearmament. In any case, Goering and Milch were determined to take over. He was detained on charges of treason and promptly signed away his firm. Such direct coercion, however, was not the norm in the regime's relationship with industry. The companies specialized by aircraft type: Junkers, Dornier and Heinkel on bombers and Messerschmitt on fighters. Others like Arado provided parts.

As a result, by the turn of the decade this industry *employed at least a quarter of a million people and was capable of turning out every year more than 10,000 of the most sophisticated combat aircraft in the world.* (p.125)

Rearmament had its costs on the balance of trade, the available raw materials and the funding. For paying armaments producers the official military budget was expanded but the main instrument were Mefo bills, off-budget IOUs like those used in the Battle for Work. Yet by spring 1938 the Reichsbank was worried about the uncontrolled growth of government spending and no more bills were issued. Instead of putting a damper on spending, the Reich simply used short-term debt, an unsafe form of funding, and the growth continued unabated while the money supply was now dangerously increasing (see Budgets). On foreign currency and material inputs, too, a ceiling was being hit by the end of the decade.

Together with those economic limitations, the expected time of war, the strength and position of other great powers and the decisions taken by the leadership in response to the previous factors determined the pace of rearmament. In general terms there was an initial buildup in 1933-35, a more intense phase with a shorter time target in 1935-36, stagnation due to economic limitations in 1937, recovery with an even shorter objective in 1938 and another crash in 1939.

The initial phase saw the definition of conscription and a remilitarized Rhineland as goals and a program of 35 billion Reichsmarks to be spent over 8 years with 4,4 billion per annum, amounting to 5-10% of the GDP spent on defense, already a high value. The air force would grow to 2,000 aircraft by 1935. The army would have a peacetime strength of 21 and wartime strength of 63 by the end of 1937 and offensive striking capacity by 1941. The navy, though of lesser priority envisioned a large fleet with submarines, battleships and aircraft carriers to be ready only in 1949.

Expansion targets grew more ambitious in 1935 and by 1936 spending exceeded the initially planned value; the army alone expected to spend 9 billion Reichsmarks a year for 3 years. The air force was to have 200 squadrons by sometime around 1937 and found an adequate fighter in the Me 109. The army would be ready by 1940 and have some offensive capacity even under a defensive posture. Peacetime and wartime strengths would be 43 and 102 divisions, respectively. Of these, there'd be 3 Panzer, 4 motorized and 3 Leichte divisions, forming a substantial mobile force, but horses were still dominant and the majority of the army was not and never came to be mechanized, reflecting the fact that Germany itself was only partially modernized. The Heer was not arming itself specifically for a mobile lightning war years in advance.

Some funding was earmarked for fortifications. France and Britain began military expansion at the same period.

Simultaneously, the Four Year Plan would lower imports through an increase in iron ore and synthetic fuel and rubber production by 1940 (table 5, table 6). Iron ore was contentious: in 1937 there were still unused low grade deposits within Germany. Industrialists, who previously preferred to import high grade Scandinavian ore, were now willing to gradually assimilate the deposits into the existing plants. Yet Goering and Paul Pleiger (of the Four Year Plan's staff) wished to build new steel foundries, dismissing fears of excessive capacity with the expectation that demand wouldn't stop growing. In the end Goering's surveillance and police apparatus won him the power struggle and the Reischwerke Hermann Goering was formed. It was hoped to give the state a dominant stake in the steel industry but became just another company among several.

Table 5. Four Year Plan: proposed levels of spending

	Plan I (January 1937)	II (January 1937)	Plan III (May 1937)	Plan IV (December 1937)		
	million RM	%	million RM	%	million RM	%
Mineral oil	1,438	16.7	1,989	22.6	2,684	28.3
Buna	517	6	687	7.8	654	6.9
Other chemistry	2,351	27.3	1,100	12.5	778	8.2
Waterways	1,826	21.2	1,567	17.8	1,518	16
Nonferrous metals	353	4.1	317	3.6	351	3.7
Iron and steel	232	2.7	449	5.1	360	3.8
Textiles	344	4	449	5.1	484	5.1
Food	267	3.1	643	7.3	1,518	16
Coal	43	0.5	194	2.2	199	2.1
Energy	947	11	1,171	13.3	721	7.6
Wood	86	1	26	0.3	66	0.7
Machines and equipment	198	2.3	194	2.2	76	0.8
Leather	9	0.1	18	0.2	9	0.1
Housing	0		0		66	0.7
Total planned investment	8,611	100	8,802	100	9,485	100
billion Reichsmarks						

Source: D. Petzina, Autarkiepolitik im Dritten Reich (Stuttgart, 1968), 83

Table 6. Rubber and iron ore: twin priorities of the Four Year Plan

ooo tons	Rubber		Iron ore (fe content)	
	Natural rubber imports	Buna	Iron ore imports	Ore production pre-1938 Germany
1929	59		10,670	2,080
1930	51		7,271	1,845
1931	45		4,856	841
1932	50		3,254	442
1933	61		4,104	828
1934	72.		6,822	1,372
1935	74	0	9,995	1,849
1936	83	1	8,430	2,259
1937	100	4	9,690	2,759
1938	92	6	10,470	3,360
1939	77	22	10,043	3,928
1940	19	41	6,874	5,019
1941	27	71	12,513	4,755
1942	24	101	13,581	4,137
1943	8	120	15,150	4,080

Sources: G. Plumpe, Die IG Farbenindustrie AG (Berlin, 1990), 385; Statistisches Handbuch, 281

This accelerated rhythm brought to fore the question of what was to be done with the Wehrmacht. To produce everything by 1940 factories would have to be built or retooled. Once rearmentment

ended, the transition to civilian production would be slow, produce unemployment (though Tooze doesn't mention that with the high demand for labor that wasn't that much of a problem) and a transition back to military production in case of a war would also be slow. To avoid such troubles it now made the most sense to put the armed forces to use once they were ready.

This armaments drive demanded ever greater resources, and though the Four Year Plan would help with that in a few years, initially it was also a burden. In 1937 the scarcity of steel log jammed all of rearmament: as the Wehrmacht's steel rations stagnated, so did armaments production.

In response, steel mills raised production by using all available capacity, labour, scrap and more ore imports, while the Anschluss and the lull in rearmament relieved the foreign exchange situation. This allowed a new phase in early 1938. Now the time horizon was set for April 1939 and war was expected to happen soon. Stocks of ammunition were to be built. Todt was charged with building the Westwall; as he cared about results but not finance production involved a lot of overpricing and inefficiently spent money. The Luftwaffe, having found its bomber workhorse in the Ju 88, ordered 7,000 of them.

More raw materials were allocated, with over 40% of available steel going to the military. Defense spending could, if plans went through, exceed 20% of national income and relied on unsafe funding. No other capitalist economy reached this level of mobilization in peacetime and Germany's was feeling the strain.

In late 1938-early '39 even more ambitious plans were laid. The Luftwaffe wanted a fleet of staggering 21,750 aircraft in four years, far more than its historical peak strength of <5,000. The Kriegsmarine received first priority from January to September and wanted 797 vessels by 1948. The army would receive heavy tanks and artillery. Armaments production in general would triple.

Such aims fell flat. With a general feeling of uncertainty the government found it hard to get credit and resorted to emergency measures, even covering some of its deficit by printing banknotes. The gold standard was formally abandoned. On the balance of trade, exports were on a downwards trend. There was no choice: the Wehrmacht's steel quotas were reduced. Once again armaments production stagnated through 1939 (fig. 10, fig. 11).

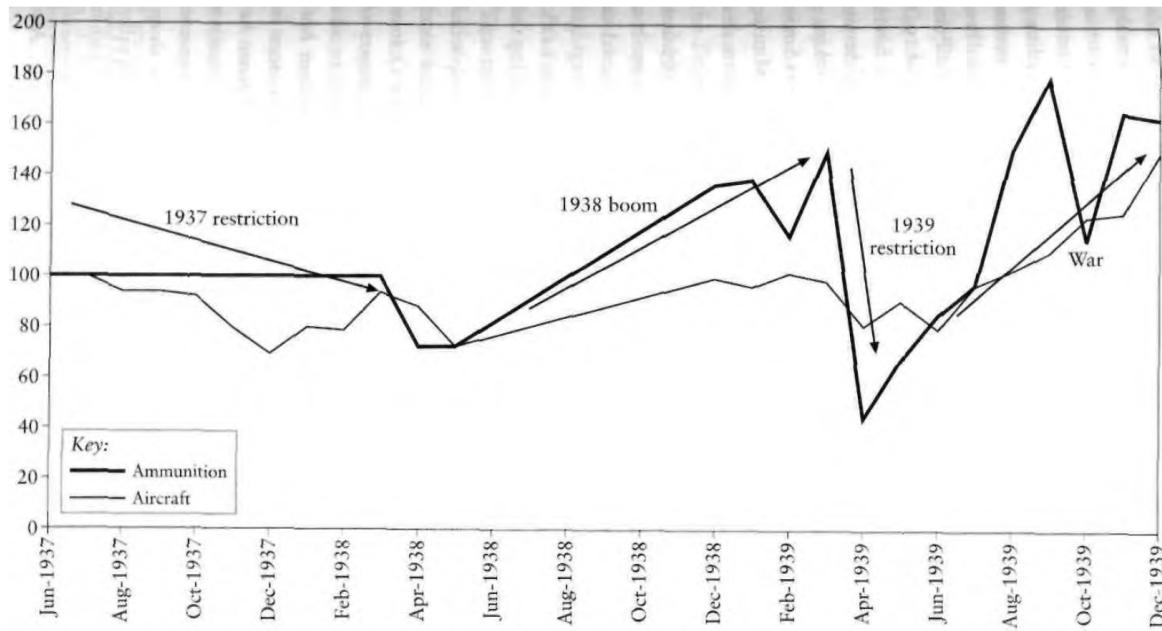


Figure 10. Production of aircraft and ammunition, 1937–1939 (June 1937 = 100)

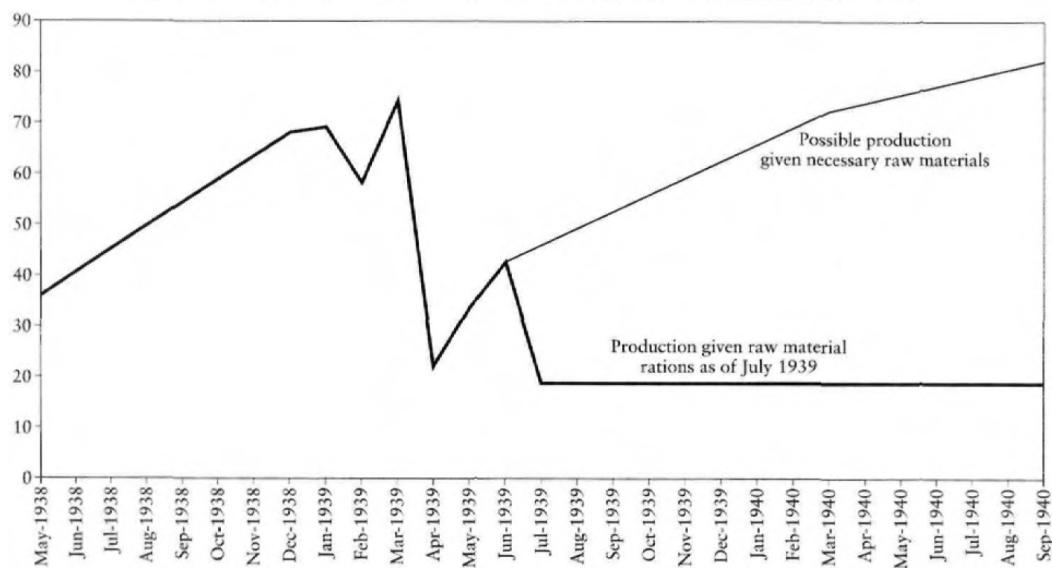


Figure 11. The future of German ammunition production, as presented to Hitler, July 1939 (January–February 1942 = 100)

Note: The chart is constructed on the basis of figures for actual production up to May 1939. The data beyond May 1939 are the predicted levels of production translated into an index using the appropriate weights for each type of ammunition. The 'ideal' figures refer to the manufacturing capacity available for ammunition production, allowing sufficient capacity for export orders and civilian needs, but assuming an unlimited allocation of raw materials.

The prewar years

1933

It has been said that Hitler did not have to take critical decisions until 1936, but from his very first days in office key choices were already taken and he had a general idea of the course that was to be taken. To carry them out the immediate seizure of power and Enabling Act were followed by a gradual sidelining of other forces besides the NSDAP which still had influence within the cabinet. Conservative resistance to the Battle for Work was outmaneuvered by the appointment of Fritz Reinhardt, party member, to a position within the RFM, though von Krosigk remained at its helm. Schacht, who opposed work creation but conceded the point to Hitler, took over from Hans Luther (together with Bruening, the man responsible for late Weimar austerity) at the Reichsbank. Hugenberg of the DNVP lost his positions on the RWM and Agriculture after, while on a diplomatic delegation, he *did manage to embarrass the rest of the German delegation with an unscripted outburst in which he demanded not only the return of Germany's colonies, but also a free hand for expansion towards the east.* (p.53) But within the NSDAP factions more radical or more conservative than the mainstream remained.

The DAF and RNS were set up, the latter building up stocks of grain after a bountiful harvest. Large funds were allocated to work creation, which continued to be the central theme in public media through the next year despite no more funds being assigned henceforth. Rearmament began with a time horizon of at least 8 years.

Abroad, the dollar devalued, grim news for the balance of trade. Schacht took an aggressive economic diplomacy with threats of a moratorium, though some level of payments still took place.

1934-5

This biennium saw the regime face and overcome at great cost its largest prewar crisis. At its root was the problem of the balance of trade. Exports were low because of the Reichsmark's high value and widespread protectionism. Jewish emigration made the problem worse. No decisive solutions had been found, the balance was in the red and foreign exchange reserves were burned out to almost nothing (fig. 2, fig. 3), to the point that by June 1934 importers were receiving foreign currency not on a monthly but on a day-to-day basis.

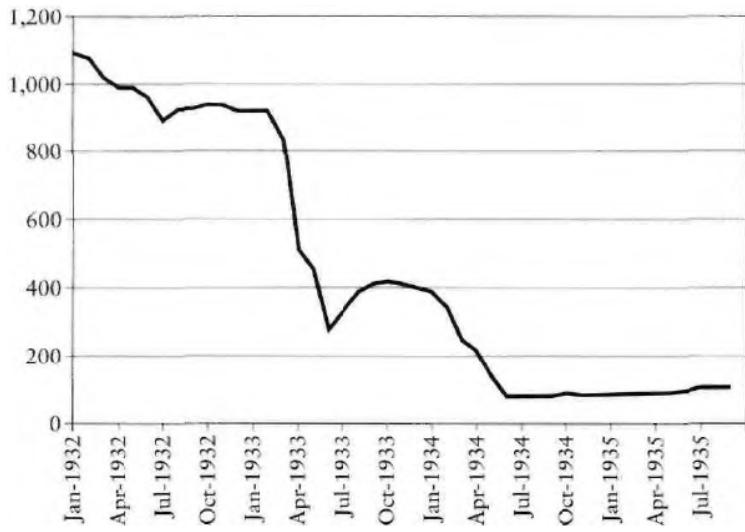


Figure 2. The declining gold and currency reserves of the Reichsbank (million Reichsmarks)

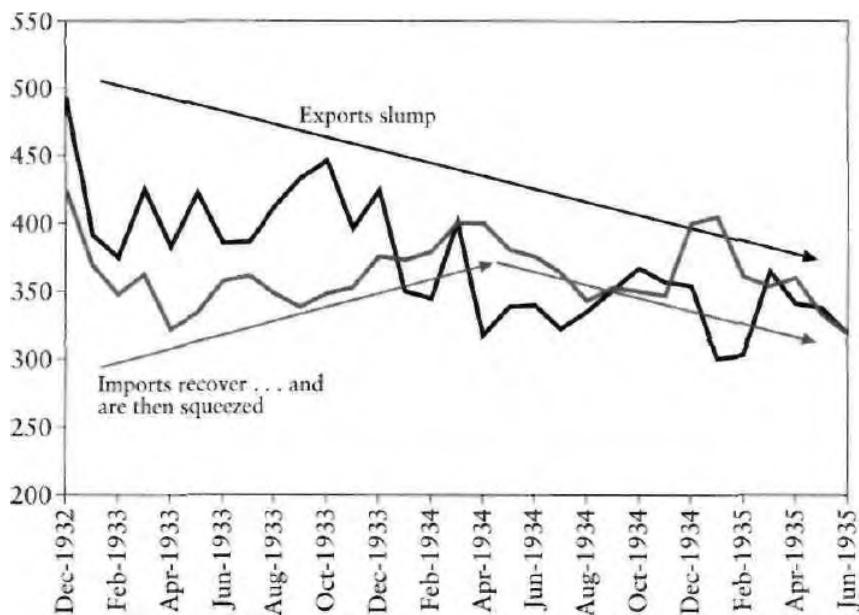


Figure 3. Pressure on the balance of trade: monthly imports and exports (million Reichsmarks)

Much was attempted to correct the balance of trade. Schacht's aggressive diplomacy continued and paid off: trade with America, with whom Germany already had a deficit anyways, began its decline, while Britain got a favorable trade deal. Dawes and Young plan loans were still being paid, though only partially.

The export subsidy scheme at foreign creditors' expense was set up but proved insufficient after several months. Under the Haavara Agreement the foreign exchange issue with Jewish emigration was alleviated. **The RWM wanted to increase demand by lowering tax rates (such as the levies paid to the DAF and others) and the RFM wanted fiscal discipline but neither were successful.** The main measure of the year was the institutionalization of import rationing, as seen in Trade. Coupled with it

was an even greater restriction of imports and a funneling of available foreign exchange to the needs of rearmament.

Creating a whole bureaucracy to manage imports was already considered a desperate measure by Schacht. Even then it wasn't enough: at first importers, now squeezed even more, resorted to stocks of raw materials, but soon those were running out. Thus in 1935 the industry-wide tax to subsidy exports was made, also in a spirit of emergency. Coupled with a more favorable global environment, this allowed exports to recover and thus sustain a bare minimum level of imports.

But it took time to solve the crisis. In the meantime, 1934 was a difficult year. Millions were still unemployed. The supply of consumer goods was uncertain. The harvest was awful, but stocks from the previous year covered that; nonetheless, the RNS fixed higher food prices. The Gestapo registered a gloomy and apathetic mood in the public with minor expressions of dissent appearing. Goebbels ran a campaign against "rubbishers and critics" but it proved counterproductive.

This reflected on the power struggle within the regime. Conservatives were dissatisfied while leftist elements demanded a more populist direction and criticized the RWM. Internal tensions burst out in the Night of the Long Knives, through which the main wing of the party cemented its power.

1936-37

Hitler now had an orderly house: unemployment was low, the economy was booming and there was little dissent. Compared to the Soviet purges and Japanese and Italian warmongering, Germany had a positive international image and this was boosted by the Olympics. International trade recovered and Western powers tried to restore international cooperation.

A memorandum by Carl Goerdeler expounded on an alternative path Germany could now take, and a Reichsbank paper shed more light on some of its proposals. It would now be possible to devalue the Reichsmark. On the short term this would produce unemployment, but the byzantine trade bureaucracy would become unnecessary and ill will over the subsidies would end. Upon recovery German goods could compete on equal terms on the world market. A devaluation, however, would require fiscal discipline, ruling out an acceleration of the pace of rearmament. Now in line with other powers, Germany could, at the cost of concessions on matters such as Jews, the Church and the rule of law, reap the fruits of closer relations with the West and even usher a new age of international cooperation.

Tooze argues even the concessions would be unnecessary because of appeasement. A related course was followed by France, which devalued.

Instead, Hitler chose to double down on his present course, for the same reasons he had chosen to take it in the first place. Compromise was impossible and Germany must be ready for a war around 1940. The Rhineland was remilitarized. The Wehrmacht drafted more ambitious expansion plans and resources would be secured through the Four Year Plan. With its own bureaucracy and funding, it'd increase the production of iron, synthetic fuel and the new technology of synthetic rubber. Goering was placed in charge, and this is when he gets relevant in the book. Interestingly enough, until then he had a reputation as a conservative, pro-business figure and was resented by populists.

The first faults appeared between militarists and pro-business elements who feared the economic effects of rearming too fast. Schacht began to lose favor.

Though the Four Year Plan would replace imports that would still take time and the Wehrmacht demanded more and more foreign exchange in the meantime. In the metallurgic industry, a crisis in steel supply was imminent, so production for the domestic market was reduced in November. This would produce inflation, so prices were suppressed and a steel rationing system created in the following months. The industry clashed and lost to Goering on expanding processing capacity for iron ore.

Imports were still very hard to come by and the Wehrmacht received a smaller ration than it wanted. Lacking resources, armaments output stagnated. The military buildup had hit a wall.

In November a more immediate solution to steel scarcity was found in the decision to maximize the use of existing capacity. Goering began to conscript private holdings of foreign assets as a non-renewable source of foreign exchange.

1938

Senior military leaders met with Hitler in November 1937 and he set the tone for the following year. Germany had to act prior to 1943-45, when it'd lose its advantage in the arms race. More concretely, it had to make a move on Czechoslovakia immediately.

At home, a “second seizure of power” took place. The Defense Minister and CiC of the Army were evicted after scandals and OKW created to further subordinate the military. Von Ribbentrop assumed the Foreign Ministry. Schacht lost the RWM, which was then staffed by politically reliable men close to Goering; senior civil servants called them a “council of workers and soldiers” in reference to the revolutions of 1918-19.

Prior to taking on the Czechs, the Anschluss took place. Austria suffered from the same balance of trade problems as Germany and did not provide long-term relief to its economic woes, but its 401,000 unemployed joined the workforce and its national bank provided 345 million Reichsmarks in gold and foreign currency. This allowed Germany to import a lot more and run a deficit, but only temporarily as that was a one-off source (table A1). Geopolitically, the Anschluss encircled Czechoslovakia and projected German influence into the Balkans.

With more imports the Wehrmacht’s steel hunger was satisfied and once again rearmament accelerated.

Table A1. The current account: Germany's dependence on foreign resources

	Current account (1)	Balance of trade (2)	Balance of trade in services, interest, dividends and reparations (3)
1913	939	-673	1,612
1924	-1,664	-1,816	152
1925	-3,045	-2,444	-601
1926	-39	793	-832
1927	-4,244	-2,960	-1,284
1928	-3,192	-1,311	-1,881
1929	-2,469	-44	-2,425
1930	-610	1,558	-2,168
1931	1,040	2,778	-1,738
1932	257	1,052	-795
1933	132	666	-534
1934	-534	-373	-161
1935	-107	-8	-99
1936	615	544	71
1937	259	437	-178
1938	-566	-319	-247
1939	53	376	-323
1940	-1,012	-72	-940
1941	-3,331	39	-3,370

Note: Column (1) is the sum of (2) and (3). A positive entry on the current account implies that Germany was accumulating claims on foreign economies. Conversely, a negative entry implies German borrowing from abroad, or other unrequited acquisitions of foreign exchange or gold, e.g. taking control of Austrian gold reserves or imposing occupation payments not described as reparations.

Sources: W. G. Hoffmann, *Das Wachstum der deutschen Wirtschaft* (Berlin, 1965), 816-28; A. Ritschl, 'Die deutsche Zahlungsbilanz 1936-1941', *VfZ* 39 (1991), 123

Already after the Anschluss there was mobilization and fear of war in Prague, though there was no intention to make a move that early; Germany's inaction then created the false impression that it had backed down. Britain and France stood by the Czechoslovaks, leading Hitler to conclude a war in the west would be necessary before attacking the Soviet Union. Disappointingly, despite his vision of achieving a neutral Britain, its hostility was now a given. America had its eyes on Europe and FDR was determined to overcome internal isolationist pressure to provide weapons to the French and British. And those two had now set their military buildup in full gear. They had overwhelming naval superiority that only increased, not decreased through the 30s, parity the ground and inferiority in the air (having started its aerial buildup late, Germany was technologically ahead and could boast of a sizeable air fleet), but even that wouldn't last long. The Soviet Union, too, could not be left out.

One reason for appeasement is this dynamic of the arms race: the allies were buying time and stalling Hitler so their superiority in the economic field could be materialized into the military.

After the May crisis the time horizon was shortened to a war already in early 1939 and, if needed, force would be used against Czechoslovakia even earlier.

Ever higher military buildup was putting a strain on the economy.

At this year unemployment was nearing zero. As mentioned in Inflation, the continuation of the economic boom meant there was a repressed threat of inflation. It was controlled by suppressing prices, but that in turn prevented the reallocation of workers to the most important sectors, which had to be addressed by bureaucratically assigning workers and that did not proceed smoothly.

Mefo bills ended in this year, and uncontrolled spending now relied on unsafe funding. This, too, was an inflationary threat.

Railways were falling apart.

After a few months passed Hitler pressed the Sudetenland issue and was willing to solve it with an invasion. France and Britain would not have backed down in this case, and the world was on the brink of war. Around Hitler a broad array of forces formed a coalition opposed to war on military, geopolitical and economic grounds. It included even Goering and Mussolini. Officers gathered around Franz Halder and planned a coup.

Ludwig Beck wrote a memorandum with a correct strategic assessment –the Western coalition had overwhelming economic superiority and would stall and drag the war to make use of it- and an incorrect operational one –France would invade the Westwall while the bulk of the Wehrmacht was in Bohemia; this, of course, was refuted by his previous point. Von Krosigk of the RFM noted that public finances were already overburdened and under “war and inflation psychosis”.

At the Foreign Office, Secretary of State Weiszaecker had, even before the crisis, prophetically determined that

in the event of a war with Britain and France, Germany would find itself facing a 'world coalition' (Weltkoalition) including both the United States and the Soviet Union. Even if it could count on the assistance of Italy and Japan, the outcome of such a conflict could not be in doubt. Germany would suffer 'exhaustion and defeat' (Erschöpfung und Niederlage). (p.271)

At the fateful hour Hitler was presented with the choice of stopping at the Sudetenland or going to war. He chose the former. Pent-up ideological tension was unleashed in greater anti-Semitism including Kristallnacht. Abroad, America became more anti-German.

Those in circles of power in Berlin were relieved and drafted new strategies for a pending war in the west.

Schacht, believing the Sudetenland would be Hitler's last demand, wanted a transition back to a peacetime economy, but instead a new wave of armaments expansion took place. Rationalization would free up manpower and capital for the military-industrial complex.

The rump Czechoslovakia would be neutralized. Alliance building would draw Japan, Italy and minor European states including even Poland to military cooperation.

1939

As in 1937, new armaments targets fell flat. The Reich's finances were in dire straits and a further ramping up of spending would produce inflation. Schacht lost his position, the gold standard was fully abandoned, paving the way for uncontrolled spending if need be, and the New Finance Plan promised a minor relief to the threat of inflation.

Exports were in decline, and even Goering accepted a shifting of focus away from rearmament. Steel rations were cut for the Wehrmacht, and its pacing stagnated once again.

It bears noting that, though the military-industrial complex was jammed in 1937 and 1939 and now there was economic strain such as the threat of inflation, both of these years were not crises as 1934 was. Internally there was no unrest and the party had a firm grip in power.

One last burst of military acceleration would be possible if Germany waited and accumulated foreign currency for a while, but the fact was that it was outsped by its enemies in the arms race. It was a similar situation as the last year: Germany had superiority in the air and a dubious parity on land but would lose both in the long run to the much faster Franco-British war machines. In the sea, it was completely powerless (table 7).

Western powers were free of balance of payments constraints and controlled the seas, giving them a strong raw materials base. Their economies were stronger in general and about to churn out weapons faster than Germany. The British introduced conscription, were heavily investing in the RAF and would soon dominate the skies. And FDR was determined to direct America's gargantuan industry into French and British armories.

All this was achieved with a lower degree of mobilization: Germany had stagnant militarization and economic woes while spending 23% of national income in defense, while that figure was 17% for France, 12% for Britain and 2% for America.

Table 7. The democratic oceans: worldwide naval spending

million RM, PPP	Britain	United States	France	Germany	Italy	Japan	'Democracies'	'Dictatorships'	Ratio
1929	1,142	1,558	409	201	262	525	3,109	988	3.1
1930	1,072	1,571	448	198	309	501	3,091	1,008	3.1
1931	1,009	1,560	462	192	352	590	3,031	1,134	2.7
1932	872	1,457	399	187	346	593	2,728	1,126	2.4
1933	877	1,268	469	312	326	827	2,614	1,465	1.8
1934	938	1,376	485	497	278	859	2,799	1,634	1.7
1935	1,108	1,798	476	695	256	928	3,382	1,879	1.8
1936	1,388	2,072	517	1,161	300	938	3,977	2,399	1.7
1937	1,595	1,866	444	1,479	313	1,056	3,905	2,848	1.4
1938	1,878	2,026	462	1,756	339	1,049	4,366	3,144	1.4
1939	2,277	2,872	724	2,390	424	1,256	5,873	4,070	1.4
Total 1929-39	14,156	19,424	5,295	9,067	3,505	9,122	38,875	21,694	1.8
Total 1933-39	10,061	13,278	3,577	8,289	2,236	6,913	26,916	17,438	1.5

Sources: Institut fuer Konjunkturforschung, *Wochenbericht*, 12 July 1939, 169-72; J. Duelffer, *Weimar, Hitler und die Marine: Reichspolitik und Flottenbau, 1920-1939* (Duesseldorf, 1973), 563

Diplomacy bore little fruit at first. Japan was cold and Mussolini unwilling to commit to a war just yet, preventing a “triple threat” against the Royal Navy. To the southeast, Germany had to secure Iranian and Romanian oil supplies and Turkey as the gateway to the east. But its actual influence was limited. Hungary was friendly. Romania sold oil for Messerschmitts but counterbalanced that with a French security guarantee. Yugoslavia, Bulgaria, Greece and Turkey were pro-Allied.

What was left of Czechoslovakia was neutralized in March, intensifying Roosevelt’s antagonism. Germany seemed encircled by France, Britain, America and the Soviet Union. However, in the wake of this move Roosevelt tried and failed to pass “cash and carry” legislation. Held back by the Neutrality Act of 1937, it was clear that isolationist resistance would delay America’s entry into a war in Europe. And, once Japan rejected German proposals, diplomacy with the Soviet Union –which had tense relations at the border in Manchuria- was opened up.

Already in the spring the Soviets were emphasizing the concept of inter-capitalist warfare, signaling their openness to an understanding with Germany. Negotiations expanded from the middle of the year and on the 24th of August von Ribbentrop achieved a major breakthrough in his non-aggression pact. Now the possibility of two-front war was gone and Soviet raw materials could be acquired.

The reasons for war

Just a few days later, Europe was at war again. What explains it? For that the scenario facing Germany’s leadership should be understood.

First, it’s important to establish that they, including Hitler, were well-informed of the geopolitical chessboard, the state of the arms race and the economic and military strengths of the great powers. Hitler derided whoever tried to sway him to a less hawkish path and banned subordinates from trying to convince him with pessimistic statistics, but he was no fool and miscalculation or lack of information are not what explain his actions in this moment.

Though he didn’t delve into technical details, he knew the strength of his enemies and kept himself in track of how many armaments Germany could realistically produce. He had the final say in the steel quota reductions that crippled rearmament in 1937 and 39. He adjusted his time horizon according to these realistic capabilities and played with international tension to put pressure on the arms race.

The following situation was presented to him in August 1939: the USA and USSR, though long-term enemies, were, for a time window, off the board on any war with France and Britain.

If such a war were started immediately, at least limited offensive victories could be achieved, though the final outcome was very dubious. If it began in 1940, the speed of the powers’ armament economies meant Germany’s relative strength and overall chances would decrease. In 1941 even more and so on. Time was an enemy.

This meant that, if a war was to begin, Germany had the highest chance of victory if it began immediately. Any further wait would increase its chance of defeat. Thus, based on the conditions of diplomacy and the arms race there was a case for starting a war immediately. Hitler himself would later explain this to Albert Speer.

But this alone is not enough of an explanation. Though Germany’s best shot at a war would be an immediate war, it would still be an extremely risky shot. It only had parity, not superiority in strength. Unless it could achieve immediate victory, and that was unlikely, its enemies would still be able to

bring their economic superiority to bear. Even such a war was likely to end in defeat, and it did. So why did Hitler commit to such a tremendous gambit? Ideology must be taken into account.

Britain was hostile despite Hitler's geopolitical calculation that his continental aims would not threaten it, and likewise, friendly to America despite his belief that they were inherently antagonistic. For him, this contradiction was explained by the actions of world Jewry. Those, too, extended to all the "flanking powers" –France, Britain, America and Russia- and this ties in to his understanding of history as a battle for survival between peoples.

The coalition facing him was a sinister one and the war that could happen would be a struggle of annihilation over which Germany would perish or secure its existence. Waiting would not help as the present peacetime position was precarious enough. A victorious war was the only guarantee of survival.

Early war strategy

Germany's leadership now had to answer three questions: how much space the internal civilian market would have, how the remainder of production would be distributed and how an increase in armaments output would be carried out.

Gauleiters and Walther Funk of the RWM wanted to balance civilian and military needs. They immediately lost the argument. Contrary to claims that few demands were made on the population early on or that the short war strategy sought to spare civilians, the consensus reached in Berlin was to sacrifice the availability of consumer goods in order to win the war.

The already high level of mobilization was pushed even further; throughout the war Germany had a greater mobilization than Britain and was second only to the Soviet Union.

The share of national income going to the military rose from a fifth to a third. More raw materials were allocated to the Wehrmacht. Private consumption and investment were curtailed and the funds redirected to the war effort.

The real choice was between a long and a short war. The military-economic staffs of OKW (with General Thomas as an important figure), the RWM and the RNS did not want a repeat of 1914, when Germany hedged all of its bets on an immediate victory that never came and was defeated in the lengthy struggle that followed. Thus they wanted to safeguard the long-term viability of the war effort. Arms production would have to share priority with exports and food. The Wehrmacht would assume a defensive posture to spare resources.

The conclusions of this line of thought, however, were defeatist: with no offensives for a long time there was no prospect of victory and the Allies could bring their economic superiority to bear.

On the other side, Hitler with Keitel, Goering and Todt as his mouthpieces had an all or nothing approach. Since Allied strength would grow faster than the Reich's, the only way to achieve victory was to spend all resources in one big push. The war effort's long-term survival would be put in question: exports would lose priority, productive capacity would be exploited to the maximum at the cost of running down stocks of raw materials, more of the workforce would be drafted and an offensive would be launched soon.

Soon, for Hitler, meant the 12th of November. Against the wishes of his generals he demanded an attack on France right after Poland was done. Bad weather prevented it from taking place, which was a saving grace. The cancelled attack would not have been the brilliant campaign of May 1940 but at most a draw .The plan was not an elegant encirclement maneuver but a brute force slog to the Channel followed by an aerial bombardment of Britain, with no prospect of how this could translate to immediate victory. Public opinion was reluctant and officers disloyal. The army needed time to refit. Third-rate units had proven unreliable and needed more training. The brief fighting in Poland overburdened the war industry's provision of supplies.

With the attack postponed military production was the central theme in the first months. The navy was relegated to last priority and its surface ships scrapped in favor of submarines. The Luftwaffe successfully lobbied to guarantee a large share of resources and focused on bombers. Though a tank production drive took place, the bulk of land production would go to a massive expansion of

ammunition stocks, particularly for the artillery; this decision was taken by Hitler against the army's complaints that it would squeeze production of other items.

Though priorities were clear the figures for armaments output in the first months of the war are disappointing. This has been construed as complacency, but the Reich was fighting to maximize the numbers. What explains it, then?

-Mobilization caused temporary disorganization and permanent shrinkage of the workforce.

-Already depreciated railways were overburdened by the movement of dozens of divisions, triggering a logistical crisis (fig. 13).

-It took months for increased raw materials assignments to cross the industrial metabolism and translate into higher production numbers. This is an important point in the book: there's always a delay between reforms/increased resources and their effects, and this repeatedly gave false impressions of merit to administrators who assumed in the interim.

-Blockaded by the Royal Navy, imports plunged to a level comparable to the late war. Soviet raw materials would make up for the end of overseas trade but this took time to establish (fig. 12).

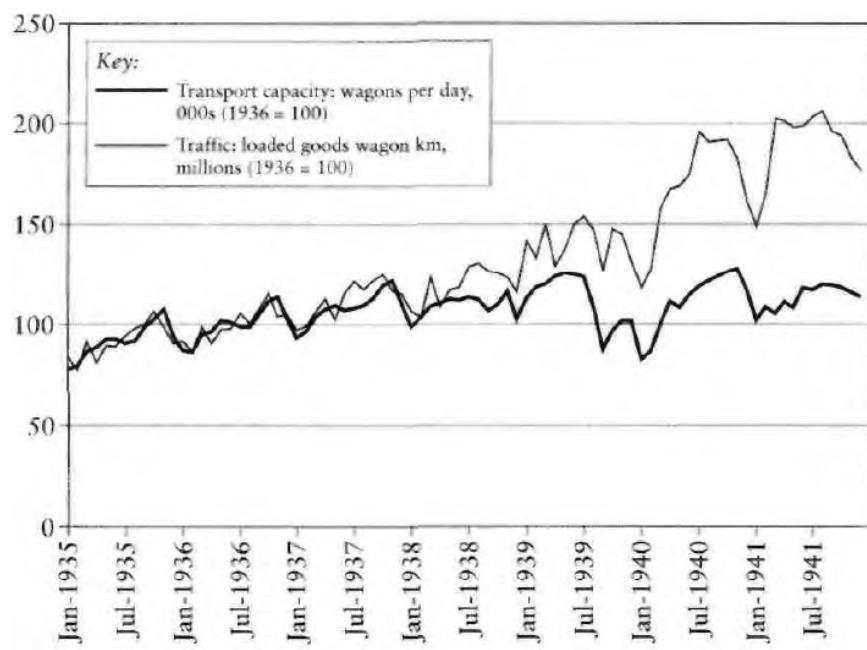


Figure 13. The Reichsbahn under pressure

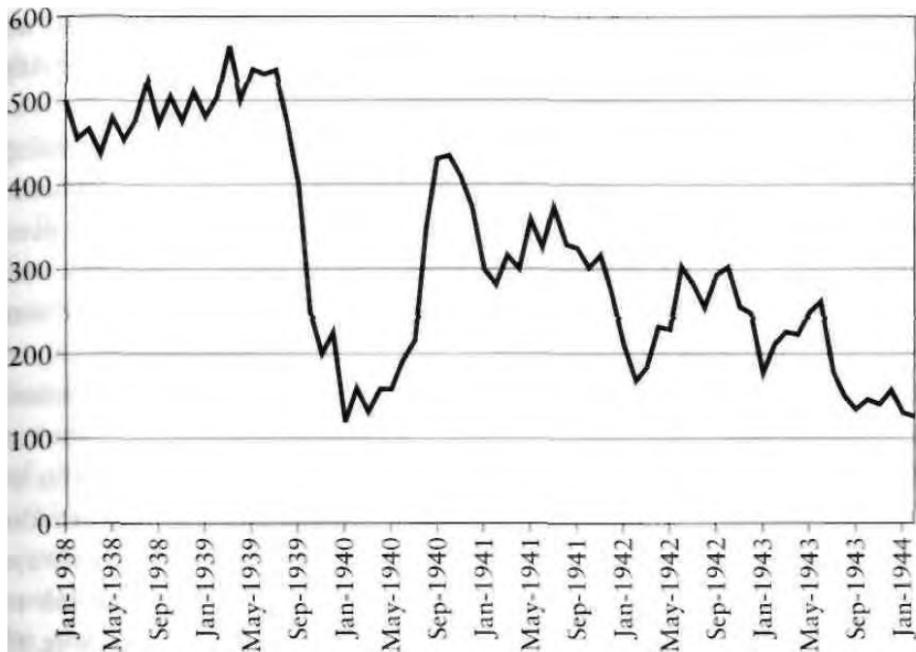


Figure 12. Volume of industrial inputs imported to Germany
(million Reichsmarks, 1928 prices)

Goering's and the RLM's political clout shielded the Luftwaffe from the war economy's disappointing results. The Heer was not as lucky. Managing the acquisition of its weapons was its procurement office, part of the army's own bureaucracy headed by General Becker. Placed under pressure, it did try as hard as it could to raise production, stockpiling empty shells so the chemical industry could provide explosives later and ruthlessly mobilizing resources. By February this had the desired effect and a steep increase in output followed until the summer (fig. 14).

But it was too late: by then the procurement office had already become the scapegoat for stagnant production and the target of Nazi ideologues. In March a Ministry of Ammunition was created and Todt, the "miracle man" of the autobahnen and Westwall, appointed to it. Uncompromising civilian National Socialist leadership, it was now thought, would do what the army's bureaucrats couldn't. Todt created new hierarchies and, most importantly, gave a greater role to industrialists in the arms economy, which greatly benefitted their class. They were a third party to this and are commonly described as having led the confrontation against the army's bureaucrats, but there were industrialists on both sides and most didn't bother. However even prior to Todt the army was already experimenting with a closer relationship with industry.

Now armaments output was rapidly increasing. Todt gained all the merit and was praised for this "miracle" when in fact most of the work had already been done to him by his reviled predecessors.

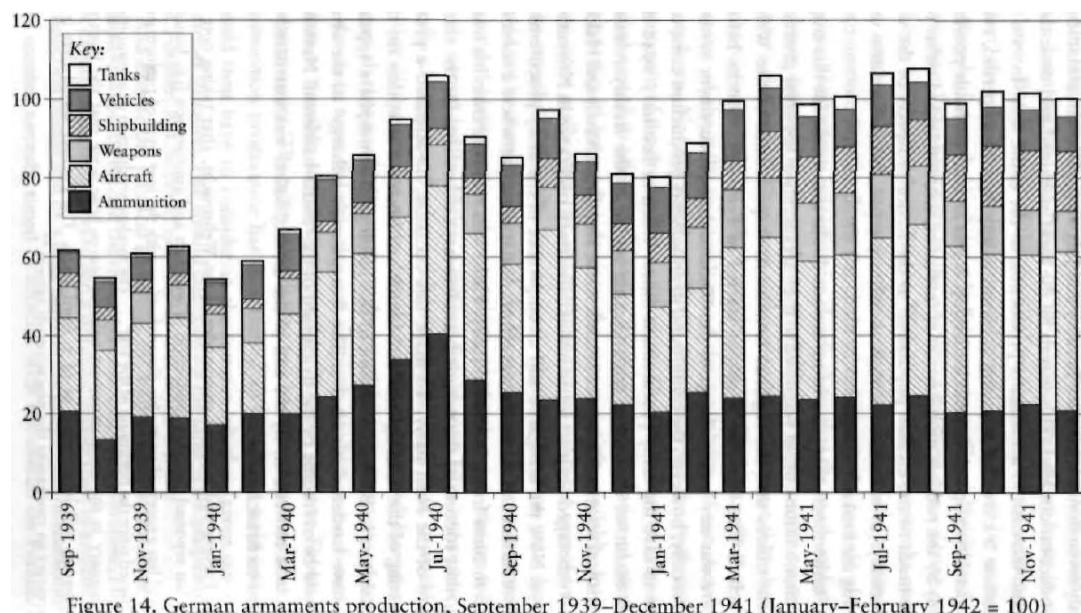


Figure 14. German armaments production, September 1939–December 1941 (January–February 1942 = 100)

Historiography of the campaign in the West

The first plan for the strike against France, a rehash of the Schlieffen Plan, had, by the last week of February, been replaced with von Manstein's conception of squeezing the Allies between the sea and a main thrust from the Ardennes to the sea.

Once applied in May, its results are well known. Against an opponent with slight superiority in men and equipment, the Heer won with amazing speed and small casualties. Finesse and movement defined the moment, not the grinding attrition of the trenches. This was baffling to all witnesses. This miraculous event demanded an explanation, and several were made in succession. They were marked by the clash of two ways to interpret history, *materialism* and *voluntarism*. In this context they mean whether the campaign should be understood as the result of the war economy, equipment, force disposition, etc. or military willpower.

The voluntarist thesis was laid out in the post-battle propaganda. It emphasized Allied material strength, showing their impressive fortifications and tanks. This was counterposed on the German side with the superior valor of soldiers and brilliance of commanders, which surmounted material gridlock to achieve a "triumph of the will". Overwhelming success in the West was seen as a confirmation of National Socialism's strongly voluntarist outlook.

The materialist antithesis came with the first generation of historians. They claimed that, despite equal numbers, Germany had the right weapons. Having predicted it couldn't win superior numbers nor a lengthy war, its leadership sought years in advance a "strategic synthesis" between the armaments economy -producing tanks, trucks, etc.- and a new military doctrine of using those new weapons for encirclement maneuvers, speed and immediate victory.

Critical historians, however, realized this was wrong. German rearmament did not fit into the concept of Blitzkrieg, neither before the war nor up to July '40 when the main priority was ammunition, particularly for the artillery. This, and the first plans for a full frontal attack, shows Berlin's expectations were close to the mass battles of the Great War. Von Manstein merely came up with a last minute "military fix". Early German depictions are more accurate than those of the following historians.

Tooze, however, gives some caveats. At the heart of von Manstein's plan were not revolutionary new ideas of mechanized warfare but an ancient principle: victory by superior concentration at a decisive point. Whereas the Allies distributed their forces equally along the front, Germany had a skeleton garrison in the Westwall, a modest offensive force in the Netherlands and the best units and bulk of its strength on the Ardennes. There, a superiority of almost 3:1 was achieved. Germany had more numbers, not on the whole front but exactly where they mattered. This was made possible by mobility and fooling the enemy, which disregarded the Ardennes and moved to counter the lesser Dutch offensive.

Allied foolishness, too, played a large part. The plan was a risky gamble. Overwhelming success would not have been achieved if the main thrust had been counterattacked and/or less forces moved to the Netherlands. The massive force concentration on the Ardennes was highly vulnerable to air attack and this was only prevented by overcommitting the Luftwaffe, leading to a high rate of casualties that made itself felt later over Britain.

Simple geography was in Germany's favor. The sea itself played the role of a pincer in the encirclement maneuver. And it was close to the German border on good roads. The vast, poorly developed Russian plains would prove far harder to tame.

So willpower only succeeded because it was given good material conditions and a fair bit of luck.

One footnote: French tanks being dispersed across divisions, compared to Germans having them in only a few, are not very relevant. France had more tanks and could afford to do that. It still had powerful dedicated armored divisions of its own.¹

Though the concept of a fast-moving short war was not what guided German decisions in previous years, it was now proven possible and taken as a central pillar of future plans. "Blitzkrieg" is thus more of a result than the cause of the Western campaign.

Besides this conceptual shift, it had two other effects. It vindicated Hitler, whose war strategy was, for the moment, proven right, giving him popular support and nullifying any resistance within the army and bureaucracy. And, to some level, it created overconfidence of what the Heer could achieve.

1. Addendum by Bernd #2:

For the following I relied on the these books:

Alistair Horne - To Lose a Battle: France 1940; 2008, Penguin

Philip Warner - The Battle for France: Six Weeks That Changed the World; 2010, Pen & Sword Military

Robert Allan Doughty - The Seeds of Disaster: The Development of French Army Doctrine, 1919-1939; 1985, Archon Books

For the Allied/French order of battle I consulted with Wikipee and an Osprey book from the Men-at-Arms Series (no. 315) by Ian Sumner, Francois Vauclier and Mike Chappel; it's The French Army 1939-45, Vol. 1, The Army of 1939-40 & Vichy France.

All available at Library Genesis: <http://gen.lib.rus.ec>

The French doctrine was a methodical maneuver based, they never calculated with mobile warfare, they believed the main tool to achieve breakthrough is the infantry and expected the tanks to add firepower to them, but not mobility. When they created armored divisions the usage they imagined for them was similar to what tank battalions were for regiments and divisions, only for higher level units (corps and army).

Beside the three armored divisions they organized (by the spring of 1940) three light mechanized divisions and five cavalry divisions which included tanks in their ranks. These divisions were divided between the armies of the First Army Group which was designated to move into Belgium as soon as the German invasion started. The armored ones however were kept in reserves, the 1st might have been the reserve of the 1st Army, the other two were surely of the GQG's (French high command) and they were stationed south west of Sedan in the Champagne area.

The French army all in all had 'bout 3100-3500 tanks (most likely closer to 3100) more than half of which was dispersed through the whole northeastern battlefield, another 800 were were divided between the armies with the cavalry and mechanized divisions, and all in all those three armoured divisions were summed up around 600 tanks.

On May 15th a new armored division "joined" the others tho. That's liek 200 more tanks.

So how the French armored divisions were used?

Separately.

They stationed in a quite good area to make a concentrated effort with them. But instead they were sent to different parts of the front, the 1st against Rommel (north), the 2nd was scattered in the chaos at first then ripped in two by Reinhardt's Corps (middle), the 3rd took part in the counter-attack at Sedan against Guderian (south). The result is known.

Maybe the three grouped together could stop one Corps of the germans preventing the German plan fully bearing fruit, and slowing down their advance in meaningful way.

Maybe if all the divisions that had tanks in their composition were held together, they could have been used as an effective force to parry the german panzer's thrust over the Meuse. But with all the tanks collected, their chance would have been better, almost good. Ofc the German success was in the concentrated use of tanks, arty and air force. So the panzers were only one component to counter.

So as a conclusion: you are right, there were monolithic bodies of armor in the French army but you are wrong, because it would have mattered a lot if they would have kept together.

As you say it here, "it was in the wrong place in the wrong time"

Which I can translate to: they were dispersed, placed all the wrong places, and not concentrated in one right.

To Barbarossa

Between the Polish and Western campaigns the Reich had already taken steps to secure its northern and southern flanks. Operations in Denmark and Norway secured Swedish iron ore deliveries and Romania agreed to sell more of its oil. But now even before France signed its armistice all of Europe realized a new, German-centered geopolitical reality was at hand and adapted to it. Italy joined the war and Romania gave Germany a monopoly on its oil. Even Spain and Portugal became slightly friendlier. Switzerland offered more generous terms on trade.

Berlin was now the heart of a power bloc backed by the economies of occupied, neutral and allied states, and beyond them, the resources of the Soviet Union. Facing it was the British Empire backed by America, and the question remained on how to deal with this troublesome archipelago.

Hitler still hoped for a settlement with Britain, leaving it to its empire while becoming the hegemon on the continent, but his overtures were rejected due to British confidence in American aid (table 11). To reach such a deal he'd need to deal a strong enough blow to the British and do so before a full American entrance in the war. There was thus a time window at hand.

A cross-Channel invasion was out of the question. The Kriegsmarine's surface ships were hopelessly outmatched and their inferiority only widened after heavy losses in Norway. Planned battleships would take years. All that could be done was harass British supply lines through battlecruisers and U-boats. It was too late to invest in the former. The latter were few in number due to the priority given to bombers and ammunition since the start of the war, and only gained a higher priority for a brief period. U-boat numbers declined to a bottom of 22 in February 1941. Though plenty of convoy tonnage was sunk it was far from enough and American aid as well as decryption and new convoy tactics tilted the balance at sea against the Axis. Worse of all, Doenitz estimated that even with an ideal number of U-boats, it'd take until autumn 1941 to isolate Britain and more months to starve it out, and this was beyond the time window.

The Luftwaffe was the other arm that could be used. However, it had just lost nearly 30% of its strength in the French campaign. The Ju 88 had neither the numbers nor the specifications to win the campaign. Its dedicated escort, the Me 110, proved a failure. Heavy bombers would've been valuable but of the existing project, the He 177, only 500 were in order and they'd come in 1941-2. (When they did, the aircraft was a disappointment). Damage was dealt but the air war could not bring victory.

In short, there was never any chance of bringing Britain to its knees. The British, on their part, had no way to invade the European mainland, either. As many predicted years in advance, the war reached a stalemate; the unexpected fact was just that it was at the Channel rather than on France. The only ones who could benefit from this were America and Russia. The latter, it is noted, tallied up the total number of aircraft lost over England without breaking them down by side: all that mattered was that the two exhausted themselves.

Table 11. Friends when you need them: domestic and external resource mobilization in Britain and Germany

	Britain				Germany			
	% of net national production mobilized for war	of which:		% external contribution to war effort	% of net national production mobilized for war	of which:		% external contribution to war effort
		Externally provided	Domestic	Externally provided		Domestic		
1938	7	5	2	71	17	-1	18	-6
1939	16	8	8	50	25	1	24	4
1940	48	17	31	35	44	8	36	18
1941	55	14	41	25	56	12	44	21
1942	54	11	43	20	69	17	52	25
1943	57	10	47	18	76	16	60	21
1944	56	9	47	16				
1945	47	11	36	23				

Source: M. Harrison, 'Resource Mobilization for World War II', *Economic History Review* (1988), 184

The former are also the reason Churchill kept on fighting in the first place. Roosevelt was determined to act against Hitler and reacted against his every move. As soon as the war began he won the upper hand against isolationists in Congress and passed "cash and carry" legislation allowing the export of weapons to France and Britain. After summer 1940 France's orders for American equipment were assumed by Britain. Through transatlantic aid it supplemented its lower level of mobilization relative to Germany and gradually overcame Axis production of aircraft and other war material. At the same time America began a humongous naval and aerial expansion. In September it transferred destroyers to the Royal Navy. In the following year it passed the Lend-Lease Act and began to engage U-boats at sea.

For this Britain paid a heavy price. "Cash and carry" meant it still had to pay for American weapons. Only after reaching financial exhaustion Lend-Lease began. Assets were mortgaged and bases and technology made available to America. Firm transatlantic backing gave Britain a safe position to continue the war, but at the cost of dependence.

The Anglo-American alliance was building up and would first hit through a fleet of strategic bombers. Germany was aware that the Luftwaffe would be the first arm to face the brunt of this strength. However it also correctly calculated it would take until 1942 for American shipments to become truly decisive.

While Britain had America, Germany had a number of smaller economies at its disposal. An economic bloc comprising continental Europe sans Russia would, if operating at a prewar level, have a GDP greater than either America or Britain (table 9). If colonial empires were factored in, this bloc would extend over a fifth of the world's population and land area. Planners in Berlin soon discussed how to consolidate their sphere of influence into the long-envisioned dream of an economic "Grossraum" spanning the continent, something even Stresemann desired. The topic of either devaluating or making other currencies rise to the Reichsmark was brought up but it was not the time to decide on

that. The initial effort was to form customs and currency unions, but the first country approached – Denmark- rejected the proposal. In any case, occupied economies plunged from their prewar outputs and Europe couldn't offer much to Germany.

Their most immediate contribution was in war booty. Thousands of tanks, artillery pieces and other items were taken and were still in use by the end of the war. To alleviate the overburdened German railways, French and Benelux rolling stock was taken over. And stores of raw materials –tin, nickel, copper, and, most importantly, oil- were seized.

Surprisingly few companies in occupied territory fell under German control: only those in Alsace-Lorraine, French interests in the Balkans and those under state, Jewish or foreign ownership changed hands significantly. The limiting factor was the balance of trade: buying firms abroad involved an export of capital, like imports, and thus had to be compensated with exports. German capital could only make inroads abroad if exports were raised –thus, after the war was over.

Concerns over the balance of trade did not apply to imports. A system was created to allow Germany to run a trade deficit with occupied countries: foreign exporters dispatched their goods to German importers, their own national banks paid them and the Reichsbank assumed a debt to those national banks. The debt went unpaid and the whole system would have to be reviewed once the war was over.

Nonetheless, a large part of the economy was still devoted to producing goods for export, even though this happened at the expense of producing armaments. While a deficit was held with France and the Benelux, a trade surplus was achieved over particularly fragile economies (Norway and Poland) and balanced trade occurred with neutrals and allies in central and eastern Europe. In the case of the Balkans, this is a reversal of the 30s, when Germany ran deficits. Exports were needed to keep their economies running –even France's- and to gain political favor.

Trade deficits were compensated by the exaction of occupation costs over conquered states. Such costs greatly exceeded actual expenses on garrisoning those states (table 10).

Table 11. Friends when you need them: domestic and external resource mobilization in Britain and Germany

Britain	of which:				Germany			
	% of net national production mobilized for war	Externally provided		% external contribution to war effort	% of net national production mobilized for war	of which:		% external contribution to war effort
		Domestic	Externally provided	to war effort		Externally provided	Domestic	
1938	7	5	2	71	17	-1	18	-6
1939	16	8	8	50	25	1	24	4
1940	48	17	31	35	44	8	36	18
1941	55	14	41	25	56	12	44	21
1942	54	11	43	20	69	17	52	25
1943	57	10	47	18	76	16	60	21
1944	56	9	47	16				
1945	47	11	36	23				

Source: M. Harrison, 'Resource Mobilization for World War II', *Economic History Review* (1988), 184

Table 10. Like 'kings in France'

Million RM (per quarter)	Occupation levy on France	Addition to French clearing surplus
III/1940	249	
IV/1940	1,510	43
I/1941	1,208	76
II/1941	1,295	146
III/1941	1,331	262
IV/1941	1,253	327
I/1942	1,657	409
II/1942	1,812	336
III/1942	2,209	408
IV/1942	2,194	555
I/1943	2,645	769
II/1943	2,240	908
III/1943	2,418	845
IV/1943	2,495	793
Overall total	24,516	5,877

Source: A. S. Milward, *The New Order and the French Economy* (Oxford, 1984), 279

The Wehrmacht could now order armaments from factories on occupied territory. However, the once large French war industry was, like the rest of its economy, suffering under severe logistical and resource limitations, and the same was true for Belgium and the Netherlands.

-Railways were crippled by German requisitioning of rolling stock, harming even the transit of raw materials.

-France and the Benelux were heavy oil consumers and their access to overseas oil was irreplaceably cut off, leaving the limited production of Romania and German synthetic plants to cover the whole continent. Severe rationing was imposed with France getting 8% of its prewar oil. This expanded the logistical crisis.

-Mobilization and blockade removed fertilizer (which competed with explosives over certain raw materials), horses, manpower and imported animal feed from the “delicate ecology of European peasant farming”, triggering an Europe-wide food crisis. Food is a critical subject and will be covered in detail on a section of its own.

-Western Europe relied on coal imports that were cut off. On paper there was enough coal in Axis Europe to make up for this, but that would require a comprehensive logistical reorganization that never took place in wartime conditions. Expanding production in local fields wasn't any easier because of the food crisis, which hit labor-intensive work such as coal mining hard (fig. 16, table 12).

As a result, occupied industry could not contribute to Germany a fraction of what America gave Britain. In 1942 7,775 aircraft were shipped across the Atlantic compared to mere 743 produced in France and the Benelux. Productivity was chronically low; it took four times as many workers to produce a German plane in France than in Germany. Foreign labor was more useful within Germany itself and many such workers were conscripted (see Manpower and foreign labor).

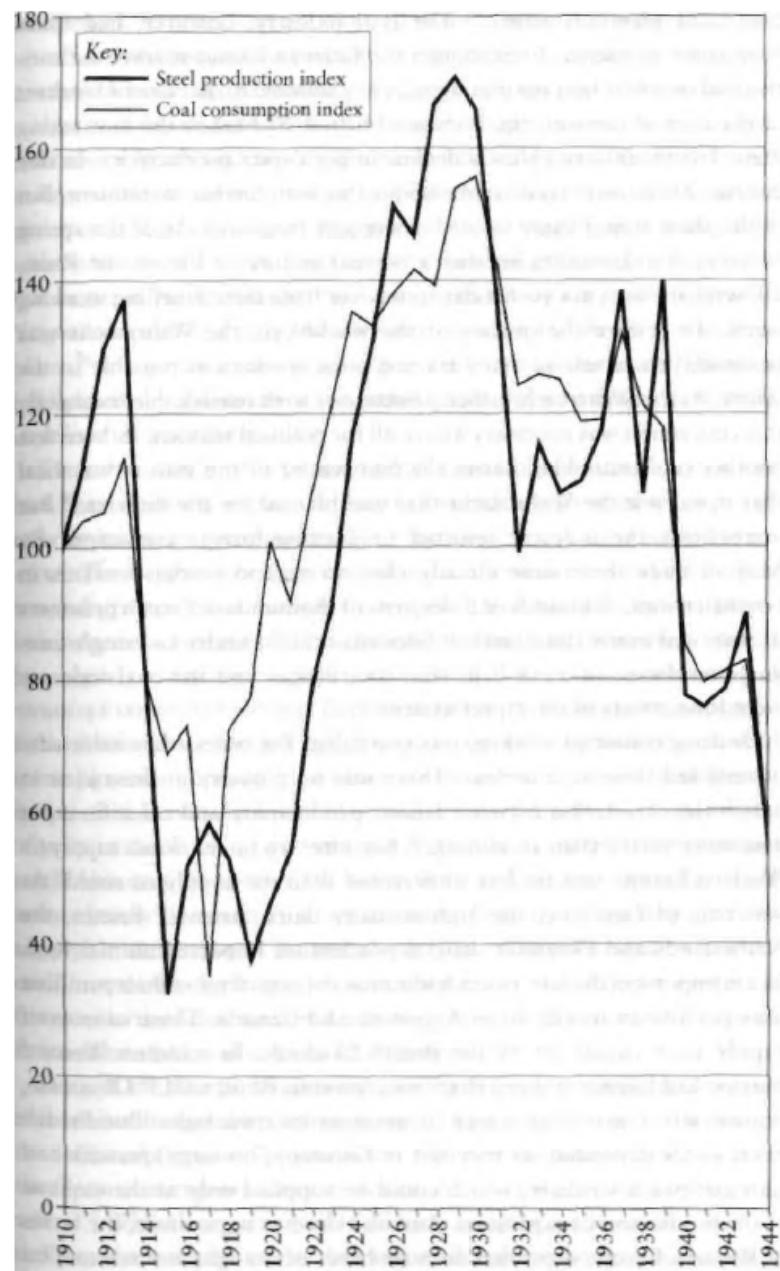


Figure 16. The coal and steel nexus: France 1910-1944 (1910 = 100)

Table 12. The precarious coal balance of the Grossraum

	Production (000 tons 1937)	Imports (-) / exports (+)	% Imported (-) / exported (+)
Net Importers:			
France	44,657	-29,263	-40
Italy	1,229	-12,933	-91
Sweden	460	-9,719	-95
Denmark	0	-6,278	-100
Belgium-	29,859	-4,234	-12
Switzerland	0	-3,509	-100
Austria	1,851	-3,450	-65
Norway	780	-2,735	-78
Totals	78,836	-72,121	-48
Net Exporters:			
Germany	230,690	45,733	20
Poland	36,222	11,291	31
Czechoslovakia	27,564	2,734	10
Netherlands	14,368	1,268	9
Totals	308,844	61,026	20
Overall balance	387,680	-11,095	-3

Source: C. Lewis, Nazi Europe and World Trade (Washington, 1941), 116

Even Germany's economy was just barely trudging along. Coal, not iron, was now the limiting factor to steel production as mobilization prevented the mines from hiring the best labor, though they did not lose workers.

For other raw materials, particularly oil, the situation was worse. Whereas Britain was worried whenever its oil stocks fell below 7 million tons, German stocks peaked at only 2 million tons in January 1941. With captured Western stocks and low military activity resources were available for the moment, but with scarce sources (for oil, Romania and coal hydrogenation) that could not last and problems were expected to emerge after the middle of 1941. Fuel scarcity was already harming the Italian navy and the training of truck drivers in the Heer.

What kept the Axis alive was trade with the Soviet Union and its importance cannot be understated. Amongst the raw materials purchased in the USSR there were alloy metals, oil and grain. Grain was imported at such a large volume that some of it was drawn from the Soviet national grain reserve. Germany reciprocated with manufactured goods, particularly machine tools. Production for deliveries towards the Soviet Union had the same priority as for the Wehrmacht itself.

Just as Britain had to become dependent as a precondition/result of receiving American aid, so did Germany have the prospect of dependency towards the USSR. Any consolidation of its existing European empire would require a greater level of Soviet trade. The export of machine tools aided the Red Army's expansion.¹ The Soviets were even in a position to request German synthetic fuel and rubber technology, though that was denied. Soviet-Japanese rapprochement in April 1941 –the Japanese were now focused on a strike against the Western powers- opened up the possibility of a move that could truly turn the tables on the Anglo-American power bloc: an Eurasian coalition of

Germany, Italy, Russia and Japan. Yet this would cause even more dependency, as the central power in such a coalition would be the one that would gain the most.

1. Addendum by Bernd #3:

Different discussions in Russian military history circles ended with opinion that Germany's pre-war export was pretty inefficient for Soviet economy. Amount of machines was not so large to do any proper effect, and other things (including cruiser Lützow/Petropavlovsk) didn't do anything good in war times.

That agreement was much more beneficial to Germany than USSR, although it is ok for pre-war USSR, who did so much wrong political moves anyway.

Defeating bolshevism: why and how

Hitler was now locked in a protracted war of attrition against an economically much stronger enemy and was set to lose. This wouldn't happen immediately, and so once again he had a time window to work in. He very well could stay put and work to strengthen his holdings, but that would require losing protagonism to the USSR, with whom an even higher level of cooperation could be sought at a dangerous geopolitical cost.

An exciting alternative existed. The Reich lacked the resources to win this war of attrition. But the amazing victory achieved over France made it seem possible to defeat any army on the continent and do so quickly. The only thing standing in the way of the continent's largest reservoir of resources was one such army. And so in 31 July 1940 Hitler ordered preparations to invade the Soviet Union, and by early 1941 the decision was final.

The logic of Barbarossa can be summed up as: winning a short war in the East to acquire the means to fight a long war against Britain and America.

If the Red Army were defeated and European Russia taken over, Swedish ore shipments through the Baltic would be safe and Ukrainian grain and iron aswell as Caucasian oil would flow west. Germany's economic inferiority versus the Anglo-American alliance would be alleviated, improving the chances of victory in the long war. And if Stalin was defeated prior to American entry, Hitler hoped that would corner Britain into an impossible position and force it to negotiate. And a knocked out USSR would also give Japan a safer position from which to attack Western possessions in Asia and the Pacific.

For this a true strategic synthesis was devised, with operational planning and armaments production united under one coordinated vision.

Economic priorities were rearranged so as to prepare for both the short Eastern and long Western campaigns, and redirect all resources to the West as soon as the East was settled. Needed in the long term, exports received a higher steel quota at the expense of the army. Yet it made up for this by cutting ammunition production; the 1939-40 burst had left comfortable stocks. Its targets, Ruestungsprogramm B, were largely met. For the fast and intense campaign divisional strength rose – he gives 143 on May '40 to 180 on June '41, though on another source I can find 165 to 209-, with a core of ~33 mobile divisions equipped by doubling the number of medium tanks. Tank construction was spread over several plants, booting up production quickly and reducing inter-company friction and vulnerability to aerial bombardment at the expense of economies of scale.

This required sapping men from the workforce: Germany was to invade with its manpower already overstretched and fully committed while the Soviets still had millions to mobilize. Yet this was compensated by releasing veterans for an "armaments holiday" of months in the factories, followed by a "war holiday" in the front and then, once the fighting was over, the army would lose manpower and resources for naval and aerial industries.

The Luftwaffe's production did not grow as much despite increases in manpower. This is because it was the most subject to delays in production increase but also because it focused on the development of new craft rather than economies of scale.

Rather than focusing on immediate output, the entire war economy invested heavily in future capacity, building or expanding aircraft, tank, aluminum and particularly chemical plants (fig. 18). One

case was a white elephant: Koppenberg, manager of Junkers, tried to build a thousand-aeroengine plant on the principle of Fordist mass production, but all it could achieve was 198 engines in 1944. Other projects were very successful but only showed their full potential after the war: IG Farben's chemical plant in Auschwitz is today one of the largest synthetic rubber producers in Europe.

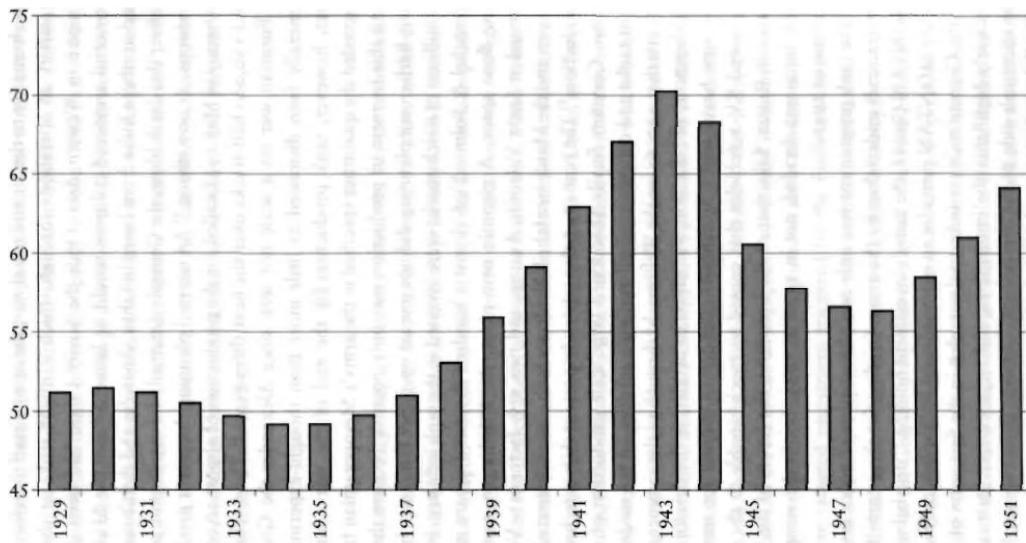


Figure 18. The wartime investment boom: German industrial capital stock (billion Reichsmarks)

The military aspect centered on the 500 km strip of land between the border and the Dnieper-Dvina river line. This was the maximum logistical range achieved with the innovation of intermediate supply dumps. Any further advance would require a delay to refit. All strength would be concentrated at the border to rapidly annihilate the Red Army before the river line in a series of encirclement maneuvers. It was then expected that the Bolshevik regime would begin to crumble and offer little resistance in operations on the Baltic and Ukraine followed by a march on Moscow.

With the information available there were reasons to doubt both the economic value that could be extracted from the territory as well as the possibility of its conquest itself.

Von Bock, commander of Army Group Center, was seriously worried about the possibility of the Red Army escaping beyond the Dnieper-Dvina line. The Soviet Union's size, population, poor infrastructure and ongoing industrialization were well known; on the other hand, there was still a large developmental gap which made it not unreasonable to assume the Red Army was weak. And if the regime faced political disintegration, it would suffer from poor infrastructure as much as the invaders.

One of the earliest war games and Generalmajor Marcks, who drafted the first plan, predicted that, if the destruction of the Red Army and capture of Moscow didn't happen quickly, Germany would be locked in a long and grim two-front war. Marcks saw a relief in that control of the Baltic and the Ukraine would facilitate survival in this long war.

And yet the Wehrmacht's military-economic office and the Four Year Plan's staff showed the Ukraine's grain surplus was modest. Hauling it west would require fuel for a large fleet of trucks, and yet an early military-geographic study ruled out an immediate takeover of Caucasian oil fields. Franz Halder of the OKH's General Staff believed an invasion wouldn't significantly improve Germany's resource base.

Despite all of this the generals could not oppose Barbarossa. There was rejection from the Foreign Ministry, but after the success of summer 1940 Hitler was in too strong of a position to be veered off course. Although flawed, the decision to invade the USSR had a rational basis. It was not just a way to survive a war of attrition in the West but also seemed to be a strike on the “weakest link in the chain”. Only on land Germany had supremacy; it seemed easier to employ the battle-proven Heer against an apparently weak enemy than bash the Kriegsmarine and Luftwaffe against strong defenses.

Besides this pragmatic/economic logic, there were the ideological reasons, such as defeating Bolshevism and securing living space. Those motivations complemented each other: if, on one hand, Germany had to conquer the East quickly so it could survive the Anglo-American coalition, on the other hand it also had to fulfill its ideological objectives quickly before the strength of the West fell over it.

1941

Five facts stood out as the year passed:

- Britain gained the upper hand on the fringes of Germany's sphere of influence, taking over Italian East Africa, suppressing pro-Axis governments in Persia and Iraq and nearly defeating Italian positions in Libya. This was partially compensated by Germany's takeover of Greece and Rommel's deployment to Libya. As a result the possibilities of integrating the colonial empires of Germany's vassals (in the distant future) and of connecting with Japan through South Asia were blocked.
- America's imminent entry into the war became obvious.
- Japan's leadership increasingly favored an attack against the Western powers.
- Germany and Japan were drawn closer into an offensive alliance against both Britain and America. For Hitler this was directed against the West, not the Soviet Union; he still thought the Wehrmacht could defeat the latter alone. But against the West, for years a German-Italian-Japanese alliance was seen in both Germany and Britain as the only thing that could pose any threat to the Royal Navy. It was the possibility of Japanese-American rapprochement that worried Hitler. He pledged to reciprocate a Japanese declaration of war and kept true to this in December.

-The assumptions over which Barbarossa was launched were proven wrong. The Red Army was not vanquished west of the Dniepr-Dvina line: despite massive, triumphant encirclements there was still an ever-growing number of divisions on the other side of the frontline. Those defeats did not unseat Stalin from power. Key figures like Fromm, director of the army's armaments effort, Thomas and Todt now pondered on a political solution to the war and Todt even discussed this possibility with Hitler in November.

And finally, the Heer was defeated at the gates of Moscow. The Red Army went on a theater-wide counteroffensive over the winter. For a moment it even threatened to encircle Army Group Center, but that could not be done due to an insufficient concentration of force.¹. The frontline panic was contained and by spring 1942 the Wehrmacht was still lodged deep inside the Soviet Union.

Yet this shock reverberated into a system-wide crisis starting on late 1941. Over the course of 1942 the Reich had to defeat crises in finance, food, manpower, coal and steel, and it is in this context that Alber Speer becomes Minister. Finance, food and manpower will be reviewed separately, and then Speer's tenure and the strategic situation in 1942.

1. Tooze blames this on Stalin's mistake, but given the Red Army's lack of armor at the moment he had a reason for doing wider attacks.

Wartime finance and inflation

The Reich could spend as much as it wanted. Since June 1939 the Reichsbank's statutes allowed it to set the money supply at will. Its real constraint was the threat of inflation. That was a problem even for the Soviet Union, which recognized a stable monetary standard as a basic necessity for accounting and statistics. Inflation acted as a hidden tax across the population, dampened incentives for worker and entrepreneurial initiative, made coercion the only way to command production, encouraged consumers to work outside the system (through barter and the black market) and threatened to send the entire war economy into disarray with popular unrest and collapsing productivity.

Military spending grew voraciously with every year. To compensate this the government had to lower costs on the military side. On the civilian side it had to suppress economic activity and the money supply and base at least some of its spending on actual revenue, of the prewar "safe funding" kind, from taxes and long-term debt/savings banks, and from occupation costs paid by other countries.

Upon the outbreak of war Germany was already one of the most highly taxed states in Europe. Nonetheless the RFM proposed a tax hike. This was rejected in favor of a "silent system" of war financing (*geraeuschlose Kriegsfinanzierung*): consumer goods were rationed, leaving a volume of unspent private income which flowed into savings banks, from which the Reich could siphon funding (fig. 15). Investors were blocked from borrowing from the banks. Those who had capital of their own had nothing to spend it on besides government debt. This achieved exactly the same as a tax increase. However it was politically more palatable, preserving an appearance of normality in which there were even some wage increases on the expectation of postwar prosperity.

Yet private income could also be hoarded or leak into the black market. The former was too rare to matter. The latter depended in large part on morale. On the first years of the war, the populace was calm and there was little black market activity.

Consumer goods rationing also depended on labor and raw materials controls to regulate production and supply. Though the operation of such controls was haphazard it was "more surprising... that it functioned at all" and they succeeded in reallocating resources to the military sector.

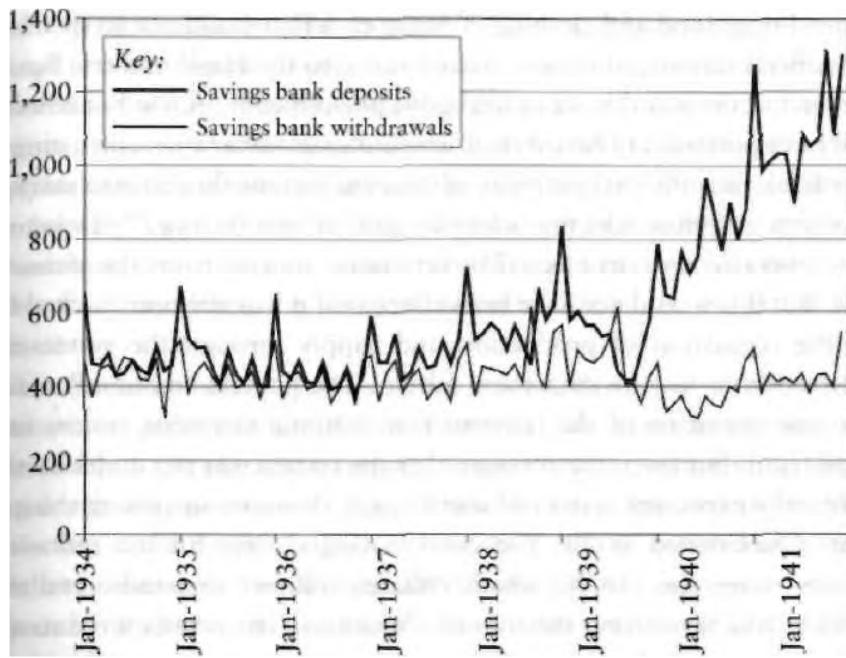


Figure 15. Silent financing at work (million Reichsmarks)

Another question in the monetary field was that of prices paid to arms producers. The Reich had to simultaneously lower costs and give industrialists a profit incentive to increase efficiency. Since the Sudeten crisis the pricing of public contracts was determined by the LSOe system. Prices were set by estimated costs plus a profit margin (normally 5%) calculated not over costs but over capital employed. Once agreed, prices were fixed.

In 1940 Todt modified this to "stimulate the appetites" of businessmen: in the case of ammunition, the lowest-cost producers were given standard prices.

But as a whole prices were not standardized through the whole board. This was appropriate for the early war, when new producers were entering the arms market and authorities needed flexibility to reach all of them.

The system did succeed in encouraging industrialists to lower production costs. The point of contention was that they were making too much profit, which the Reich had to "claw back". The topic came up in 1940 and was brought to fore in November 1941, when Reich price commissioner Josef Wagner proposed to raise 2 billion Reichsmarks by cutting profit rates and in the future defining standard prices. He was opposed by industrialists, who were represented by Wilhelm Zangen, head of the Reich Group for Industry. Wagner resigned due to unrelated intrigue with the SS.

Discussion continued and pricing reform was portrayed as one of the central pillars of Speer's miracle, though it began months before his appointment. Producers were now paid in standard prices and could keep profits they made by reducing costs were theirs to keep. It is commonly said, and a talking point in Speer's propaganda, that the LSOe system was inefficient and did not encourage producers to cut costs. This is incorrect. The innovations were standardization and a lesser need for bureaucratic oversight, but even then there was a reason not to standardize in the early war.

The "claw back" was made in a tax over profits 50% higher than those earned in 1938, favoring older armaments producers. It was applied mildly and overall the compromise achieved did not greatly

cream off business profits. Speer couldn't care less about inflation and gave workers and producers generous monetary rewards.

By 1941-42, while the matter of pricing was settled, authorities detected an expansion of barter and black market trade and an inflationary threat. Barter was under a code restricting it to between households. Goebbels launched a successful propaganda attack on the black market over the winter. Fiscal authorities encouraged savings and raised revenue by increasing corporation tax (from 40% in mid 1941 to 55% in January 1942) and a one-off prepayment of 10 years of the Hauszinssteuer, the Weimar tax on property (see Living standards). Meanwhile occupation revenue also increased. Tax revenue covered 54% of expenditure in 1942 and 44% in 1943. The Reich's economic stability was secure for the moment. This achievement of the Reichsbank, RFM and RWM has little appreciation, but Speer's "miracle" could not have happened without it.

This did not last. The state's capacity to raise revenue and impose rationing and controls was overwhelmed by the burden of its military , which hit 99,4 billion Reichsmarks in the fifth year of the war. Inflation began to creep in, starting from the periphery of Germany's empire. In 1942 prices rose sharply through the Balkans. In 1943 the economies of Western Europe disintegrated under the weight of occupation costs. In Germany tax revenue stagnated, ever less consumer goods were on the market, financial institutions could not absorb all of the government's debt and the black market steadily grew as morale withered away from 1943 onwards.

By 1944 Germany proper was also facing uncontrolled inflation, which Hans Kehrl, leading figure in the RWM (though Goering was at the helm), described in a memorandum in July. Banks no longer invested into government bonds, leaving that task for the Reichsbank. The volume of cash in circulation exploded. Kehrl noted that the bureaucratic suppression of inflation that was already being attempted could only be effective if combined with tax increases and the replacement of some cash payment with payment in bonds (comparable to the New Finance Plan of 1939). Yet Hitler, which had previously overseen a high level of peacetime taxation, a measure identical to a tax increase in 1939 and further efforts in 1942, now refused to raise taxes, ruling out such a possibility in 22 September 1944. In February 1945 he agreed to the RFM's request for a tax increase... on the condition that it would happen after the war.

Refusal to raise taxes did not mean civilians were spared. Living standards plunged and a tax increase would have been the lesser evil. There was a "drive towards substance" (Drang zur Substanz): once it was clear that funds would evaporate in postwar inflation, capital that could have contributed to the war effort flowed towards shares, machine tools, new buildings and neutral states. In the industries, partial answers to the meaninglessness of monetary incentives were found in material rewards such as extra rations and greater coercive violence. But inflation was still one of the factors behind the war economy's collapse in late 1944.

Manpower and foreign labor

Essentially the entire German workforce was employed in September 1939, either on the civilian sector or in activities necessary for the war effort – agriculture, mining and the military-industrial complex. For a peacetime economy the latter was already a large segment of the population. Mobilization transferred millions to a third sector, the Wehrmacht. The Reich's leadership now had to carefully reallocate workers between the three sectors.

Emptying civilian industry in favor of the other two was a no-brainer and began already in 1939. The Wehrmacht received workers through conscription. Useful industries were bolstered in a number of ways. With higher wages they had a magnetism and many workers moved on their own, particularly new entrees to the workforce. Civilian firms received contracts from the Wehrmacht or transferred employees to military contracts they already had. And the regime had many tools to force reallocation, from its rationing systems to assigning compulsory service (*Dienstverpflichtung*) to workers. On the first year it also tried to close down small businesses to release their resources, but this was ditched as it was unpopular and ineffective.

In the likely inflated Reich Group for industry's figures, the share of the industrial workforce under Wehrmacht contracts rose from 22% in 1939 to 50,2% a year later. 750,000 men were on civilian contracts in summer 1940, compared to 1,3 million in May 1939.

Consumer goods industries managed to resist with their powers of bribery, their products being scarce and desired, and from 1943 onward a renewed effort was made to "comb" them out through coercion by Speer and the SS. However the extent of undermobilization in the first years of the war was greatly overstated by Speer and early historians; as soon as the war began the Reich was already working hard towards economic mobilization.

The real dilemma was not civilian vs. military but between the frontlines and the war economy. Mobilization drew extensively on teenage cohorts entering majority, which only had an indirect impact, but employers soon found themselves in competition with conscription authorities for prime manpower, both young and old. The Wehrmacht needed not just cannon fodder, which could be drawn from unqualified workers, but also skilled mechanics, fitters and electricians for the engineering corps, in army repair shops, as Luftwaffe ground crew and in naval engine rooms; they were thus also in competition for experienced workers. Employees in firms directly under Wehrmacht supervision were exempted from the draft, but further down the production chain sub-contractors and raw materials providers were caught up in mobilization. Even where no net loss of workers took place, the best young men were unavailable for hire. This was one of the reasons for struggling coal output in 1941.

The contradiction became grave once the Eastern Front was opened, with a substantial number of fatalities which had to be replenished on top of the need to expand the military. By the first half of 1942 teenage cohorts could barely cover losses and conscription advanced over 200,000 armaments workers (fig. 19).

There was less leeway to increase the workforce by mobilizing women than is commonly assumed. In 1939 German women already had a high rate of employment, higher even than in Britain and America at the end of the war. This was particularly the case in agriculture, but major centers such as Berlin and Hamburg had a large proportion of women at work.

One thing that could be done was increasing the work load of existing employees. This was done in two high-priority cases: in the coal fields of the Ruhr from spring 1941, with the usage of Sunday shifts, and in tank factories after the Adolf Hitler Panzer programme of late 1942, with 72-hour work weeks. Workers and their families were generously rewarded. Henschel's Tiger tank plant in Kassel worked 24/7 in two daily shifts.

Manpower could also be juggled back and forth. This was part of the pre-Barbarossa plans: demobilize workers, call them up for a short Eastern campaign and then dismiss them again.

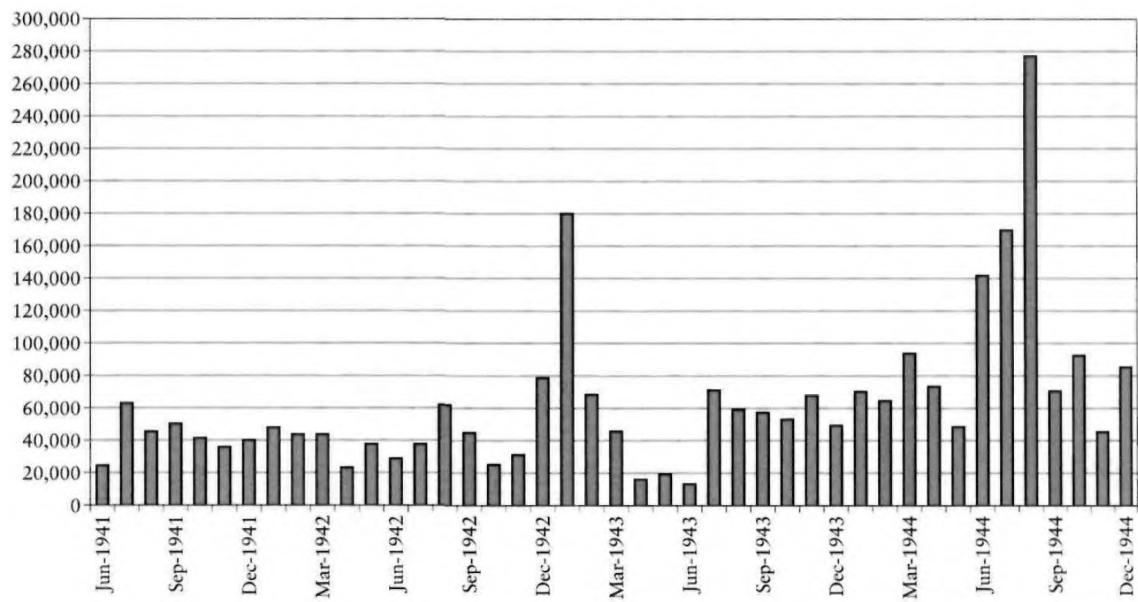


Figure 19. Monthly Wehrmacht fatalities on the Eastern Front, June 1941–December 1944

But the only definitive solution was to increase the number of workers. They could be brought from the several countries under occupation to make up for conscription losses and go beyond that. Besides this simple logic of addition, importing workers also made sense as Germany had the highest productivity in Axis Europe. A French worker in Germany was more productive than a French worker in France. A concentration of the continent's manpower within the German economy was what any "rational economic dictator" would do.

The usage of foreign labor began with Poles in agriculture. There was already a tradition of temporary work across the border and in 1938, with the harvest looking difficult, Backe had proposed to negotiate with the Polish government a transfer of laborers to German fields. In 1940, with the food supply in danger and the pre-France strategy of total short-term mobilization dictating a greater exploitation of occupied territory, Goering, Backe and Hans Frank (occupation administrator) agreed to use the General Government as a reservoir of labor, employing a large proportion of its population and tapping into areas without traditions of temporary cross-border work.

This clashed with Himmler's intentions: Germany had just annexed several Polish territories and he was working to have the Poles leave, not enter the country. The arrival of large numbers of Poles and their participation in society were not desired. A compromise was reached in subjecting the arrivals to apartheid, severely restricting their social contact with Germans, as well as a cap to their wage level and harsh punishments for shirking at work -but never deportation back to the General Government.

POWs were put to work and volunteers arrived, but that was not enough. Manpower targets had to be met by forceful transfer. As this provoked a reaction by the subject population and occupation authorities had little military strength they preemptively targeted the nucleus of a nascent Polish resistance movement, with purges beginning in the summer.

The usage of foreign labor widened, assimilating Western POWs and delving into other sectors such as coal mining. But it truly boomed in 1942, when in response to the manpower crisis, Hitler appointed Fritz Sauckel to the new position of general plenipotentiary of labor mobilization (GBA). Sauckel was a crude, plebeian representative of the NSDAP's populist wing. He has been compared unfavorably to the "handsome, urbane technocrat" Speer, but that underestimates him and downplays the rationality of his efforts. He succeeded in extracting millions of workers from occupied territories, either voluntarily or through press gangs. To give an idea of how many foreign workers were in Germany:

Between January 1942 and the end of June 1943 the GBA delivered 2.8 million new foreign workers to Germany: the workforce of a great factory - 34,000-strong – every week, for seventy-eight weeks. By the summer of 1943 the total foreign workforce had increased to 6.5 million, of whom 4.95 million were civilians rather than prisoners of war. After the summer of 1943 the pace slowed somewhat, but Sauckel continued to bring in workers. By February 1944 the total of foreign civilians and prisoners of war had risen to 7.356 million. By the autumn of 1944 it had reached a maximum of 7.907 million. At this point, foreign workers accounted for more than 20 per cent of the German workforce. Of the armaments workers of the Third Reich, more than a third were foreign. In the plants of the Reichswerke Hermann Goering and the Luftwaffe, the foreign share routinely exceeded 40 per cent. On individual production lines the percentage could be even higher. As State Secretary Milch boasted in June 1943, the Stuka Ju 87 was being '80 per cent manufactured by Russians'. (p.517-8)

Besides POWs and Sauckel, another source of foreign labor was the SS. Through the practice of "Selektion" it sifted those useful or not for work. Part of the concentration camp population was rented out to arms producers. This was done on the basis of units of labor, not specific individuals: when a worker died or became unproductive, the SS provided a replacement. For employers, the profitability of camp labor compared to hiring Germans depended on the fees charged by the SS, the cost of hiring overheads for the new workers and the money won from the official procurement agency for the job. Ultimately the Reich was both selling labor to the producer and paying him for a task. In the construction sector, camp labor was profitable but less than hiring Germans; it was still used simply because sometimes it was the only labor available (table 16).

A notable example of this kind of labor was the IG Farben chemical plant in Auschwitz, larger than the camp west of it and part of a wider industrial complex in Upper Silesia.

In addition to providing workers of its own, the SS was also instrumental in managing foreign workers from other sources as it kept them in line and held unruly workers in its camps.

Table 16. The economics of slave labour

	SS rental fee for appropriately skilled inmate labour, RM	Normal German pay rates, RM	Productivity at which concentration camp labour is cost neutral, as % of German productivity norm assuming unadjusted contract prices	Actual productivity of concentration camp labour, as % of German productivity norm	Concentration camp labour more or less profitable than normal German labour assuming unadjusted contract prices?
Metalworking Industry:					
Skilled	0.545	1.21	45	40-60	Y
Semi-skilled	0.364	1.011	36	40-60	Y
Labourer	0.364	0.795	46	30-50	?
Female worker	0.364	0.582	63	60+	Y
Electrical engineering:					
Female worker	0.364	0.629	58	60+	Y
Construction:					
Carpenter, concrete specialist	0.545	0.969	56	28-38	N
Bricklayer	0.545	0.929	59	28-38	N
Road worker	0.364	0.684	53	28-38	N

Source: M. Spoerer, 'Profitierten Unternehmen von KZ-Arbeit?', *HZ* 268 (1999)

The German economy was unprepared to handle such a large influx of labor. There was much waste at first and it took a long learning process, until late in the war, to finally assimilate them into its metabolism.

Among Soviet POWs brought for work, the high mortality of this category of prisoner continued within Germany. Meanwhile, Sauckel's Ostarbeiter arrived so fast adequate housing and food could not be provided. They, too, had a high rate of attrition at first. Even after initial complications, they were mistreated, overworked and given limited food rations; the December 1941 ration for Soviet POWs and Ostarbeiter had a nominally high daily calorie value of 2,500, but it was of low quality with little fat and protein, and the real ration received was often less than that. Administrators were negligent and rations leaked into the black market. The populace resented the new arrivals and frequently accused authorities of favoritism, such as the case of Italian POWs who received more fruit and vegetables in accordance with their diet. The presence of so many foreigners clashed with ideology.

Tens of thousands of weak laborers had to be sent back to the East in the autumn under haphazard conditions and many died on the trains. Poor conditions became known in recruitment areas and voluntary enlistment withered away. Escapes became common among this population. The Gestapo registered 42,714 between April and July 1942, with 34,457 recaptures.

Besides mortality, another problem was a productivity lower than that of Germans, particularly among POWs. Mortality and productivity were both tied to the treatment of workers, particularly the question of food. In sectors such as coal mining caloric input had a direct relation with productivity. Mere days after Sauckel's appointment the Wehrmacht's military-economic office wrote to him that a well-fed group can outproduce a poorly-fed group twice its size, and feeding workers only barely enough to keep them alive would be a net loss to the war economy.

The wastefulness of these questions was immediately realized. In early March the Mitteldeutsche Motorenwerke complained to the Food Ministry of insufficient rations, noting that unlike in the East,

where replacements could immediately be provided, the loss of an Ostarbeiter working special machinery in Germany to malnutrition meant a lot of time wasted training his successor. Large-scale death and underperformance nullified much potential productive capacity.

Sauckel struggled to ensure foreign laborers were given more humane treatment so as to employ them efficiently and even to give propaganda value to his program. He insisted that they be fed appropriately and was backed by the Pleiger, the coal tsar. Besides existing complications, such as the popular feeling that any increase in rations for foreign laborers would have to be compensated with another increase for Germans, Backe opposed this on the grounds of the continent-spanning food crisis. Hitler intervened on Sauckel's side and dictated that more food should be given to the foreign workers. This was achieved, though it had to be done at the expense of the food supply in the occupied territories.

The SS also learned to better nurture its labor pool. Camp workers received improved medical attention, had their rations increased after the winter of 1942-3 and were stimulated with bonuses of food and cigarettes.

Ways were also found to distribute food more efficiently. In Upper Silesia, the innovation of Leistungernaehrung (performance feeding) deducted rations from underperformers and redistributed them to overperformers, concentrating resources on the strongest and sending the least able on a spiral of malnutrition. By the end of 1944 it became a standard practice across the country.

The question of discipline also had to be dealt with. From September 1942 escapes were handled by a comprehensive system of police cordons on roads and cities. Punishments for incorrect performance also had to be dealt. There were legalistic means -the police, courts and SS. Sauckel wanted them to have a monopoly, with any corporal punishment within the workplace being treated as assault. However, official means were long-winded and kept workers unavailable. It was sometimes more convenient to let foremen handle the problem on site. Furthermore, corporal punishment was already present in the German workforce. Sauckel lost this case to Pleiger and Robert Ley.

Among civilian Ostarbeiters, mortality remained higher than Germans or their counterparts in the Soviet Union, but mass attrition ended completely: in July-August 1943 there were only 2,300 deaths among a population of 1,6 million.

Productivity rose: comparing a September 1942 Krupp study with investigations eight months later, productivity as a % of German counterparts rose from 70-85 to 80-90 for the French, 70-85 to not far from 100 for Eastern women and 57 to 60-80 or 80-100 for Eastern men. However, the figure for Soviet POWs was only 42% in the Krupp study. Those who were in construction, along with concentration camp inmates, remained at less than 50% of their German counterparts.

Overall, once contradictions were overcome, a massive pool of foreign manpower was efficiently integrated into the German economy. This was one of the pillars of the "Speer miracle" and output increases in the last three years of the war.

Agriculture and demographics

Hunger played a role in the outcome of the Great War. Choked by blockade, the Central Powers were unable to properly feed their armies and civilian populations, with disastrous consequences for morale.

Twenty years later, food remained a topic as critical as manpower and industrial production. What was at stake was, first of all, morale. The Reich's leadership remembered the past war all too well and was determined to keep the German population well fed at all costs. There was a geopolitical dimension: one of the reasons Franco chose not to enter the war was that he knew Axis Europe couldn't feed Spain. And an economic: workers without sufficient nutrition, not just in total calories but also in protein and fat, could not be expected to be productive, particularly in sectors such as coal mining.

Yet the continent's food situation wasn't much safer. As discussed, even in peacetime it wasn't strong, and now blockade and mobilization came with crushing force. By the time France was defeated Germany had on its hands an "Europe-wide agricultural crisis". In 1940 French yields fell to less than half of their 1938 value with smaller contractions in the Netherlands, Yugoslavia, Hungary and Germany itself. Poland's food surplus regions had already been annexed. Only Romania increased its grain deliveries, and in time the Soviet Union would make its contribution.

If food stocks continued to shrink, Europe's herds of livestock would be culled, permanently reducing the supply of protein and fat; this had happened in the "pig massacre" of 1916 and was already taking place in small scale with Danish swine and poultry populations.

The RNS, of course, had its stores of grain, starting the war with 8.8 million tons, enough to give bread to the entire German population for a year. On the first year only 1.3 million tons were consumed, but with faltering harvests Herbert Backe was seriously worried about the following years. Reich agricultural authorities now had to ration Europe's scarce food supplies. They were concentrated and stratified by the priority of feeding each population, with the civilian German population having reasonable rations on the first years of the war. Within the General Government, rations were highest for the Germans themselves, followed by Poles working in important positions, the Ukrainian minority, Poles in general and Jews. By the end of the year Germans received 2,600 daily calories, Poles in general 938 and Jews 369. By the spring undernourishment had noticeable effects on industrial workers. On several moments food had to be shipped to the General Government, but it made its contribution by supplying labor for German farms.

Rations hovered around 1,600 calories in Czechia and Norway and were as little as 1,300 in Belgium and France. Rations alone don't describe how much was actually available as there was much black market activity.

Another aspect of food management was the distribution of nitrogen between fertilizer and explosives. It was relevant later on in 1943 and 1944, when explosives were favored, with consequences lasting into the postwar years.

The scarcity of food thus drew attention to the Ukraine's grain production, which became one of the main targets of Barbarossa. The short-term management of Eastern agricultural output to feed Axis-held Europe through the war of attrition with the Western powers was minutely discussed in the months preceding the invasion by Backe and General Thomas, with conclusions laid out in a meeting between Thomas and State Secretaries of major ministries on the 2nd of May as well as the OKW's

“Green Book” of guidelines on the agricultural management of conquered territory; altogether this formed the “Hunger Plan”. However, a large gap was soon found between what was planned and what could truly happen.

The army was expected to live off the land, not only conserving the food produced elsewhere but also freeing up the overloaded logistics for war materials. Yet it failed to satisfy its demand with requisitioning, particularly in Belarus, requiring large shipments of food from Germany, and even that was not enough. Army Group Center did not starve but over the winter many soldiers went for days or even weeks without rations.

Then there was the topic of shipping the Soviet Union’s agricultural output westwards. A minor note is that the highest priority items were not grain but oil cake and oil seed.

The Ukraine’s grain surplus was actually modest and could only provide a minimal improvement to Germany’s position. This was the result of lower productivity and, most importantly, industrialization, which created a Soviet urban population numbering in the tens of millions which hogged most of the output. The solution was to simply take over the entire food supply and not give any to the cities, leaving their “surplus population” to starve or emigrate. This was proposed by Backe and fully accepted by General Thomas, who had earlier opposed the regime on some points; what was at stake was not ideology but ruthless pragmatism. As the OKW’s guidelines explained, “ “Efforts to save the population from death by starvation by drawing on the surplus of the black earth regions can only be at the expense of the food supply to Europe. They diminish the staying power of Germany in the war and the resistance of Germany and Europe to the blockade.” ” (p.480).

Though the sticking point in pre- invasion planning, this was never carried out. It was soon found that mere inaction could not stop the flow of food to the cities; that could only be done with massive security operations employing manpower that was sorely needed on the frontline. Occupation administrators also opposed this as they wanted to have a functioning society under their control.

Instead, food was distributed by authorities and the urban population did what it could to survive, resorting to the black market or moving to their relatives in the countryside.

The only groups that could be subjected to deprivation were urban Jews and POWs. Restrictions were placed on Jewish access to food markets, direct purchase from farmers and purchase of scarcer items such as dairy and meat. Jews on Minsk and other Belarusian cities received only 420 calories per day. Famine then struck over the winter.

The POWs would, given conditions on the Eastern Front -poor state upon capture followed by lengthy treks out of the frontline-, have suffered tens of thousands of casualties just from normal attrition. Their actual mortality was many times that due to systematic negligence and mistreatment.

However, several urban centers were cut off from the agricultural hinterland in an unexpected way -the frontline. The Soviet Union’s main agricultural areas were severed from Moscow, Leningrad and the rest of the unoccupied country, freeing up the output they used to absorb for Axis territory and leaving the other side of the front to fend off with what little food it produced. This was greatly worsened by Stalin’s mobilization policies, which diverted far too much manpower from the fields to Red Army, causing starvation on the Soviet side of the frontline.

Over the course of the winter crisis concessions had to be made to the local population. As 1942 passed Germany’s food situation continued to worsen. On April civilian rations were reduced, a dramatic measure taken only because there was no alternative; the political cost was high and there

were fears of industrial performance reduction in the event of further cuts. To make matters worse, there was now a massive influx of foreign workers and it was eventually settled that they would be properly fed.

The German and foreign worker population was then fed at the expense of the occupied territories, with the harshest results in Poland (where rations were down to a pitiful level until the 1943 harvest) and the occupied Soviet Union. Goebbels described this as “digesting” occupied lands; if there was to be starvation in Europe, then Germans would be the last to starve. French and Soviet deliveries of grain, meat and fat in grain equivalents rose from 3.5 million tons in 1940-41 to 8.78 in 1942-43. Even the General Government, a food deficit region, was squeezed to provide over half of German rye, oats and potato imports. The harvest was also better than expected in 1942, and in October 19th rations were substantially increased for Germans and foreign workers. The food crisis was under control for now.

Parallel to this was the long-term reorganization of conquered territory. It began in Poland. Hundreds of thousands of ethnic Germans from South Tyrol and the Baltic were to be resettled in the annexed provinces on land taken from the local peasants. The Jewish and Polish populations in general would move to the General Government, with some of the Poles assimilated. In reality both resettlement and non-German emigration were much slower than expected, with many eastern Germans remaining in their transit camps. Jews were moved to ghettos and Poles conscripted for labor in Germany.

Once Barbarossa was in the horizon, this could take a much grander scale. Planning was largely made through Himmler’s subordinates in the SS economic administration, Reinhard Heydrich’s Reichssicherheitshauptamt (RSHA) and the Reichskommissar fuer die Festigung deutschen Volkstums (RKF), where Konrad Meyer was settlement expert. Their discussion continued into a year after the invasion and by July 1942 had produced three drafts, the first and last by the RKF and second by the RSHA, of the “Generalplan Ost”. It covered the future of the German East widely, even going into mundane details such as forestry (table 15).

Table 15. Proposed investment priorities of Generalplan Ost (spring 1942 version)

	billion Reichsmarks invested	of which:	% of total	Purpose:
Landscape amelioration:	3.3		7	
Forestry		0.6		11,000 square kilometres to be afforested
Landscape restructuring		0.6		Protective hedging and afforestation of agricultural area
Technical land improvement		2.2		20,000 square kilometres of agricultural land need proper drainage
Agriculture:	13.5		30	
Agricultural reconstruction		8.6		Complete reconstruction of agriculture in most of Poland
Rural crafts		0.8		40,000 small-scale crafts and other businesses required by population
Rural industry		0.4		Large-scale food processing, lumber industry, etc.
Rural cultural facilities		1.0		Community centres, schools, Hitler Youth centres, welfare centres, Kindergarten, sports facilities
Other rural housing		0.9		For farming population and for teachers, doctors, civil servants, workers
Village infrastructure		1.8		Local infrastructure: roads, tracks, local electricity and telephone connections
Transport and infrastructure:	7.8		17	
Road building		1.2		Aim is to reach the density of roads of East Prussia
Autobahn building		1.0		Two north-south and two east-west routes
Railway construction		1.5		Narrow-gauge system to be built up to connect agriculture to trunk lines
Waterways		2.6		Flood regulation and navigation on Weichsel and Warthe
Electricity supply		1.5		Electrification to be raised to level of East Prussia
Industrial	5.2		11	650,000 industrial jobs at c. 8,000 Reichsmarks investment per job
Urban:	15.4		34	
Urban housing		9.0		1 million large apartments for urban population of 4.3 million
Urban cultural facilities		2.0		Minimum provision with educational facilities, cultural facilities and hospitals, the rest to be built with own funds
Urban crafts		0.8		45,000 craft and other businesses for needs of population
Urban utilities		3.6		Local infrastructure plus gas, sewerage and local transport facilities
Equipment for construction	0.5		1	
Total	45.7		100	

Source: C. Madajczyk (ed.), *Vom Generalplan Ost zum Generalsiedlungsplan* (Munich, 1994), 91–123, doc. 23

The planned reorganization of the East would be a massive project on the scale of the past decade's rearmentment. It would begin with a rationalization of land distribution, with plots being consolidated into 18-30 ha estates at the hands of the most hardworking small farmers, so that in the future no farm would yield less than 3,000 Reichsmarks per annum. This would affect as much as 30% of farms in some areas, and that was a concession to local sensibilities as otherwise that rate could get close to 50%. 220,000 families would be freed up by this and join 220,000 young rural couples and 2 million urban colonists to settle the East. They would mostly occupy Hufen (self-sufficient farmsteads) of at least 20 ha. Poorer lands would be formed into larger Wehrbauernhoefe run by SS veterans with Slavic labor. By 20-30 years 10 million Germans were expected to have become settlers. But not all colonists would become farmers: the population structure would be similar to Bavaria and Hanover,

which was considered balanced and had only a third of the workforce in agriculture (table 14). Only 36% of investment would go to agriculture and land remediation.

Even when imagery of the Teutonic Knights was used, it was not in an “atavistic”, backwards-looking sense; the calculating, commercial character of the Ostseeiedlung’s settlements was emphasized. But the historical process that was taken as a model was the conquest of the American West. The construction of a German East was a thoroughly modernizing project and sought a high-intensive living space with cities, livestock and machinery on the farms and an extensive infrastructure network.

To pay this 67 billion Reichsmarks -more than had been spent on rearmament- would be raised from the national budget, local government, a special RKF fund, the Reichsbahn and debt, with more from the private sector; it would be a grandiose eastward movement not just of population but of capital.

Alongside massive expenses, this would require a large workforce; 400,000–800,000 were expected for the first phase. Forced labor would be used extensively and could reduce labor costs by 20%.

Table 14. Proposed population distribution
Generalplan Ost

% of population reliant on	The SS ideal (Hanover and Bavaria)	Reich average 1933
Agriculture	35	21
Crafts	35	39
Industry and commerce	15	17
Public services	7	8
Other	8	15

Source: C. Madajczyk (ed.), Vom Generalplan Ost zum
Generalsiedlungsplan (Munich, 1994), 3-14, doc. 1

Some of this workforce would be lost to wastage, contributing to the demographic rearrangement that was expected to take place: a large part of the local population would starve or be moved to the east of the Reich’s new border. The mechanism for this was the one defined by short-term planning, which, as discussed, could not be implemented as expected. Expulsion from immediate areas of settlement was also considered, and a “trial run” done in the General Government. Starting on July 1942, the Polish population around Zamosc was expelled. This had limited success: many locals escaped to the forests, resistance activities heightened and the operation could only be carried out with a lot of German manpower.

This topic is part of wider controversies on wartime population management, for which Tooze has an insight. From the perspective of manpower, populations were an asset and it was desirable for the Reich to have them as large as possible for absorption into its war economy. Yet there was large-scale loss of population, including many potentially useful workers, through the treatment of Soviet POWs and foreign workers, the distribution of food and other factors, with further loss expected in plans that were not realized. This is a grave contradiction. The most commonly cited explanation is that counterposed to the desire for manpower was ideology, with a struggle taking place between a committed minority of SS officers and a pragmatic majority of Wehrmacht and civilian bureaucrats. Himmler himself sometimes used the rhetoric.

This ignores that there was another rational, economic concern on the same level as manpower: food. From this perspective, given Europe's agricultural crisis populations were a liability and it was not desirable to have too many people. The three competing factors of manpower, ideology and food would over the course of the war evolve into a synthesis.

The gist of it was that scarce resources would be concentrated on the economically useful, with population loss left to the economically useless. The economically useful included the German population itself, which was kept at the top of the food hierarchy at all costs. It extended to the foreign workers - volunteers, conscripts and in the camps. As shown, in time their wastage was dealt with and the Reich tried to keep them alive and productive. Mortality among foreign workers was successfully brought to fairly low levels. Even the section of the camp population rented out to the war industry had its conditions improved. Some expected losses such as among the Soviet urban population did not take place, at least not as imagined. The concentration is also visible in small scale in performance feeding. In turn, the occupied countries with low productivity were at the bottom of the food hierarchy. Populations captured by the SS were subjected to "Selektion", separating those who could be used by the war economy and those who couldn't.

Albert Speer, man and myth

In 1942 the German war economy was divided among:

- The Reichsbank, RFM and RWM civilian economic administration, which maintained the Reich's financial stability.
- Backe and Darré's agrarian bloc, centered on the RNS and Food and Agriculture Ministry, administered the continent's food supply.
- Sauckel's provision of manpower.
- The SS served several purposes, providing manpower as well as discipline and control for foreign workers and the German population itself.
- Goering's and Milch's Luftwaffe political bloc.
- General Thomas' military-economic office. It would soon lose its power at the same time as Speer rose.
- Coal was, since 1941, under Paul Pleiger's Reichsvereinigung Kohle (RVK) after a conflict between Reich Coal Commissioner Paul Walter, a populist hailing from the DAF, and coal syndicates. Walter's anti-capitalist rhetoric led to his demise.
- Fritz Todt was Minister of Armaments and oversaw mostly the Heer's industrial base, delving into the Luftwaffe only in the case of ammunition.

On the 8th of February Todt died in a plane crash. SS intrigue has been suggested but it was likely an accident. Hitler names Albert Speer as his replacement, and from that point he becomes the "protagonist" of the last third of the book, just as Schacht for the first. Unlike Schacht, Speer propelled himself to international fame and remains a figure of much public interest today.

The first thing that must be known about him is how much he was image-savvy and publicity-minded. He was an expert at inserting narratives favorable to himself into public consensus. In wartime he hammered into the home front the tale of the "arms miracle"; his task was as propagandistic as it was economic and as such he worked closely with Goebbels. The need to maintain the momentum of propaganda and to provide "big stories" (the tank, missile, electric submarine programmes and so on) grounded his production decisions. After the war, he successfully rehabilitated himself and presented a tale in which "*Speer is presented as an artistic soul, an architect, who was pushed reluctantly to take on wider responsibilities. This was a self-image that Speer shared with Hitler.*"; his detractors then took him for an "*"unpolitical technician', a man given the task of resurrecting the German war effort, who did his job without asking questions about the wider purpose of his work or the wider activities of the regime that he served.*" (p. 552)

Both took for granted his narrative of a miraculous reform of the German economy and of himself as an apolitical technocrat, the two forming the "Speer myth", which Tooze seeks to bring down and pick apart. "Myth" not in the sense he lied about the "Speer miracle": the data collected by his ministry is valid, there was indeed a great expansion of output in his tenure (in two periods with an interruption from mid 1943 to early 1944) and, save for one case in July 1944, he did not falsify statistics for the public, though he did use misleading statistics such as comparing the present with previous periods of particularly low production. But Speer's explanation for why and how this took place must be read critically.

The "apolitical" half of the myth is merely wrong. The book doesn't cover much his ideological fervor but it does question any implication that he was an outsider. He joined the party in 1931, when it

wasn't mainstream yet and soon became a close friend of Hitler. He was then chosen first and foremost because he could be relied upon, and indeed, he remained loyal, not swerving even in moments such as the 20 July coup; this friendship was also his trump card within the Reich's power struggles.

With Himmler he only had a working relationship at the time of his nomination but, contrary to Speer's later attempts to distance himself, they formed an alliance and he came to rely on the SS for labor and discipline; by the end of the war they were the "two strong men of the regime".

Through his work, Speer became well acquainted with the regime's other important figures. He was already engaging in "office politics" long before being Minister and continued to the end of the war. His decisions were influenced by the need to maneuver around his rivals for control of the war economy: the A4 (V1/V2) program allowed him to sap resources from the Luftwaffe, the development of closer economic relations with France got around Sauckel, the reorganization of the steel industry contested Pleiger and so on. He accumulated "secret sources" of inputs unknown to the other managers of the war economy, which were funneled into his prestige projects. He was very ambitious and in his pursuit of power managed to expand beyond Todt's fields, which were at first all he controlled, to swallow Kehrl and the navy's spheres in 1943 and the Luftwaffe's in 1944.

But he was apolitical in one sense: the propaganda of the arms miracle, in its insistence on the possibility of victory through willpower, did away with questionings of the rationale and purpose of Germany's position -something Kehrl confronted Speer about but nevertheless lost his power- and thoughts of a political solution to the war, which Generals Thomas and Fromm aswell as Todt had considered.

On the arms miracle itself, Speer's wartime rhetoric had two elements: the "self-responsibility of industry" and "rationalization".

In accordance with self-responsibility, or "Selbstverantwortung", the Ministry would merely set targets for industry to achieve. What this meant in practice is that at least at first there was a close relationship between the regime and the industrialist class, which were bound together by the shared existential threat of a Stalinist victory. In 1942 the industrialists were committed to arming the Wehrmacht to fulfill the Reich's strategy in the East; the war effort still seemed coherent. Speer sided with the industrialists on matters of business profits, even at the expense of the fight against inflation. The Armaments Ministry's structure of Rings and Committees was used to communicate with the industry and staffed by companies, each receiving a number of posts proportional to their power.

By 1943 the war effort was losing its coherence and the relationship began to sour. Over the course of the war's last years the regime's treatment of industry became dictatorial as the latter's enthusiasm died off at the same time as the former began to speak of total war and sought a continuous radicalization and mobilization of the economy. Nonetheless "self-responsibility" remained in rhetoric and was used to defend Speer's methods against the likes of Kehrl, who wanted fiscal tightness and state control.

"Rationalization" was the silver bullet. As the story went, until that point the war economy was held back by bureaucratic inefficiency, which the Ministry swept away and then, through technocratic reform, began to unleash potentially infinite output from Germany's limited resources by raising

productivity, a triumph of the will that would overcome the enemy's material superiority. Minute attention to detail would optimize all processes. American-style economies of scale would continually find more productivity. The Minister would empower outsiders to vigorously impose modern techniques against industrial conservatives.

In practice this didn't matter much. One example of this rationalization was the price system reform initiated a few months before Speer's nomination, but as shown the previous system was not irrational and the improvement was incremental.

The chief innovations made after Speer's appointment were organizational. He joined Milch, Goering's secretary, Kehrl, Sauckel, Backe and others in the Zentrale Planung, an overarching organization for discussing the allocation of raw materials and hence the war economy as a whole. Within his field, Todt had already set up five Main Committees to manage industries in each sector (e.g. Tanks, Electrical Equipment); Speer added two more and had Karl Otto Saur command them as head of the Technisches Amt. Saur was ideologically committed and Speer's successor in Hitler's last will and testament. Alongside the Main Committees, Speer created Rings to handle subcomponents and raw materials and had them overseen by Walther Schieber, ideological like Saur.

An example of the gap between the Ministry's rhetoric and what could be achieved was its intervention in the Mark XXI U-boat program. In the spring of 1943 the navy expected it'd take until March 1945 before series production could begin. Speer believed that the possibility of doing away with piece-by-piece construction, implementing mass production and replicating the success of America's Liberty ship program was open and all that stood in its way were conservative bureaucrats and industrialists. As such, Otto Merker, an outsider to shipbuilding, was assigned to revolutionize submarine production. He had the hull divided in eight sections made by inland firms -mobilizing additional capacity and allowing economies of scale- and only used the dry docks, which were a bottleneck, at a short final phase of assembly. A fleet of 30 U-boats was promised by the end of summer 1944, with the same number every month. The conservatives balked at his outsider status and did not believe German industry was ready for this kind of mass production; Rudolf Blohm, the naval patriarch, opposed the program and had to be sacked from his Main Committee and Business Group. They were right. The hull sections delivered by inexperienced inland firms were grossly deficient. The administrative apparatus needed to handle multi-stage production was not ready. The Mark XXI design itself needed time for fine-tuning. Merker's timetables were not fulfilled. The U-boat could only be used in the final days of the war.

Productivity did significantly spike in one field -the Luftwaffe's, which was outside Speer's authority and yet responsible for much of the increase in arms output during the "miracle". In 1942-3 output doubled with a negligible increase in labor and aluminum inputs. Germany remained with less per capita productivity than America but in aircraft the gap was shortened (fig. 21).

Milch set up Rings in Speer's manner. Investments started in autumn 1940 began to pay off. A rhetoric of "more for less" appeared and had in its proponents William Werner, who complained that the aeroengine industry produced more waste chips than engines; this fact, however, was not a German failure but the norm throughout the world; the industry was just advancing in technique. But the central pillar of Milch's success was the exploitation of economies of scale: the concentration of production into fewer models, larger batches and the accumulation of experience. The aircraft

industry had long sought “American-style” success by concentrating production into larger new or expanded plants, with both successes or failures, but this led to internecine competition. Milch instead cut the big firms down to size, taking direct control of Junkers, Messerschmitt and Heinkel. But economies of scale were at odds with the adoption of new designs, which dispersed efforts and caused lags. In the previous year Udet had waited for new aircraft designs and did not commit to any; the Me 210 and He 177 were then finally pushed into production, but their performance was gravely disappointing.

Milch’s response was to trade quality for quantity and produce old aircraft with some updates. Among them were the Me 109 G, which could match the speed of its enemies with new engines but not their agility, putting it at a disadvantage in dogfights, and the He 111, which was equipped with electronics and heavy guns to serve as a night fighter; it was useful in this new niche until the second half of 1943, when the USAF began escorted daylight raids.

And yet it was this decision that produced much of Milch’s successful numbers.

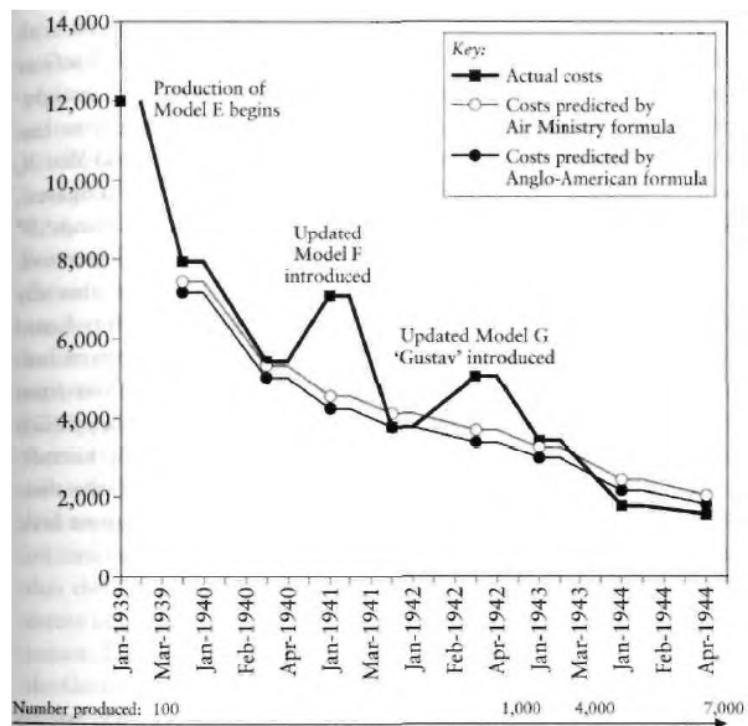


Figure 21. Learning to make Me 109s at Messerschmitt-Regensburg
(hours per plane)

A digression on technology

In the following year the Me 210 and He 177 became viable. They needed better design specifications and suffered from a recurring theme in German wartime technology: the sacrifice of the test and fine-tuning phase of development to save time. On aircraft this could shorten the development cycle from four to three years. But this meant running the risk of producing faulty designs, whose perceived failure was worsened by the heavy expectations placed on them in the desperation to find war-winning weapons. With enough time they could mature and overcome their weaknesses but this negated the time won by rushing production. The gamble worked better with the Ju 88, which came out imperfect but good enough as a workhorse. The Panther entered Kursk with teething problems.

The Mark XXI U-Boat had a convoluted story but could only be put into action when it was truly ready -at the war's very end. The Me 262 was not rushed and the Luftwaffe's leadership did all it could for it; it has been said that it could have been put into production earlier but that would have been rushing it. If anyone sabotaged it, it was Speer and Willy Messerschmitt. After the war the rockets, jet aircraft, tanks and electric submarines inspired future designs but there was no way to cheat time, technology had to mature on its own pace.

Within Speer's field, the bulk of the expansion in output came not from rationalization but from payoff from the heavy investments made in 1940-1, guarantees of food and financial stability and, most importantly, inputs of labor and raw materials. Finances, food and labor were handled by others through the year and Speer had a 30% increase in his workforce in 1942. Among raw materials steel was king: there were extensive reallocations and production soared (fig. 20). For that to happen, however, another crisis had to be faced, and Speer played a role.

In June the industry was organized in the Reichsverenigung Eisen (RVE), modeled after the RVK but lacking any "steel tsar"; it was instead pluralistic with the leading steel industrialists represented in its presidium. Though Vestag's Voegler was the most important the chairman was Roechling.

Steel rationing had been disorganized since the end of 1941, when priority was shifted back to the army; entitlements for bombs, anti-aircraft shells and naval and aerial expansion were cut, but some remained for investment and exports. There was now a "ration inflation" with more steel entitlements than actual steel, allowing producers to pick the grades of steel they wanted and not the ones needed for high priority projects. With Kehrl's help the backlog of steel orders was canceled, entitlements slashed to match production -with the greatest cut falling on the civilian sector- and only issued to 90% of total production, with 10% for priority projects.

Previously enough iron ore and scrap to continually grow steel output, but at the turn of the year it dropped due to a coal crisis. It could recover and soar but only with more coking coal. Some of the fall over the winter was logistical, as the railways strained under the size of the Reich's new territory. Speer oversaw a crash locomotive program with a 90% increase in the sector's workforce.

But even then Pleiger couldn't provide the needed coal. Output was dying in occupied territories and even German mines suffered from lack of manpower. Speer and Hitler pressured Pleiger and the steel industrialists to come up with a solution. Sauckel promised more men but did not deliver. Ultimately the answer found in October was to slash domestic coal consumption by 10% and have the steel firms pool the output of their coal mines.

With the coal crisis dealt with the Reich achieved a heavy industrial boom. Steel production soared to 2,7 million monthly tons in 1943. If iron mines could be held, it could continue to rise and reach 3,25 million tons in April 1945. This, not "rationalization", is the foremost reason for the main period of the Speer miracle, from his nomination to early-mid 1943. Even the productivity improvements that did take place owe a lot to the economies of scale made possible by the increase in inputs. Naturally, the period came to an end when the steel surge itself was interrupted. With Allied bombing of the Ruhr from March to July 1943 output did not rise but rather fell by 200,000 tons. Until a final second burst in 1944 the speed at which armaments output grew slowed down considerably, revealing how much the first period depended on the steel boom.

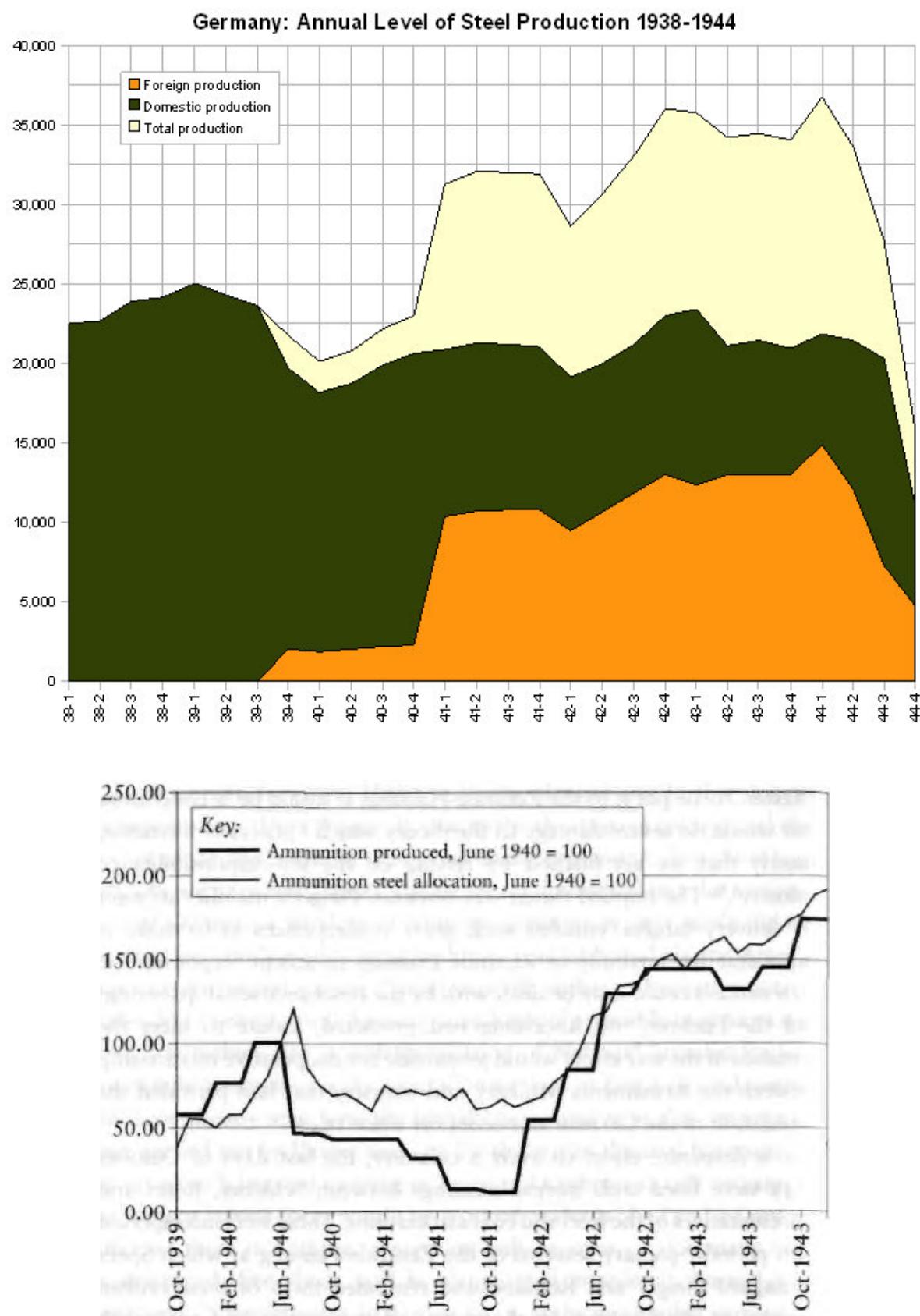


Figure 20. Ammunition production and steel allocated to ammunition

1942 to the end of the war

With America in the war the much anticipated world coalition was now arrayed against Hitler. Its material superiority would soon fall on the skies and frontlines. Germany still had to secure resources for the long war, deliver a killing blow against the Red Army, now in the Caucasus, from where it would also threaten Britain's position in the Middle East together with the Afrika Korps. The time horizon for this was short. But there was one good news: Japan's rampage against the Western powers distracted them from the European theater, giving Germany some breathing space.

The production priority at this time was ammunition. Little had been produced after large stocks were built for the Battle of France and followed by brief fighting, but now with the prospect of long-lasting attrition warfare it came back to fore.

The topic of the nuclear program briefly came to Fromm and Speer's attention but was dropped as it'd take years to bear any fruit.

Rommel's offensive effort ended inconclusively in September. Immediately afterwards American tanks began to arrive through the Suez canal. This was the watershed in the arms race: the Allies had finally brought their economic superiority to the battlefield. By the 23rd of October Rommel's 123 up-to-date tanks faced nearly 1,000 Allied counterparts. Outnumbered and outgunned, the African foothold came to its inevitable defeat by May 1943 with the surrender of 290,000 troops.

In the East, the pattern of the previous year's offensive and counteroffensive were repeated but this time the enemy was better armed and organized, achieving a catastrophic counterblow over the winter. The Heer was pushed back to its original positions and the front only stabilized by Von Manstein in March 1943.

The reasons for defeat in Africa are clear, but in the East they're more elusive. By now the Soviet Union displayed remarkable staying power, absorbing brutal military and territorial losses and coming out stronger than before and a threat to the Reich's position. As this is a book about Germany, not the USSR, there isn't an in-depth discussion but three points are mentioned:

- Lend-Lease is considered decisive only after 1943, when it kept the Soviet economy afloat and gave the Red Army mobility in its great offensives.

- The new Soviet industrial complex existing beyond the frontline and the economies of scale it achieved by concentrating production in massive factories. Yet that alone couldn't outcompete German industry.

- Most critical was the Soviet Union's mobilization. With its pharaonic powers the Soviet state could move an unbelievably high share of the economy towards the war effort. Even the farms had too much of their manpower taken by the army, causing hundreds of thousands or millions of deaths by starvation. This was unsustainable and had to be toned down by 1944, but it allowed superior armaments production over the decisive 1942-3 period.¹

Russia's industrialization is, along with America's rise to superpower status, one of the two great developments of the 20th century which formed the backdrop to Germany's history.

1. Harrison's book shows the USSR mobilized a % of their economy equal, not higher to Germany's, but their year-by-year mobilization was much faster and the peak achieved earlier.

Table 1.8. The military burden, 1939–1944 (military outlays, per cent of national income)

	1939	1940	1941	1942	1943	1944
<i>At current prices</i>						
<i>Allied powers</i>						
USA	1	2	11	31	42	42
UK	15	44	53	52	55	53
USSR	—	—	—	—	—	—
<i>Axis powers</i>						
Germany	23	40	52	64	70	—
Italy	8	12	23	22	21	—
Japan	22	22	27	33	43	76
<i>At constant prices</i>						
<i>Allied powers</i>						
USA	1	2	11	32	43	45
UK	—	—	—	—	—	—
USSR	—	17	28	61	61	53
<i>Axis powers</i>						
Germany	23	40	52	63	70	—
Italy	—	—	—	—	—	—
Japan	—	—	—	—	—	—

Sources:

USA (per cent of GNP at current and 1958 prices): table 3.1 (cols. 3, 6).

UK (per cent of net national expenditure at current prices): table 2.6 (col. 2).

USSR (per cent of GNP at 1937 factor cost): table 7.11.

Germany (per cent of GNP at current and 1939 prices): calculated from table 4.16. For war outlays at 1939 prices the same deflator is assumed as for government outlays generally; by 1943, war outlays accounted for 96 per cent of the latter.

Italy (per cent of GDP at current prices): table 5.14 (col. 22) shows real military outlays divided by real GDP, both converted from current values by the same GDP deflator.

Japan (per cent of GDP at current prices): table 6.11 (col. 5).

In 1943 the Reich's situation was growing desperate. Nonetheless arms output continued to rise. The focus was nominally on tanks through the Adolf Hitler Panzer Programme announced on January 23. They received resources from other sectors, their workforce labored for more hours and the industry was given "Panzer priority" in deliveries, a priority the Luftwaffe soon lobbied and also got for itself. Production soared and now the Panther and Tiger saved Germany's qualitative position in the field of tanks. But they were still only a small fraction of the overall war effort in terms of resources consumed and wider production successes were achieved in the Luftwaffe.

The year's summer offensive at Kursk was anticlimactic. What followed were relentless Soviet offensives until by spring 1944 Army Group South had been evicted from the Ukraine. The Kriegsmarine was all but knocked out of the war, interrupting its surface and submarine campaigns. Meanwhile Mussolini was toppled and the Allied strategic bombing campaign became serious with the battles of the Ruhr and Hamburg. They interrupted the steel boom, driving down production, and triggered a subcomponents crisis (Zulieferungskrise). The classic period of the "Speer miracle" was over (fig. 22). The speed at which arms output expanded slowed down across the board. Tank production fared better because it was compensated with more resources.

It was at this point that civilian morale began to die out.

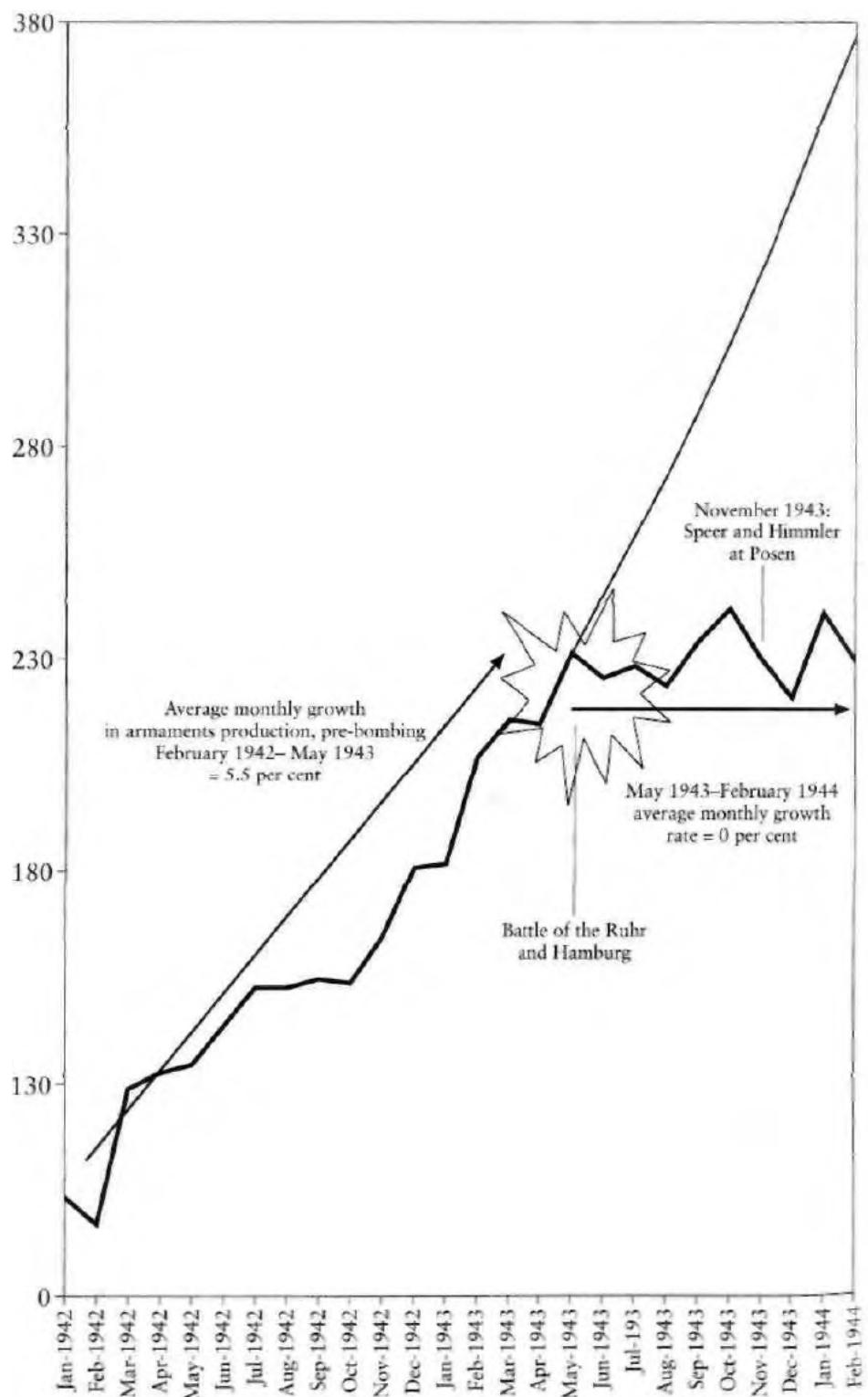


Figure 22. The armaments miracle halted: two years of armaments production under Speer (January–February 1942 = 100)

The Reich's leadership responded with a "determined escalation of violence". SS and Party extended their control and politicization of general and factory security, local government and the courts. Repression kept the population, including the upper classes, in line, though it could not contain the growth of the black market which fed the inflation that would burst into the open in the next year. Speer subordinated Kehrl, fully took over the navy and closely allied with Himmler and Goebbels and together they sought "total war" (though that was already part official rhetoric since the winter), employing the repressive apparatus to extract whichever civilian capacity remained for the war effort. This is something I'll cover later as not all of the extra weapons production achieved in the last years of the war can be attributed to this, nor was there so much capacity lying idle; the undermobilization of the early war German economy is overstated.

Speer's attentions moved away from tanks to two projects: the V1/V2 and the Mark XXI U-boat. The former produced some of the most advanced technology of the war but ultimately offered little help to Germany's situation. The latter was precisely what was needed to respond to Allied anti-submarine efforts and restart the Battle of the Atlantic, but the Speer Ministry's promises of a quick delivery were a fiasco.

In 1944 Germany only had two consolations: it still had large buffers of occupied territory, preventing any enemy strike from immediately hitting the heartland, and could prolong production after the loss of economically valuable areas with its stocks of raw materials.

Starting on February and lasting until around the middle of the year the war economy woke up from its relative slumber and soared for one last time. The most spectacular surge was in aircraft, from 1,323 units in February to 3,538 in September, most of them fighters. As the Speer Ministry had just begun to coordinate with the Luftwaffe's bloc through Otto Saur in the newly-created Jaegerstab (and later absorbed it in August), this burst so late in the war under hostile conditions is the triumphant final chapter of the Speer myth. Speer himself was removed from day-to-day business from the first weeks of the year until early May, so Milch was effectively still in charge; the Jaegerstab mattered insofar as it made Speer's "secret sources" available to the Luftwaffe. It is stated to have rationalized and revolutionized a previously "feather-beaded" field, a claim dismissed by a contemporary RLM study. The Luftwaffe's producers were competent. The reason for the particularly good performance of this field is that over 1943 the RLM had expanded aeroengine production and acquired 243,000 workers on its own and received 317,000 from Sauckel and 100,000 from the concentration camps. Within the war economy as a whole, this period reflects its adaptation to the bombing campaign as well as the campaign itself becoming less effective. Rather than continuing to strike the Ruhr, in 1943 the Allies shifted attention to the less economically critical target of Berlin, while the Luftwaffe improved its defensive capabilities. It was also caused by payoff from the early war investment boom and harsher demands, including working hours, from the German and foreign workforces, the former compensated with rewards but the latter only with greater repression. Foreign workers were used more actively and their numbers still increased, with the notable case of Hungary's Jews.

Over mid-late 1944 each war industry reached its peak production and then slid into oblivion until the rest of the war. Aircraft, the most complex, peaked earlier in the summer, while ammunition did so in September. This collapse was both internal from the buildup of inflation and external from a new phase of strategic bombing. In the first half of the year the RAF and USAAF had cemented their

air superiority and, after focusing on the invasion of France, came down in full force against Germany. City after city was scorched with tens of thousands of casualties. But what was effective was neither the area bombing of cities nor strikes against specific plants, but the strangulation of infrastructure, particularly in the Ruhr, creating a coal famine across the entire economy.

The arms race started in the 30s had finally come to its conclusion. Even though the German war machine peaked later than its Allied counterparts it was still several times smaller in all fields. All efforts to raise production could not change the course of the arms race, not for German failure but because, as anticipated even before the war, the world coalition would in time bring its overwhelming material superiority to bear (table 17).

This cemented the Reich's fate and made the last moments of the war in Europe their bloodiest.

Armaments index

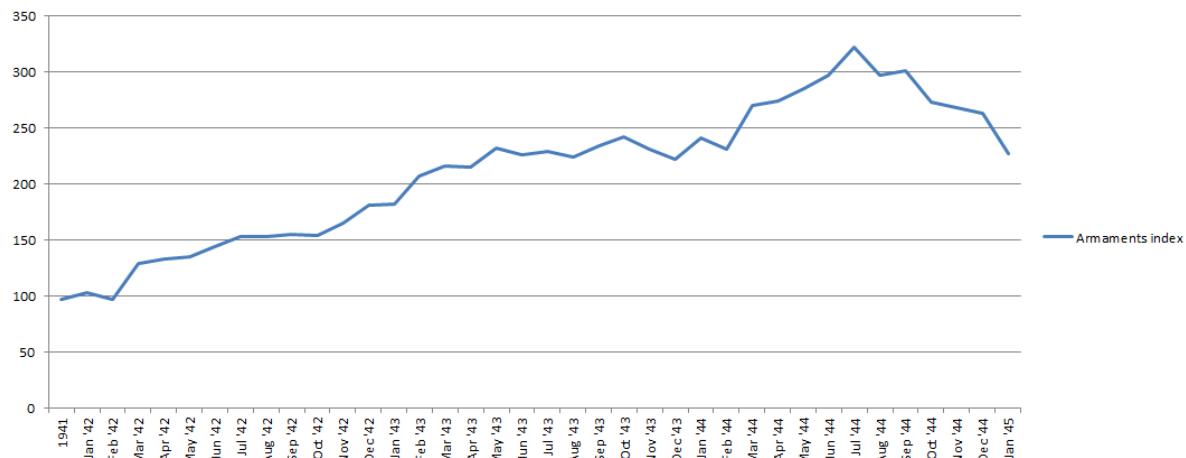


Table 17. Axis and Allied armaments production, 1942–1944, in relation to economic potential

	000s:						1990 PPP \$:			ooo tons:			
	Rifles	Machine pistols	Machine guns	Guns	Mortars	Tanks	Combat aircraft	Major naval vessels	1941 GDP	1944 GDP	Steel production 1939	Steel production 1944	
	United States	10,714	1,685	2,291	512	61.6	86	153.1	6,755	1,094	1,499	55,731	
Britain	2,052	3,682	610	317	65.3	20.7	61.6	651	344	346	13,716	12,337	
Soviet Union	9,935	5,501	1,254	380	306.5	77.5	84.8	55	359	495	18,796	16,350	
Total, Allies	22,701	10,868	4,155	1,209	433.4	184.2	299.5	7,461	1,797	2,340	88,243	110,008	
Germany	6,501	695	889	262	66.0	35.2	65.0	703	412	437	21,528	24,218	
Italy				83	7	11.3	2.0	8.9	218	144	137	2,283	1,025
Japan	1,959	3	341	126	4.3	2.4	40.7	438	196	189	6,693	6,366	
Total Axis	8,460	698	1,313	395	81.6	39.6	114.6	1,359	752	763	30,504	31,609	
Allies/Axis Allies/ Germany	2.7	15.6	3.2	3.1	5.3	4.7	2.6	5.5	2.4	3.1	2.9	3.5	4.5

Sources: *Statistisches Handbuch*, 292. M. Harrison (ed.), *The Economics of World War II* (Cambridge, 1998), 17

The immediate aftermath of the war seemed to confirm Hitler's apocalyptic view: Germany would be condemned to irrelevance and deprivation if it could not secure for itself a strong economic position. It had now ceased to exist as a political, military and economic unit. The country was a smoldering

pile of rubble. The Rhine ran clean because there were no factories left to pollute it. What few coal was produced couldn't leave the mines. For years there wasn't enough coal for heating. Famine struck Western Europe and Germany received the least priority for food.

Yet it was Stresemann who was avenged in the end. As he predicted, the other great powers would realize they needed Germany for its economy and that would allow it to regain a place in the European stage. By 1947 America realized the value of a prosperous West Germany as a bulwark against communism and, after overcoming the resistance of France, which still expected to retain the resources of the Ruhr, changed its policy to one of reconstructing a strong German economy. West German and European recovery proceeded as miracles. However, a cost had to be paid for that: not just West Germany but also the victorious states found themselves with constrained sovereignty. The age of great powers was over. Within Germany the scope of discussion about possible geopolitical courses of action, once wide in Weimar years, shrank.

The undermobilization controversy

One point on which Tooze has a controversial take is on early war German undermobilization. This thesis goes along two lines. The first is that the war economy prior to 1942 was marked by inefficiencies: labor productivity went down, economic institutions accused each other of incompetence, the price system did not pressure industrialists to innovate and so on; this was particularly bad in 40-41, a period for which footnotes speak of "egotism and incompetence" and of Germany "squandering its armaments advantage". Only under Speer and his rationalization the economy was put in working order. The second is that initially the Reich's leadership wanted to shelter civilians and prior to the "total war" drive of 1943 a large portion of German manpower, plants and capital were still in the civilian sector producing useless consumer goods and the like. Those lines converge to the conclusion that from the very beginning there was a lot of unused capacity which could at any moment, even before Barbarossa, have been unlocked by implementing rationalization and total war.

As soon as the war this entered historiography and remains influential today. I've seen it in Wikipedia, the Paradox Interactive Forums, /k/ and elsewhere. Tooze explicitly bashes the first line and weakens the second.

On the first line:

1)The inefficiencies are called into question. The price system wasn't bad. The apparent productivity decline still appears in revised data (fig. 17). The sector which received the greatest number of workers in the France-Barbarossa period was the Luftwaffe, and it is in aerial production that the lag between workers&inputs entering assembly lines and more armaments coming out is the greatest, lasting several months, and this creates the statistical illusion of faltering productivity. In army and naval production output grew much more than the labor force. There was indeed a factor which could harm productivity: preparations for Barbarossa incurring logistical disarray and the drafting of workers, but it was minor. Further, it must also be noted that with the ongoing investment boom the industry wasn't focusing merely on short-term output.

Tooze defends the German war economy in its France-Barbarossa period. It had a clear direction, was coordinated with geopolitical planning and achieved its objectives.

2)The "Speer miracle" was mostly led by factors other than rationalization, mainly the heavy industrial boom and the arrival of foreign workers, so there wasn't that much output to be unlocked by rationalization in the first place, or if there was, Speer couldn't reach it. Milch made a truer rationalization but even most of the extra productivity he got was from his decision to ditch quality for quantity; further, it was easy for Milch in 1942 to outperform 1941, when aerial production stumbled over difficult technological leaps. Not that Speer and Milch did no technocratic reforms, their organizational innovations could've been made earlier and Milch subordinated the big aerial firms.

So Hitler couldn't just appoint Speer or some other technocrat to replace Todt (himself a questionable "miracle-maker") in 1940, seek "rationalization" and get a massive boost.

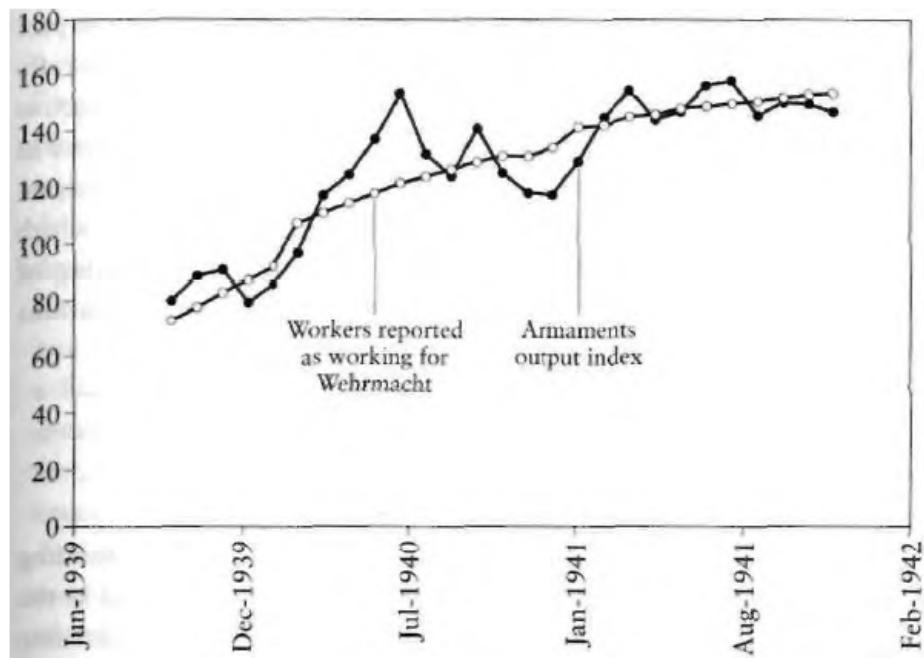


Figure 17. Labour input and armaments output (1st quarter 1940 = 100)

On the second line:

1) Much of the output expansion in the late war was from sources other than the transfer of resources from the civilian to the military sector within Germany. Heavy industry grew (though in 1942-3, not later) and millions of workers were added to the German economy, most of which weren't even available before Barbarossa and Hungarian Jews weren't available prior to 1944. The early war investment boom already produced some effect by the late war. As more production could have been done without this investment, to some extent there was more production late in the war because there was less early on. Some investments, of course, only showed their true potential after the war, and sacrificing investment for extra weapons in Barbarossa would have made sense. But the Reich wasn't preparing for Barbarossa in isolation, it wanted to spend just enough to win a quick campaign because the campaign itself was part of a wider conflict with the Western powers. Hence it invested long-term a lot and spared some effort for the air force and navy. If it expected to wage a war of attrition on land for several years it could have done differently, but then its geopolitical outlook would be completely different and it may not even have done Barbarossa.

Late-war expansion alone cannot be taken as a gauge of how much civilian potential was left to mobilize because these other factors must be discounted from it.

2) Some civilian production in the early war was not consumer goods but exports. This wasn't wasted production as the logic of the balance of the payments was still in place and German goods were needed to prop up and maintain allied states.

3) The German military economy's previous phases do not show any "slack" towards the civilian sector but a continuous drive to mobilization. In 1933-39 it went from almost nonexistent to a higher level of mobilization than the Western powers, so high it was causing economic problems. *Never before had national production been redistributed on this scale or with such speed by a capitalist state in peacetime.* (p.659). It was a strong and very effective reallocation, and the side effects were

just natural for this level of mobilization. Interruptions in 1937 and 1939 were this high speed mobilization hitting the country's resource ceilings.

Then in 1939-40 mobilization had the most radical policy, to sacrifice not just civilian production but even the war effort's long-term viability to immediately maximize output. De facto taxation shifted income from consumer goods to the war effort. Already in the first winter of the war there were severe shortages of items such as ovens and stoves and the civilian industry -not just consumer goods but even electricity and mining- had large cuts to its steel rations. In 1940-41 the time horizon was reversed, there was now much investment for the future, but the stance on the civilian sector did not change.

In 1942 civilian coal was sacrificed for steel. In 1943 total war is formally announced, but since a decade before resources were continually migrating from superfluous civilian production to the military-industrial complex. There was a consistent movement towards total war. As Harrison's mobilization graph shows the civilian sector shrank with every year. It was probably possible to accelerate the transfer, though that could run into a limitation -the state's power- and hence it wouldn't be as fast as the Soviet Union's lightning fast mobilization as Germany wasn't a command economy.

4)There weren't much women to be mobilized. The majority were already in war-vital work, not in the weapons factories but in the fields which were just as important. The topic of fields is interesting because Germany could free up a lot of manpower by modernizing its rural sector, but this is long-term structural change and not something that takes place in wartime. A lot could have changed if the Reich had pursued agricultural modernization in peacetime, but this topic was left to the postwar, when it could be dealt with at the same time as the settlement of conquered territory.

This line, however, is not quite wrong as after 1943 there were still manpower to take from the civilian sector and output to squeeze from it by demanding more working hours. However, exploiting it in the early war wouldn't produce late war results because of the limitation of how much there was to mobilize and said results had other sources. Further, there was probably an upper limit to how fast mobilization could happen. So in this case Hitler could have Goebbels do his Sportpalast speech in 1940 and have some extra production but not all that much.