6. World War I: Costs and Consequences

Mark Harrison
mark.harrison@warwick.ac.uk

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The Balance Sheet of War

Costing war turns out to have many as many layers as an onion.

Here, think of two concepts:

The costs to people as they lived through the war:

- Impoverishment, pain, suffering.
- Losses of life and bereavement.

The costs to the survivors:

- Those still alive must live with the human and material losses attributable to the war.
- For which we will compile a balance sheet.

> Edelstein (2000, p. 349): “It is absurd to think the methods and perspectives of economic history can come anywhere near to comprehending the meaning of human losses from war. We are far better served by the speeches and letters of Lincoln or the poetry of Sassoon, Brooke, Owen, Graves and Seager.”

“Not an attempt to capture the loss of utility arising from war deaths, but merely treats people as human capital to be replaced like physical capital so as to maintain production” (Broadberry and Harrison 2005).

The Balance Sheet of War

Value stocks, not flows:

- The flow of lost consumption has gone.
- Capital losses (including human capital) persist.

Value loss of life – but how?

- People are valuable to society as producers.
- They also consume and consumption is a cost to society.
- People are more than just producers and consumers, but we may not be able to account for that.

Losses are not diminished when war is followed by recovery:

- Postwar baby booms replace missing people; postwar rebuilding renovates the capital stock.
- But the associated efforts would have not have been necessary in the absence of war.

War also has possible benefits:

- Wartime R&D adds to scientific knowledge.
- Wartime social spending improves education and training.

The Balance Sheet of War

Capital is human and physical, tangible and intangible – and some capital is held abroad.

The national balance sheet:

	Human	Physical
Tangible:	Replacement (basic rearing) costs of uneducated, untrained workers.	Replacement costs of accumulated tangible physical capital (structures, equipment, and inventories).
Intangible:	Replacement costs of human capital, measured by cumulative spending on education and training, health, safety, and mobility.	Replacement costs of intangible non-human capital, measured by cumulative spending on research and development.
External:	…	Measured by net worth of overseas assets.

Source: Broadberry and Howlett (1998).

The Balance Sheet of War

Omissions from the national balance sheet:

- Omits moral obligations, e.g. liability to provide care for disabled soldiers and widows' pensions.
- Not considered whether war is followed by recovery; the human and physical capital lost in wartime is lost, whether or not subsequently replaced.

Data for World War I leave many gaps:

- Civilian premature deaths not counted across countries.
- Possibly including 50-100 million deaths from Spanish flu in 1918/19.
- Military deaths counted across countries, but not rearing and education costs. So, we can't value tangible human capital in the same currency as physical capital.
- Additions to intangible capital from government spending not counted across countries (but found very small in WW2, so smaller in WW1 *a fortiori*).

Costing the War

Military deaths in World War I:

	Prewar population, million	Deaths	
		Thou.	% of prewar
France	39.6	1,327	3.4
Great Britain	46.1	715	1.6
Italy	35.9	578	1.6
Russia	167.0	1,811	1.1
Other Allies	31.1	599	0.2
British Empire	342.2	198	0.1
French colonies	52.7	71	0.1
USA	98.8	114	0.1
Allies, Total	813.4	5,413	0.7
Turkey + Bulgaria	26.4	892	3.4
Germany	67.8	2,037	3.0
Austria-Hungary	58.6	1,100	1.9
Central Powers, Total	152.8	4,029	2.6
Grand Total	966.2	9,442	1.0

Source: Broadberry and Harrison (2005).

Costing the War

War losses, percent of prewar stocks, as of 1919:

	Human capital	Domestic physical assets	Overseas assets	Reparations*
France	7.2	59.6	49.0	…
Turkey + Bulgaria	6.8	…	…	…
Germany	6.3	3.1	…	51.6
Austria-Hungary	4.5	6.5	…	…
Italy	3.8	15.9	…	…
Britain	3.6	9.9	23.9	…
Russia	2.3	14.3	…	…
United States	0.3	…	…	…

Sources: Broadberry and Harrison (2005).

* Reparations are per cent of prewar physical capital. Germany was the only one of the Central Powers obligated to pay significant reparations. The sum shown is the value of A+B bonds fixed in 1919, as discussed below. Germany did not actually pay more than a small fraction of reparations due, but this was not anticipated in 1919.

Costing the War

Inter-Ally lending, billion dollars at current prices, 1923:

Loans by:	GB	Empire	France	Italy	Russia	USA	Other	Gross debits
Loans to:								
GB		0.1	3.6	0.1	1.3	4.7	…	6.5
Empire	0.7		…	…	…	…	…	0.7
France	2.9	…		0.1	…	4.0	…	7.0
Italy	2.6	…	0.2		…	2.0	…	4.8
Russia*	4.3	…	1.2	…		0.2	…	5.7
USA	…	…	…	…	…		…	…
Other**	0.6	…	1.8	0.2	…	1.0	…	3.5
Gross credits	11.2	0.1	3.5	0.4	1.3	11.9	…	28.3
Net credits	4.7	–0.6	–3.6	–4.4	–4.5	11.9	–3.5	0.0

Source: Fisk (1924, facing p. 1), somewhat rearranged; "…" is nil or less than $50m.

* Soviet Russia defaulted on all external debt in 1918.

** This includes debts among the Central Powers, but the only one of any size was a loan from Italy to Austria.

Consequences of the Peace

New states under various postwar treaties and actions:

Austria-Hungary	$\rightarrow$ Austria, Czechoslovakia, Hungary, Yugoslavia (incorporating Serbia).
Russia	$\rightarrow$ Soviet Union, Estonia, Finland, Latvia, Lithuania, Poland.
Ottoman Empire	$\rightarrow$ Turkey, Armenia (part of Soviet Union), Iraq, Jordan, Lebanon, Syria, Turkey.
United Kingdom	$\rightarrow$ United Kingdom, Republic of Ireland.

Even states that were not new, or did not break up, acquired new constitutions: Austria, Germany, Hungary, Russia, Turkey.

- New constitutions were fragile.
- New leaders were ambitious and inexperienced.

Consequences of the Peace

The Treaty of Versailles, June 1919, was imposed on Germany by the victorious powers:

- Penalties.
- Reparations.
- Restrictions on rearmament.

The penalties and reparations were famously criticized by Keynes (1920) on two grounds: the reparations violated the terms of the Armistice (which should have limited German reparations to making good civilian damages arising from the war); and, in combination with the penalties, the resulting burden of reparations on the German economy would prove to be intolerable.

We'll see . . .

Consequences of the Peace

Penalties: The treaty transferred German territory to France in the West and Poland in the East.

Germany's losses (% of possessions, 1913).

	Percent of possessions
Population	10
Territory	13
Productive capacity:	
• Arable land	15
• Coal	26
• Steel	38
• Iron	44
• Iron ore	75

Sources: Hardach (1976: 191); Berghahn (1982: 67).

- The treaty also confiscated 90 percent of German merchant shipping.
- And mandated all German overseas colonies to the League of Nations.

Consequences of the Peace

The Reparations Commission (1921) issued A, B, and C bonds that obligated Germany to the Allies.

A and B bonds (50 billion gold marks) were held to be within Germany's ability to pay.

50 billion: how much is that?

Germany, 1921	Britain and France, 1921
Reparations 125% plus ordinary public debt 50% = 175% of GDP (Eichengreen 1995 and Ritschl 2005).	Britain: net public debt 150% of GDP (Reinhart and Rogoff 2010). France: gross public debt 250% of GDP (ditto).

Thus the burden of reparations on Germany was heavy, but still comparable with postwar indebtedness of Britain and France.

- A difference: German bondholders were largely foreign, and sought payment in goods.
- Keynes (1920) made much of the "transfer problem": Germany could not repay its debts without exporting products that would compete with the export industries of Britain and France.
- But the purpose of reparations was to allow the recipients to consume more than they produced.

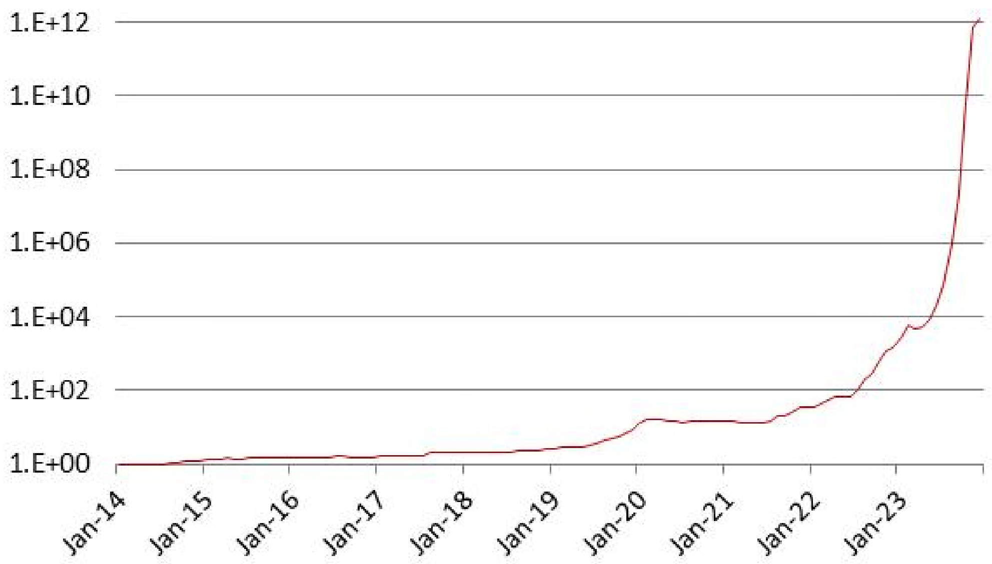
Consequences of the Peace

All serious attempts to force Germany to pay reparations were limited to 1921 to 1923.

In 1923, the French occupied the industrialized Ruhr valley in an attempt to force German deliveries of coal. This provided a trigger for loss of confidence in Germany's commitment to sustainable fiscal policy

In Germany there was hyperinflation.

Wholesale prices in Germany, ratio to 1913:



Source: Bresciani-Turroni (1937: 441).

The German hyperinflation in context

Keynes (1920): “The inflationism of the currency systems of Europe has proceeded to extraordinary lengths. The various belligerent Governments, unable, or too timid or too short-sighted to secure from loans or taxes the resources they required, have printed notes for the balance.”

In the early 1920s many new states experienced hyperinflation.

	Price level at stabilisation, ratio to initial price level
Russia	10^{11}
Germany	10^{10}
Poland	10^{6}
Austria	10^{5}
Estonia	10^{2}
Latvia	10^{2}

Source: Bresciani-Turroni (1937) and various others.

The German hyperinflation in context

How inflation starts: Money is printed when fiscal balance is unsustainable.

- To build popularity and the nation, new governments spent without taxing.
- Compliant central bankers monetized budgetary deficits.
- Government spending was paid for by the "inflation tax."

How hyperinflation takes off: Government fails to commit to sustainable debt finance (Webb 1986; Lopez and Mitchener 2018).

- In new states, taxpayers and bondholders could not agree how to share the pain of adjustment.
- Described as a "war of attrition" (Alesina and Drazen 1991).
- While inflation continued, anticipating the inflation tax became everyone's top priority.
- There was a flight from money; the economy became demonetized.

How inflation stops: austerity.

- To stabilize the budget, someone had to give up the war.
- Entitlements slashed and taxes paid again.
- Money emission and inflation stopped; the economy was remonetized.

How does Germany fit this framework?

The German hyperinflation in context

Causes of the German hyperinflation: some factors were special.

- Foreign bondholders: the war of attrition pitted foreign holders of reparation bonds against German firms and workers.
- French intransigence: faced by German failure to deliver reparations, French troops occupied the Ruhr valley in January 1923 to ensure coal deliveries.
- German intransigence: the Ruhr workers went on strike; the German government kept paying them.
- The fiscal gap between revenues and outlays widened further.
- The international value of the mark collapsed; hyperinflation set in.

Conclusion 1. The German hyperinflation was triggered by not paying reparations, not by paying them.

- Keynes was wrong: won't pay, not can't pay.

Conclusion 2. The German hyperinflation ended when foreign bondholders stopped pressing for reparation payments: they were losers in the war of attrition.

Can’t Pay/Won’t Pay

With 1924 came the first rescheduling of German debts (Marks 1978).

German reparations, billion Reichsmarks and %:

	Year fixed	Billion RM
A + B bonds, total	1921	50
At annual rate[a]		2/year
Dawes Plan[b]	1924	1-2.5/year
Young Plan[c]	1929	0.66/year
Lausanne Convention[d]	1932	3
Total actually paid		
• 1919 to 1922		8
• 1923 to 1932		12.6

Source: Marks (1978); Ritschl (2005). [a] Plus 26% of export values. [b] Including provision for an international loan. [c] For 59 years. [d] The last RM 3 billion repayment was to be conditional on U.S. debt relief.

After that, Germany’s foreign bondholders ceased to press beyond what Germany could easily afford.

Easily? How do we know?

Germany benefited from a peace dividend (Hantke and Spoerer 2010).

Can’t Pay/Won’t Pay

Treaty restrictions on rearmament: Germany was prohibited from having an air force, armoured forces, chemical weapons, and armoured battleships; limits were set on the size of the army and navy.

In the absence of the treaty, two scenarios for unconstrained German rearmament (Hantke and Spoerer 2010):

- Peaceful scenario: suppose other European powers unresponsive to German rearmament.
- Arms race scenario: suppose all powers increased defence outlays together.

Totals, 1924 to 1929, in current prices and RM billion:

	Peaceful scenario	Arms race scenario
Actual military outlays	4.1	4.1
Hypothetical military outlays	11.9	14.4
Peace dividend (hypothetical, less actual)	7.8	10.3
Reparations (gross burden of the treaty),	8.9	8.9
Reparations, less peace dividend (net burden)	1.1	–1.4

- On cautious assumptions, the true net burden of Versailles on Germany in the mid-1920s was a small fraction of the gross burden.
- On more relaxed, still plausible assumptions, Versailles brought a net peace dividend.

Conclusion: Won’t pay, not can’t pay.

Can’t Pay/Won’t Pay

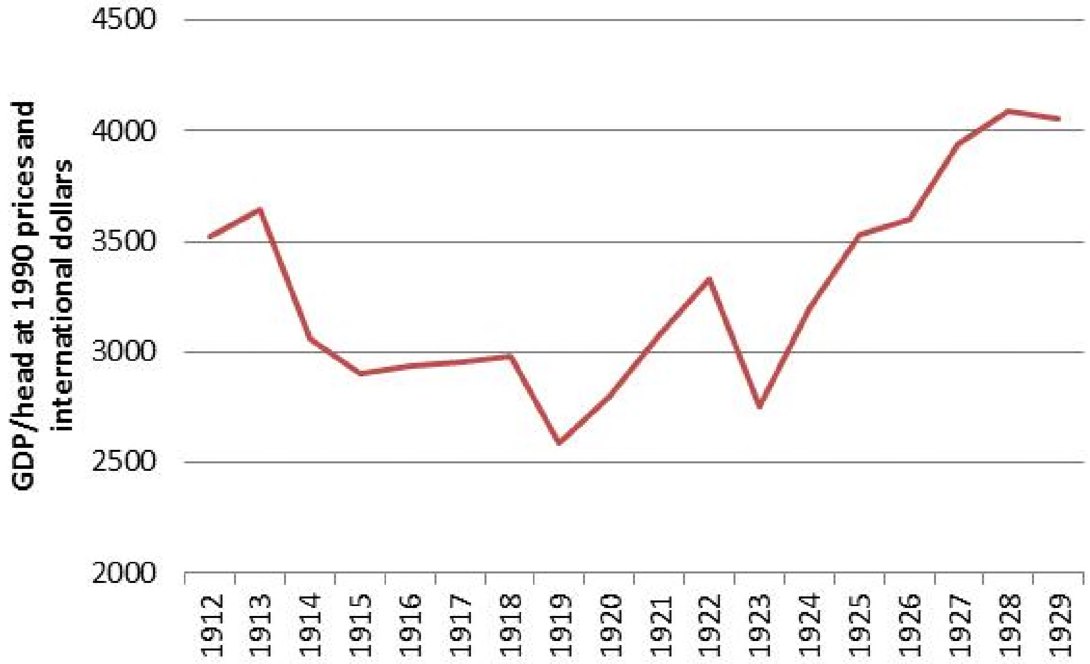
What happened to all the postwar international obligations?

The inter-Ally debts (see slide 7):

1918	Soviet Russia repudiates all foreign debts, including war debts.
1931	Hoover moratorium on all war debt repayments (including interest) due to the United States.
1932	Lausanne conference: the European powers suspend war debt payments among themselves, pending revision of debts due to the United States.
1933	Hitler cancels German reparations payments.
1933-1934	All countries suspend war debt repayments.

Recovery and Reaction

German postwar recovery:



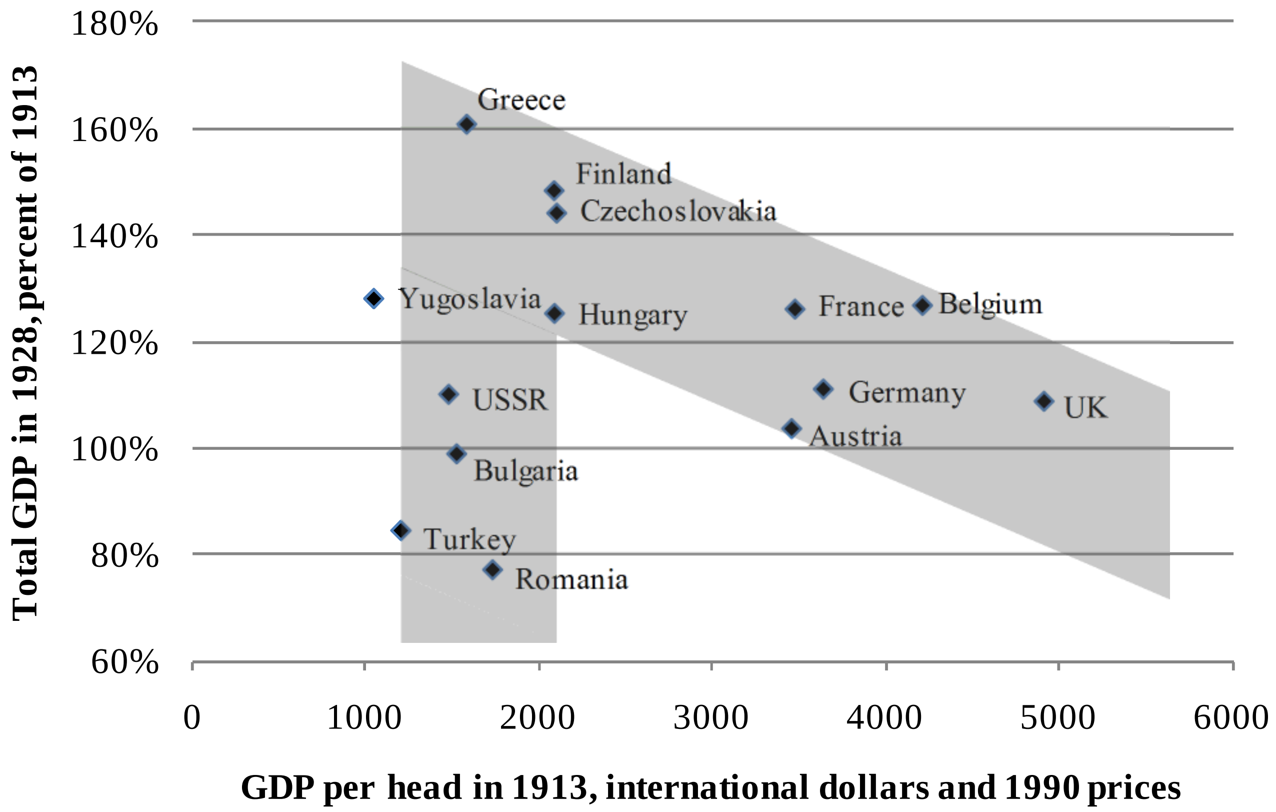
Source: Data by Angus Maddison at http://www.ggdc.net/maddison.

- Hyperinflation temporarily disabled the supply side of the German economy.
- When the hyperinflation ended, the supply side bounced back.

How does German postwar recovery compare?

Recovery and Reaction

The war: setback, followed by recovery?

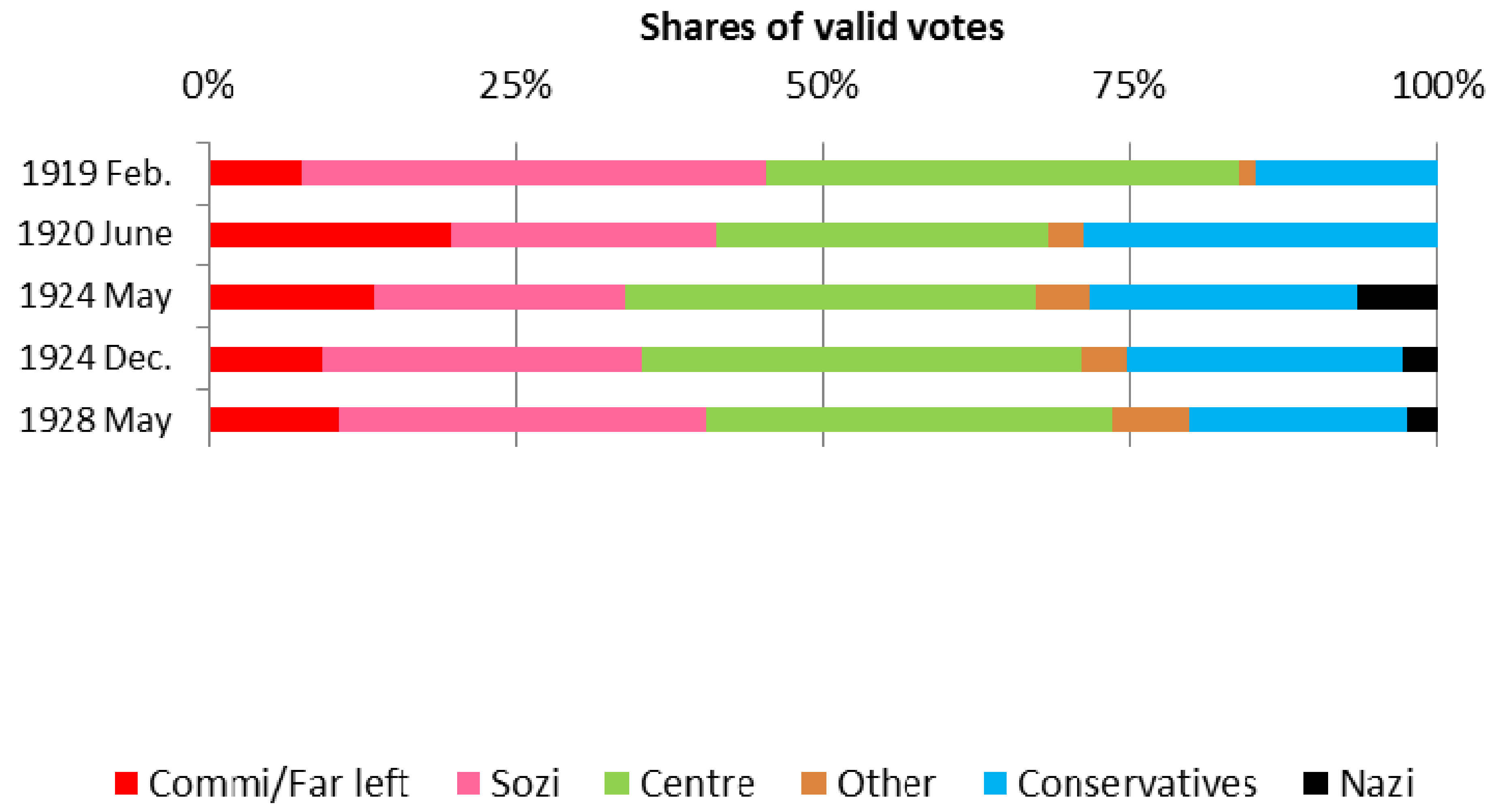


Source: Markevich and Harrison (2011).

- With many other countries, Germany made it to the (sloping) convergence frontier.
- Note those that didn't: agrarian dictatorships in Eastern Europe.

Recovery and Reaction

Politically, despite reparations and hyperinflation, Germany was doing surprisingly well:



Source: Harrison (2016).

What We Have Learned

We have looked at a range of measures of the cost of the war.

The war had many consequences beyond these costs.

- Empires were broken up and new states were created.
- The web of postwar obligations among the Allies was complex and unmanageable.
- Germany bore the brunt of Allied demands for war compensation.

Allied demands although occasionally forceful, were ineffective.

- Their net burden was relatively light or even zero.
- German leaders did not pay because they did not want to, not because they could not.

The main reason is that many Germans were unhappy with the terms of the peace treaty.

- While many Germans were unhappy, this did not make them vote for extremist parties.

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