London School of Economics and Political Science

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Doctoral thesis

Essays on war reparations and sovereign debt

Two hundred years of war debts and default, from the Napoleonic Wars to Iraq

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A thesis submitted to the Department of Economic History, of the London School of Economics and Political Science, for the degree of Doctor of Philosophy.

London, September 2021.

Declaration

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Abstract

Wars are expensive. For more than 200 years, victors have imposed reparations and indemnities on defeated nations to help pay the bill. Reparations have been large and small, repaid and cancelled, but the consequences have almost always been significant. Reparations constitute vast flows of money, affecting all aspects of the political economy, yet are poorly understood. After German interwar reparations were blamed for the subsequent economic collapse and default in the 1930s, large-scale reparations fell out of political favour. But they did not go away. World War II peace settlements included sizable transfers, and Iraq continues to pay reparations from the Gulf War. This thesis is a historiography of these reparations. It visits often forgotten episodes and tells the story of how reparations were mostly repaid - and when they were not.

My thesis consists of three main parts. The first paper focuses on the terms of trade and the economic effects from the Napoleonic Wars reparations. In a small open economy model, I show that the French terms of trade improved, and the gains were close to the size of the reparation. The second paper examines how reparations are enforced, using sovereign debt analysis. The paper explains why Germany defaulted on its sovereign debt, while everyone else repaid their sovereign debt raised to pay reparations. It shows how enforcement of debt contracts is key to understand the political economy of paying reparations-related debts. The third paper writes the debt history of Iraq from 1979. It documents how, in less than 25 years, Iraq went from being a net creditor to the most indebted nation in the world. The full story of how Iraq restructured its debt burden, yet still repaid reparations, is told for the first time.

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Data and replication

The data and code used in the dissertation is available at the following link:

https://drive.google.com/drive/folders/1PCfxuSYZL0LBm93rltAST3cf08Enbuv2?us p=sharing.

All figures and models have been created in MatLab. The replication files are available at the abovementioned link alongside the underlying data. The names of the replication files used are specified under each figure or model, alongside the data source.

Chapter 1

Introduction

Wars require a lot of money. Fiscal outlays during and after wars can be enormous, and countries often turn to borrowing to finance spending. After wars, victors have tended to impose harsh penalties on defeated nations to help them pay. One such penalty is war reparations (or indemnities), which has been a common feature in post-war settlements for more than 200 years. After German interwar reparations were widely blamed for the country's subsequent output collapse, hyperinflation, and sovereign debt default, large-scale reparations fell out of political favour. Yet they did not disappear. Iraq is still paying reparations from the Gulf War (1990-91), and post-World War II settlements included large reparations. These transfers constitute vast capital flows across borders and are almost always financed by sovereign debt. Sometimes reparations are paid without much trouble, but occasionally it ends in a debt crisis and default. Combining open economy macroeconomics, history, and political economy, my thesis studies how reparations have affected economies.

The themes of capital flows, sovereign debt, and political economy are as important as ever. Many contemporary emerging market countries face similar challenges as countries paying war reparations: they issue external debt to make payments in currencies that are not their own. Debt crises and defaults have also become steadily more frequent. The rise of globalisation means money flows across borders easily, but the effects remain poorly understood. A history of reparations tells us that these capital flows can have important repercussions, spanning across the political economy. Reparations have been large and small, repaid and cancelled, but the consequences of the transfers have almost always been significant.

Sovereign debt played a key role in almost all reparations, for better or worse. It helped France smooth consumption in the aftermath of the Napoleonic and Franco-Prussian wars. However, it was less successful for Germany in the 1920s. Iraq also experienced an economic collapse, linked in part to its ballooning debt levels in the late 1980s. No holistic contextualisation of these reparations exists. Historical research has focused on specific points in time, while the economic and finance literature has concerned itself with more recent sovereign defaults. This thesis is a historiography of the most important reparations and builds on work from both history and economics. I study fifteen war reparations since 1800 and visit oft-forgotten episodes to tell the story of these reparations. The rest of this introduction explores some of the broader themes that run through each of the papers and outlines the key contributions of this thesis.

1.1. The importance of a sovereign debt approach

The two topics of the thesis-war reparations and sovereign debt-address major questions of political economy, such as what is the impact of external debt, and when should countries repay their debts? Since before Keynes (1919) made his case against German war reparations after Versailles, transfer payments have been hotly debated. One issue is the reason for imposing reparations. Is the point to punish a country for war, to prevent it from gaining military or political power, or to incentivise re-entrance into a future political alliance? Another question concerns the economy. What amount of reparations is possible to extract, and is it possible to do so without inflicting disastrous economic consequences? Because reparations are paid as part of peace settlements, the incentives of the debtor and creditor are very different. It is therefore worth asking what we can learn by putting these questions into a longer historical context, as Mantoux's (1946) analysis of Keynes did. Mantoux suggested to study reparations as a question of willingness to pay, rather than a capacity to pay issue. It is because logic would dictate that reparations violate a country's willingness to pay constraint by default because they are involuntary. A country's capacity to pay can therefore be much larger than its willingness to pay, especially when it can borrow all the money to smooth the cost of paying.

The willingness to pay approach to reparations, as first pointed out by Albrecht Ritschl (1995, 2002), is identical to a sovereign debt approach. The capacity to pay is less interesting because it is not what constraints a country from paying reparations. Instead, what constraints a country from paying reparations is the possibility of political and economic crisis. It is important to understand if the level of sovereign debt, including reparations, violates a country's willingness to pay. The sovereign debt literature has recently developed frameworks to analyse this question in a new way. I use an off the shelf sovereign debt model

to analyse whether reparations were paid, despite being outside the participants' willingness to pay constraint.

An important factor in the sovereign debt approach is how reparations are financed. In general, countries can meet budgetary expenditures either through taxes, by printing money, or by borrowing the money (domestically or internationally). The reparations studied in this thesis were financed by a mix of taxes, money printing, and borrowing, but almost all reparations were primarily financed by sovereign debt. Using sovereign debt to pay reparations is practical because it allows states to smooth their consumption and extend the costs over time. Tax revenues were mostly not high enough to cover reparations transfers by themselves, so sovereign debt played an important role, just like it has in fighting recessions and depressions.¹ The willingness to pay reparations depends to a large degree on how easy it was to issue and service debts, but successfully repaid debt stocks were often much higher than suggested by Reinhart and Rogoff (2010). It raises the question of whether creditor enforcement for war reparations is fundamentally different from other sovereign debts. I show that reparations were repaid in several instances in which a sovereign debt analysis would suggest a default.

These political economy themes are important. They are not limited to a narrow set of technical questions but have important real-world implications of war, peace, and prosperity. This thesis explores what happens when countries borrow large amounts of money, and what happens when money flows across borders. Sometimes it ends well, and sometimes it does not. Understanding the causes of success and failure is paramount. The following sections outline the motivations behind the broader themes.

1.1.1. The economic consequences of capital flows

The study of reparations is important because it says something about the broader political economy. The subject is interdisciplinary which means the literature is scattered. The open economy macroeconomics literature has followed in the footsteps of Keynes (1929a) and Ohlin (1929a), focusing on the transfer problem (see e.g. Corsetti et al. 2013 or Epifani and Gancia 2017). The transfer problem asks whether the total cost of a reparation is bigger or smaller than the actual transfer.² Studies of war reparations have therefore tended to focus

¹ Fiscal multipliers have been consistently positive during times of crisis because of the lack of demand, both in the 1930s (Gordon and Krenn 2010; Cloyne et al. 2018) and during the Financial Crisis in 2008 (DeLong and Summers 2012). The effects are multiplied when the buyers of sovereign debt are external investors (Zimic and Priftis 2018).

² Section 2.2 explores the topic in detail.

on a transfer's terms of trade effects. This is an important question. The first paper is devoted to investigating the terms of trade effects for the Napoleonic Wars reparation. The analysis is used to show how to think about the costs of transfers. Earlier studies like Devereux and Smith (2007) and Dong and Guo (2018) have looked at the terms of trade implications of the Franco-Prussian War and the Sino-Japanese War indemnities, but Napoleonic Wars reparations remain unexamined.

The thesis aims to understand how these capital flows affect economies. Conventional wisdom is that the net flow of money runs from advanced economies—where returns are low and capital abundant—to emerging economies, in search of higher yields and productive investments. Emerging countries should benefit from access to capital not available domestically. However, Ikeda and Phan (2019) show recent boom-bust cycles of capital inflows and asset bubbles have the following characteristics:³

- 1. Money flows from emerging markets *to* developed markets.
- 2. Ensuing asset bubbles in developed markets cannot be explained by changes to economic fundamentals (especially housing prices).
- 3. Output volatility increases for everyone because of these money flows.

This is a relatively new phenomenon. In the 1980s and 1990s, capital generally flowed from developed to emerging markets (Carstens and Schwartz 1998). After the Asian financial crisis in 1997-98, however, emerging market governments began to hoard foreign reserves. They accumulated reserves through large current account surpluses, which amount to capital outflows (Lee and Luk 2018). The change in policy was to increase resilience in the face of sudden stops to capital inflows, and to lower reliance on foreign debt financing. Central banks and governments, especially in Asia, now hold large stocks of foreign securities (Fatum and Yetman 2018, p. 4). The change in policy was a consequence of misguided advice from the IMF during the 1990s: incorrect economic diagnoses led to advice that exacerbated the Asian financial crises (Bullard et al. 1998).⁴ It meant the global flow of money switched direction. Before 1998, the current account for the average emerging market economy was negative. Afterwards, it was positive. The balance of payments consists of the current account, the capital account, and the financial account (IMF 2013, p. 9-10):

 $current\ account + capital\ account + financial\ account + net\ errors = 0$ (1.1)

³ They show it holds for the U.S. housing crash and the Eurozone debt crisis.

⁴ Devereux et al. (2019) show how one policy option would have been to introduce capital controls.

The current account is made up of the trade balance (goods and services), primary income (e.g., investment income), and transfers. The capital account is capital transfers (e.g., debt forgiveness). The flipside is the financial account, which is net purchases of financial assets and new debt.⁵ A stylised version of the balance of payments is shown in Table 1.1. It shows Iraqi balance of payments for 2014 when it was a net borrower (to the left) and in 2018 when it was a net lender (to the right).⁶ In 2014, Iraq spent more money than it received, which was paid for by selling assets (or taking on debt) as most emerging markets did before 1998. The reverse holds for 2018, where Iraq was a net lender, accumulating net foreign assets through a current account surplus.

	Net borrower (Iraq, 2004)		Net lender (Iraq, 2018)		2018)	
	Credits	Debits		Credits	Debits	
	(exports)	(imports)	Balance	(exports)	(imports)	Balance
Current account						
Trade balance	17	22	-5	93	57	36
Primary income	0	0	0	1	3	-2
Transfers	3	1	2	2	1	1
Capital account	0	0	0	0	0	0
Net lending (+) or borrowing (-)			-3			35
Financial account						
Direct investments	0	0	0	0	-5	5
Portfolio investments	0	0	0	3	0	3
Other investments	10	1	9	9	2	7
Reserve assets	-6	0	-6	7	0	7
Deferred accrued interest	-6	0	-6			
Net lending (+) or borrowing (-)			-3			22
Net errors and omissions			0			-13

Sources: IMF (2004, p. 25) for 2004 accounts and IMF online database for 2018 accounts. Note: deferred accrued interest was a special line-item because Iraq was in default.

Table 1.1: Iraq balance of payments (U.S. dollar billion).

The effects on the global economy were large because capital flows can lead to global imbalances. Capital flows played a key role in both the 2008 financial crisis and the Eurozone crisis. European and U.S. capital markets are the most liquid and deepest financial markets in the world, which means they act as a residual to global savings. The accumulation of savings in the form of reserves from Asian foreign reserves therefore appears on American balance sheets as capital flows into the U.S. In the early 2000s, this forced down interest rates and led to a search for yields (see e.g., Tooze 2018). Ultimately, as Bernanke (2005) shows, the global savings glut ended up fuelling money flows into the U.S. subprime mortgage market. In this respect, recent crises are akin to the Great Depression, where Ho and Yeh

⁵ A final category is net errors and omissions, but as the name implies it is hard to define. Table 1.1 is a standard simplified version, for full details see IMF (2013).

⁶ Iraq is also chosen for its relevance to chapter 5.

(2019) found that capital flows were the main culprit for the German interwar default. The comparison with reparations is straightforward: transfers are an export of capital to the country receiving reparations.

This thesis addresses questions that emerge from the debate on capital flows. Reparations are capital flows and often financed by borrowing on international capital markets, through the financial account in the balance of payments. As reparations happen over a defined period, with a (mostly) known quantity, they provide an excellent case from which to try to understand the effects of capital flows.

1.1.2. Sovereign debt defaults and reparations

One of the most important questions concerning reparations is how they are financed. The economic consequences for how a government finance its spending differ, and it is not always possible to choose freely between taxes, printing, or debt. Reparations are almost always paid in foreign currency. This makes printing money in one's domestic currency less attractive, as dramatic increases in the money supply can provoke a currency crisis. Raising taxes, on the other hand, takes domestic resources directly out of the economy, instantly affecting households and corporations. Using borrowed money to pay allows a country to smooth costs, which is why sovereign debt has played a major role in most reparations. If debt is obtained from external sources, then there is a direct link to capital flows.

If sovereign debt is repaid and there is no debt crisis, it is advantageous to issue bonds to repay. But if the risk of default goes up, the costs can be felt throughout the economy. Gu (2019) shows that a country's terms of trade is affected negatively from increases in default risk because it lowers the demand for a country s intermediate export goods, creating a pro-cyclical effect on income and consumption. The creditworthiness of countries relates directly to their ability to repay reparations, because it affects the interest rate paid on loans. Considering how commonly sovereign debt defaults occur, it is worth re-examining reparations in the context of sovereign debt theory to understand the role of borrowing on the capacity and willingness to pay.

The willingness to repay sovereign debt is a choice for policymakers and the broader polity. The occurrence of defaults has increased in recent years, with defaults happening both because of an inability and an unwillingness to repay debt. Sovereign defaults and restructurings come in many shapes and sizes: from Russia s full repudiation of debt after the Bolshevik Revolution in 1918 (Reinhart and Rogoff 2009, p. 61) to Uruguay s creditorfriendly restructuring in 2003 (Cruces and Trebesch 2013, p. 97).⁷ As section 2.1 will show, reparations have varied in size and scope as well.

After few sovereign defaults in the decades following World War II, the Latin-American debt crisis saw a surge of defaults in the 1980s. It was followed by Russia s default in 1998; the Argentine default in 2001, and the Eurozone restructuring of Greek debt a decade later (Beers and Mavalwalla 2018, p. 11-17). Alongside these more well-known sovereign defaults, there has been a steady stream of smaller, less notable ones. Figure 1.1 shows the total amount of debt in default at any point in time since 1960, as a percentage of outstanding debt and world output.



Source: Bank of Canada's Credit Rating Assessment Group database on sovereign defaults. Replication file, *plot_sovdd.m.*

Figure 1.1: Global sovereign debt in default since 1960.

Significant developments in sovereign debt theory accompanied the rise in defaults, starting with Eaton and Gersovitz (1981).⁸ Since then, sovereign debt theory has been applied widely. It has, however, focused almost exclusively on recent defaults (since 1980), with most models calibrated to the Argentine restructuring in 2001.⁹ Older defaults have mostly been left unexamined, as data availability is a limiting factor. Several large-scale debt

⁷ After the Bolshevik Revolution, bondholders recovered nothing until 1987 when Russia re-entered international bond markets and offered a nominal settlement (worthless in real terms). Meanwhile, Uruguay's debt exchange in 2003 was pre-emptive, required no principal haircut on the bonds, and only extended the maturity by five years. The net present value loss was less than ten percent.

⁸ Sections 2.3 and 2.4 examine the sovereign debt literature.

⁹ Arellano (2008), Chatterjee and Eyigungor (2012), or Sosa-Padilla (2018) to name just a few.

issuance episodes therefore remain under-covered in the literature, something my thesis seeks to correct.

Sovereign debt analysis is useful for understanding the costs and benefits of borrowing. Some benefits are obvious (smoothing the cost of consumption) while others are indirect. If a country needs to rebuild infrastructure after a damaging war, there are lots of productive investments with high return. If there is a lack of capital domestically, external capital can finance productive investments and will have high benefits. The cost of borrowing is the interest rate paid, but again it must be thought of in the aggregate: does the inflow of capital help or hurt the country, compared to a state of autarky, defined here as spending being financed entirely by taxes. Sovereign debt theory is therefore paramount to understanding reparations, and reparations are an important way of understanding sovereign debt.

The second paper uses sovereign debt theory to understand the costs and benefits of borrowing to pay reparations. It explores the cost of default versus the benefits of repayment and develops an optimal policy for a government facing reparations. War reparations have mostly been dealt with in the literature as a problem of capacity to pay. I argue that a sovereign default on reparations was impossible because of the political ramifications. The German default on its sovereign debt was special because it was allowed by its politically weak creditors, who were unable to enforce debt contracts in the 1930s. A default on reparations themselves never happened. The question of sovereign debt as it relates to reparations is then mainly a question of enforcement.

1.1.3. Capital structure and the enforcement of debt contracts

All debt is not created equal. Indeed, a high headline debt-to-GDP number might obscure strong underlying ability to pay, while the reverse also holds true. An ability to refinance maturing debt at below-market interest rates makes a debt burden more sustainable, while implicit liabilities or off-balance sheet deals can make a debt burden unsustainable. Countries might not even have the option to avoid payment altogether. Understanding the structure of the debt is therefore important alongside the political context.

Reparations are not voluntary, and unlike most sovereign debt there is an enforcement mechanism to force repayment: often the country is still occupied. Reparations are imposed because the victor demands them, not because there is an economic rationale for the debtor. Reparations can therefore, in theory at least, be considered senior claims to other state liabilities. Sovereign debt enforcement is different from the enforcement of household or corporate debt because there are no legal remedies to make a sovereign pay.¹⁰ Countries can be coerced to pay by military force, but unlike the bankruptcy of people and firms there is no international bankruptcy court to settle claims.

The German sovereign default in the 1930s was on debt issued to pay reparations, but it also had several effects on other state liabilities, with loans offering different kinds of creditor-protection. Germany in the 1920s had high levels of reparations but was able to borrow, because it offered de-facto seniority to new loans. Creditors were willing to lend into a large debt stock because they thought they would rank senior to reparations. It was the case in Germany, as we shall see in the second paper, and it was the case in Iraq as well, in the last known reparation.

After the Iraqi invasion of Kuwait and its loss of the Gulf War in 1991, the U.N. imposed reparations on Iraq. Iraq, which I explore in the third paper, was a net creditor in 1979 but defaulted on its debt less than ten years later. How did Iraq accumulate so much debt in a short amount of time? The literature does not have satisfying answer. This is unfortunate because the case of Iraq has applications, in terms of understanding how debt is accumulated and how it is restructured. The history of Iraqi debt is a prime example of what happens when all sorts of different loans are taken but there is no state capacity, no willingness to pay, and no enforcement of debt contracts. The third paper aims to fill the gap in the literature by examining the Iraqi debt history.

1.2. My contribution: Reparations and default

The studies of war reparations examine single episodes, with limited comparisons across history. Several significant war reparations are not fully explained in the literature, and most have not been explored within a sovereign debt framework. This thesis takes aim at these deficiencies, studying several large reparations in the context of a sovereign debt analysis.

In the first paper, I address how the terms of trade aided in paying the Napoleonic Wars reparations. In a small open economy model, the paper estimates the gains from the improvement in the terms of trade that occurred following the war. The economic gains are shown to be approximately the same size as the cost of the reparation. The analysis is used to show how to think about the costs of reparations. The first paper places the French reparation in the quantitative business cycle literature. The episode has not previously been explained using the dynamic models common in recent research.

¹⁰ A question that will be dealt with fully in section 2.4 and chapters 4 and 5.

The second paper is a study of how reparations are enforced, using sovereign debt analysis. Historical cases of sovereign defaults are typically accompanied by several stylised facts: default occurs after a sharp contraction in output and is followed by a devaluation of the currency. The periods around large war reparations exhibit many of the same macroeconomic characteristics, yet they are not usually followed by a sovereign default. The difference is the ability to enforce sovereign debt linked to reparations by military and political force. I argue that in both the cases of German World War I reparations and Finnish World War II reparations, the countries paid while being outside their willingness to pay constraint.

The third paper writes the historiography of Iraqi debt for the first time. Unlike the rest of Iraq's sovereign debt, reparations imposed after the Gulf War were repaid in full. I make two main contributions. First, I reconstruct the build-up of debt through the 1980s and 1990s from primary and secondary sources. The rise in Iraqi indebtedness was a consequence of global geopolitical trends in the 1980s where political lending trumped solvency concerns. It allowed Iraq to obtain financing on terms more favourable than the U.S. government, without conditionality of reform. Second, I use oral history to trace how Iraqi debt was restructured after the U.S. invasion in 2003. The restructuring was permeated by politics to inflict harsh terms on creditors at the Paris Club, at a time when creditor-friendly restructurings were the norm. Despite its apparent success however, in going for a politically expedient deal at the Paris Club, I argue the restructuring missed an opportunity to enshrine a doctrine of odious debt in international law.

1.3. Structure of thesis

The thesis consists of three independent papers (chapters 3, 4, and 5), with a unifying thread of war reparations and sovereign debt. Chapter 1 provided an overview of the main themes explored and the motivations underpinning them. In chapter 2, I provide a history of war reparations, followed by a critical review of the relevant literature, pointing out gaps and situating the thesis. I review the literatures on the transfer problem in section 2.2. I review the literature on sovereign debt in section 2.3, which is common across all three papers. The history of sovereign debt defaults (section 2.4 through 2.4.5) analyses what constitute a default and shows how enforcement of sovereign debt has changed. I discuss the different methodologies and frameworks used in the thesis in section 2.5. Chapter 3 is the paper on the transfer problem in the context of Napoleonic Wars reparations. In the second paper

(chapter 4) reparations are addressed in a sovereign debt context. Chapter 5 is the historiography of Iraqi debt. Chapter 6 sets out the main implications of the research.

Chapter 2

Review of the reparations and sovereign debt literatures

Wars are expensive. Weapons, soldiers, food, and supplies are costly. Infrastructure is often destroyed, or—at the very least—resources that could otherwise have been spent on productive investments are re-directed to the war effort. Wars represent large fiscal outlays and often result in large war debts (Shea and Post 2018). The debt can take many forms, such as commercial or bilateral loans, war bonds, or fiscal arrears. Money is fungible and it can be hard to disentangle different kinds of liabilities. On top of war debts, victors have historically asked for restitution from defeated countries in the form of reparations or indemnities. Stevenson (2010, p. 1505) defines reparations as, "[*t*] he compensation for war damage paid by a defeated state," and indemnities as, "[*a*] sum of money paid as compensation, especially one paid by a country defeated in war as a condition of peace," (p. 888). It is the study of reparations and indemnities, and how they relate to sovereign debt and defaults, that is the driving topic of the thesis.

War reparations can take many forms. Most common are monetary transfers in hard currency. But reparations have included precious metals such as gold and silver, natural resources such as oil, the transfer of industrial assets, intellectual properties, or compensation for specific damages. These sorts of transfers are often governed by treaties, which are negotiated as part of a peace settlement. Repayment of reparations is often conditional for the removal of occupying troops, or paid under the threat of re-occupation, which incentivises the debtor to pay. Official monetary reparations are easy to track historically because they are written down in treaties. It is harder to understand illicit flows, theft, or confiscations. An example is the transfer of intellectual property and scientific know-how, which might be seized as a spoil of war, but without direct attribution. The transfer of intellectual property does not require borrowing, as the patents are owned already, but can affect trade flows and future income streams. The loss of territory is of course common in post-war settlements but have not been thought of as reparations. They only feature in the analysis as they relate to loss of economic output or changes to trade patterns.

It is helpful to define what is meant by a war reparation upfront. The value of a war reparation is a stock notion. It is the present discounted value of all future transfer payments. The value of the reparation depends on the structure of future liability flows, which can either occur as an upfront payment or be spread out over many years. The structure of the cash flow can either be negotiated by the countries in a treaty or changed by the debtor if the country can borrow the money. The transfer of resources occurs either through an increase in production and exports of tradable goods, or by transfers of income-generating assets. The latter is an indirect transfer as the country gives up future income.

The issue of sovereign debt is crucial for the analysis of war reparations because the total cost depends on this fact. If a country does not have access to borrow money on sovereign debt markets, it might be forced to sell valuable assets upfront, or undertake painful tax increases. If a country can borrow at reasonable interest rates, the liability flow can be smoothed over many years. Barro (1979, 1987) showed how public debt can help smooth out changes in tax rates in the face of temporary increases in government spending. War reparations constitute a temporary increase in expenditures. Increases in taxes can introduce inefficiencies which can be overcome by increasing the level of sovereign debt, to smooth out the cost of the reparation over time. Sovereign debt levels have increased in almost all cases of war reparations for this reason. The adjustment to the macroeconomy is spread out over many years, as countries have structured the cash flow of their liabilities to be longer. While war reparations are unavoidable, the adjustment costs therefore crucially depend on how the transfers are financed.

A stylised example of how sovereign debt can change the liability flow is shown in Figure 2.1. The figure depicts the annual cash flows of a hypothetical reparation of 25 percent of GDP in year zero, with four different financing options. For simplicity, it is assumed that the entire transfer is due in year zero. In the first (blue) line is shown total upfront payment of 25 percent of GDP. In this scenario the country would pay the reparation out of a combination of tax increasing, cuts to other government spending, out of asset sales, or use of foreign reserves. The adjustment cost to the economy is very high upfront, but low after the shock (assuming it does not create a political crisis). It is an extreme case in which the government has no ability or willingness to borrow and can raise the money domestically. In the second (orange) line, it is assumed that half of the reparation is paid upfront, while the

rest is borrowed. The upfront transfer is transformed to a sovereign liability, which is partly paid back upfront and partly paid back in equal instalments over five years, this time to a sovereign creditor. The third (yellow) line shows a scenario where the reparation is split into an upfront payment of 2.5 percent and then a ten-year loan with equal size instalments. Finally, the fourth (purple) line shows the liability stream if the entire reparation is repaid with a loan, which is then paid back over 20 years.



Note: Theoretical depiction of annual cash flows of an assumed reparations transfer of 25 percent of GDP. It is assumed the country can borrow at a fixed rate of 4 percent, with repayment in equal instalments. Replication file, *plot_smooth.m.*

Figure 2.1: Smoothing of reparations liabilities.

Changing the liability flow means the macroeconomic adjustment cost is smoothed, but borrowing money has other long-term costs because interest costs must be factored into the total costs. In the theoretical exercise in Figure 2.1 it is assumed the country can borrow at four percent fixed interest rate, regardless of the maturity of the loan. In that case, the total cost of the reparation increases from 25 percent in the first scenario (no borrowing) to 26.5 percent in the second scenario (half upfront), 32 percent in the third scenario (10-year borrowing), to 61 percent of year-zero GDP if the entire amount is borrowed and paid back over 20 years (fourth scenario). The cost of timing of the cost of reparations depends crucially on the country's ability to access financing via sovereign debt markets.

The reason for imposing war reparations can include punishment; the need or want of restitution; the desire to increase soft power; or the destruction of the defeated nation's economic structure. The reasons for war reparations often overlap and punishment can take

many forms. It can be proportional to the economic damage wrought or be much larger. The economic structure of a country might not be able to sustain large-scale borrowing, which can destroy political legitimacy. If the sum imposed is much higher than the war damages and too high for the country to pay, it lowers the chance of repayment. The winner therefore faces a trade-off between extracting the maximum amount of money and increasing the likelihood of repayment unless the desired outcome is to cause an economic and political collapse. The utility of reparations for the receiving country depends on whether they want hard currency or power (either soft power or hard power). The history of reparations shows terms and reasons have varied from small, specific claims to larger damages that have destroyed the polity of the paying country.

In the economics literature, reparations are mostly studied as examples of the transfer problem, despite sovereign debt playing a prominent role in war financing. Conflicts are repeatedly financed by issuing sovereign debt, as are reparations. In fact, a reason to enforce reparations might be to increase the stock of sovereign debt, which would render a country unable to borrow money to engage in another war. Yet, reparations play a relatively minor role in the literature on sovereign debt, which has mainly concerned itself with more recent defaults in emerging markets. Likewise, sovereign debt has not featured prominently in reparations studies, which are sparse except for the German interwar reparation. The thesis takes aim at both deficiencies, linking the large fiscal outlay that are reparations to the study of sovereign debt more generally. This chapter sets the stage and is a critical review of the literature on war reparations, the transfer problem, sovereign debt, and how they tie together.

2.1. History of war reparations

The thesis is not a definite history of reparations, which go back thousands of years. At least as far back as in 241 BC, Rome imposed an indemnity of 3,200 talents of silver on Carthage following the First Punic War, to be paid over ten years (Treaty of Lutatius 241 BC). The monetary indemnity was later accompanied by Rome seizing Corsica and Sardinia in 237 BC. A full history of reparations would require an in-depth look at all reparations since then. The number of armed conflicts is high and unknown. Cirillo and Taleb (2016) find at least 565 armed conflicts involving governments since 1 AD, using a threshold of 3,000 deaths to qualify. Even assuming the dataset is complete, it would be too many episodes to investigate. Instead, the focus of the thesis is recent reparations. The thesis investigates fifteen war

reparations since 1800, listed in Table 2.1.¹¹ The episodes are chosen because they represent monetary reparations for major conflicts, where reliable macroeconomic data is available, and there is a treaty which governs the transfer. Sovereign debt was commonly used to finance reparations in almost all episodes. The reparations values have been so small as to be meaningless in national income terms but have also represented significant shares of GDP.

ъ

	Percentage of		
Reparation related to	output	Who paid?	Repaid?
1815-1819: Napoleonic Wars	22	France	Yes
1825-1947: Haiti independence	300	Haiti	Yes
1848-1881: Mexican–American War	<1	US	Yes
1871-1873: Franco-Prussian War	25	France	Yes
1895-1901: Sino-Japanese War	-	China	Yes
1897-1898: Greco-Turkish War	-	Greece	Yes
1901-1939: Boxer Rebellion	-	China	Yes
1918-1918: WWI (Russia)	37	Russia	No
1919-1964: WWI (Bulgaria)	>150	Bulgaria	Yes
1923-1933: WWI (Germany)	100	Germany	No
1945-1952: WWII (Finland)	20	Finland	Yes
1947-1965: WWII (Italy)	1	Italy	Yes
1953-1965: WWII (Germany)	3	Germany	Yes
1955-1965: WWII (Japan)	4	Japan	Yes
1994- : Gulf War	>400	Iraq	Ongoing

Sources: See sections 2.1.1 to 2.1.5 for details.

Table 2.1: War reparations and indemnities since 1800.

The value of the reparation is shown as a percentage of GDP, with the best datapoint chosen for ease of comparison. The crude way of comparing has several data issues. First, GDP data is increasingly unreliable the further back one goes and is unavailable for China and Greece in the late nineteenth century. The year chosen to estimate the percentage of GDP is, to my best effort, the year of the first payment. However, post-war output sometimes differs significantly from pre-war output. The comparison also does not consider over what time-frame reparations are paid nor discount rates. The early French reparations

¹¹ Not included are U.S. reparations to Japanese Americans who had been interned during World War II in 1988 (Civil Liberties Act of 1988); and U.S. reparations to Cuba in exchange for prisoners captured during the Bay of Pigs. The latter is one of only two cases of the U.S. paying reparations to a country (other being to Mexico in 1848). Also left out are all non-war reparations, such as reparations awarded by the International Center for Transitional Justice (ICTJ) in Tunisia for human rights violations, because they occur within a country rather than between (https://www.ictj.org/about, accessed 18 February 2020). Reparations currently being negotiated, such as German reparations to Namibia for the colonial era massacres from 1904 to 1908, are also left out.

were repaid in less than five years, while it took China 38 years to pay for the Boxer Rebellion. I examine each reparation in more detail in the following sections (2.1.1 to 2.1.5).

2.1.1. French reparations in the nineteenth century

France lost two major wars in the nineteenth century-the Napoleonic Wars in 1815 and the Franco-Prussian War in 1871—both of which resulted in the French having to pay reparations and indemnities. The payments were large; both around a quarter of GDP (White 2001, p. 351; Devereux and Smith 2007, p. 2379). A detailed history of the Napoleonic Wars reparation can be found in the first paper (chapter 3). I therefore make only a few additional notes to Napoleonic Wars reparations here. First, data availability for the period is less good than for reparations in the twentieth century. Second, the reparation was repaid ahead of time. France did not initially have access to international capital markets as its credit reputation had been squandered during the revolution, and the war was mostly financed by taxes (Bordo and White 1991). This changed in 1817, from which point France quickly borrowed, and repaid, the entire amount (Oosterlinck et al. 2014; Greenfield 2016). The incentives to repay quickly were considerable, as France was occupied from Calais to the Swiss border for as long as payment was outstanding (Veve 1989, p. 99). White (2001, p. 360) estimates a sharp contraction with consumption falling by 19 percent over five years, while I suggest a more mixed picture, with a positive terms of trade shock mitigating most of the costs.

Fifty years later, as France lost the Franco-Prussian War in 1871, the country was again forced to pay an indemnity. Just over a quarter of total output was paid over three years, again mainly financed in sovereign debt markets (Kindleberger 1993, p. 241-50). The French held many foreign securities that were easily sold, providing liquidity for loans issued to repay the indemnity (Taussig 1927, p. 266-68). The sale of securities allowed for debt financing on rather attractive terms. The indemnity was considered too big to pay by many at the time, but easy issuance of loans and asset sales meant it was repaid quickly (Gavin 1992, p. 175). The debt issuance did change savings and investments for the period between 1871 and 1873, as a large share of domestic savings went to pay the reparation, but it was temporary. Figure 2.2 shows French savings, investments, and current accounts. The dotted line represents the current account net of indemnity, while the solid line represents the difference between savings and investments (on the left), and the French current account (on the right).



Sources: Jones and Obstfeld (2001) online dataset for savings and investments; Lévy-Léboyer and Bourguignon (1990, table A-III) for the current account; Devereux and Smith (2007, p. 2380) for the reparation. Replication file, *plot_sica.m.*

Figure 2.2: French savings, investments, and current account (1868-80).

Output and consumption fell in the lead up to the transfer but rebounded during and after (Devereux and Smith 2007, p. 2381). Similar results are found when examining the cumulative change to real GDP per capita starting in 1870. The second paper (chapter 4) provides a detailed look at the Franco-Prussian indemnity. Both French nineteenth century reparations were paid quickly, despite significant distortions to the economy, with pivotal roles in both cases for sovereign debt markets. Enforcement of the transfers was binding by creditors who militarily occupied France until repayment was ensured.

2.1.2. Nineteenth and early twentieth centuries reparations

At least five other reparations and indemnities were paid during the nineteenth and early twentieth centuries, although they are scarcely covered in the literature. First, France imposed a reparation on Haiti in 1825 after the former colony gained its independence in 1804 (James 1938; Blackburn 2006). The reparation was justified as compensation for loss of slaves and land, with France conditioning the recognition of Haiti as a sovereign state only against such payments. The imposed indemnity was 150 million gold francs in 1825. The amount is significant compared to the Haitian economy at any point in time and Piketty (2020, p. 473) estimates it being equivalent to 300 percent of 1825 GDP. The outstanding reparation was reduced to 90 million francs in 1938, but it was not until 1947, over a century after the initial settlement, that all loans related to the indemnity were paid off (Munro 1969, p. 25). In the

end, Haiti paid the equivalent of 21 billion in 2015 U.S. dollars to France (Sommers 2015, p. 124).

Second, the U.S. paid indemnities to Mexico from 1848 to 1881, after the Mexican-American War.¹² In national income terms, this reparation was minor. The Treaty of Guadalupe Hidalgo of 1848 stipulated the U.S. pay 18 million U.S. dollars, of which 15 million were indemnities and 3.25 million were transferred debts. Using data from the Federal Reserve to convert the indemnity to 2011-equivalent dollars and comparing that to the chained real GDP per capita multiplied by the population at the time (Bolt et al. 2018), I find it is the equivalent of less than one percent of GDP.

Third, in 1897, Greece lost the Cretan War to the Ottoman Empire. Greece had been overrun and asked the Great Powers of Europe to broker an armistice, which they did just before Athens was invaded. Greece was at the time highly indebted and defaulted on some of its outstanding sovereign bonds. In the negotiations that followed, sovereign debt payments were directly linked to indemnities by creditors. The Ottomans had required 10 million lira but were negotiated down to 4 million and loss of some territory (Waibel 2015, p. 14-17). The amount was considered so high as Greek capacity to pay was in question, but with no reliable GDP figures it is not possible to quantify directly. Creditors forced an intervention in Greek fiscal decisions, to make sure there was capacity to pay. The final agreement included a loan of 6.8 million pounds from the U.K., France, and Russia to Greece (ibid). The loan was thus larger than the indemnity but ensured Greece could repay existing private creditors too. Greece did not have much choice in the matter: enforcement of sovereign debt happened under the threat of invasion. The terms included the de-facto takeover of fiscal affairs (ibid) and made indemnities and existing creditors pari passu (meaning equal ranking of claims), ensuring repayment. In the end, Greece paid the equivalent of 94 million francs in indemnities.

The fourth and fifth occurrences concerned China, who paid reparations twice. First, between 1895 and 1901 China paid 230 million taels of silver to Japan following the Sino-Japanese War (Dong and Guo 2018, p. 17-18). Second, between 1901 and 1939, it paid 669 million taels of silver as reparation for the Boxer Rebellion (Hsu 2000, p. 477-91). The Treaty of Shimonoseki of 1895 stated that China owed indemnities to both Japan and Britain. The payment was too large to finance without a loan, which China obtained from Russia, France, Britain, and Germany (Dong and Guo 2018, p. 18). The loss of the Boxer Rebellion in 1901

¹² The War ended in 1848. I am indebted to Eugene White for pointing out that it contained reparations.

doubled indemnity payments, as all eight invaders had to be compensated.¹³ China was thus shackled with significant indemnity payments for the next thirty years, which it financed with European loans.

Neither China nor Greece has reliable nominal GDP figures to compare the size of the indemnities. In context, however, they were undoubtedly large, and required significant sovereign debt issuance (in the form of bilateral loans) to finance. But with no dependable output number, is it difficult to put in perspective and they are left blank in Table 2.1.

2.1.3. World War I reparations

German interwar reparations are well documented in the literature because of their importance in the lead up to World War II and their role in the Great Depression.¹⁴ But German interwar reparations were not the only ones following the First World War.

The Bolshevik government in Russia ended their involvement in World War I with the auxiliary Treaty of Brest-Litovsk on 3 March 1918. Russia gave up territorial control over the Baltic states and defaulted on previously incurred debts to the Allies. A subsequent financial appendix was agreed on 27 August 1918, which set out financial terms of the Treaty. Soviet Russia was to pay six billion marks to Germany in five instalments from 1918 to 1920, with parts of the transfers consisting of commodities and gold.¹⁵ Russian pre-war output was 16 billion Russian Rubles (Markevich and Harrison 2011, p. 680),¹⁶ which at the prevailing exchange rates in 1918 meant the reparation was around 37 percent of GDP.¹⁷ Only the first two instalment were paid in September 1918, according to Smele (1994, p. 1319) who investigates the flow of Imperial Russian gold reserves. The later transfers were not made because the Treaty was subsequently annulled by the Armistice of 11 November 1918 that ended fighting between Germany and the Allies.

Bulgaria was initially given a bill of 2.25 billion gold francs to France, which took its debt-to-GNP to over 200 percent (Tooze and Ivanov 2011, p. 37-43). Bulgaria's reparations burden cannot be easily untangled from its war debts, but assuming the increase in foreign public debt from 1919 to 1921 was entirely reparations, the initial imposed transfer was over 150 percent of output (Dimitrova and Ivanov 2014, p. 239). After the first payment was missed in 1921, the French forced the Bulgarian government to prioritise debt payments.

¹³ The Eight-Nation Alliance: Austria-Hungary, Britain, France, Germany, Italy, Japan, Russia, and the U.S. ¹⁴ A detailed history is found in chapter 4.

¹⁵ Memorandum Appendix XXI (Russian-German Financial Agreement) to The Treaty of Brest-Litovsk, signed on 27 August 1918, published in *Izvestia* on 4 September 4 1918 [accessed 13 February 2021].

¹⁶ The GDP number is for Soviet interwar territory in 1913.

¹⁷ Rubles and Mark exchange rates are found in Mixon (2011).

Under great strain, reparations payments were made through 1923. The League of Nations mediated a deal, which postponed most reparations. Of the 2.25 billion, 550 million was extended to 1935 with the additional 1.7 billion postponed to 1953. From 1923 to 1935, only 28 million was paid (Dimitrova and Ivanov 2014, p. 221). As shown in Figure 2.3, Bulgaria s debt burden was massive but was negotiated down. No explicit default happened, outside of the missed initial payment. It was a story of extreme economic hardship and repayment under duress and diplomacy, albeit more the former than the latter.



Source: Tooze and Ivanov (2011, p. 37). Replication file, plot_bdgdp.m.

Figure 2.3: Bulgaria net debt-to-GNP (1921-39).

German reparations had a different ending and are described in more detail in section 4.4.3. This section includes a brief overview of the initial size of the reparations bill for context. As a share of output, the combined A- and B-bonds, which covered reparations and inter-Allied debts, were around 100 percent of German GDP (Ritschl 2012a, p. 945-46). If the entire proposed reparation is included, the bill represented 300 percent of pre-war GNP. The further 200 percentage points of debts included C-bonds, a debt that was added for political reasons to maintain a grip on Germany and avoid further aggression. However, there was no real expectation of repayment of the C-bonds, at least according to diplomatic cables from the time. In addition to monetary payments, the U.S. confiscated German patents, such as chemical patents through the Office of Alien Property (Steen 2001). The confiscation of patents helped develop a U.S. domestic chemicals industry, and while not classified as reparations altered the structure of trade in both countries through the 1920s.

Reparations (A-bonds) were around 24 percent of output, which is close to the value of the indemnity France paid in 1871. There is reason to think that the size of the reparation was negotiated with the historical precedent in mind. According to Marks (2013), who surveys the literature on the negotiations of the Versailles Treaty, diplomats and politicians made numerous references to the Franco-Prussian War indemnity. The French would be intimately aware of the cost they bore which shows up in discussions from French archives at the time. The initial enforcement mechanism was different, but the value of the reparations was estimated to be payable by Germany, as indeed it had been for France. The difference was the additional war debts and C-bonds.

After Germany went into default on reparations in 1922, the Ruhr was invaded to enforce repayments. Out of the occupation came the Dawes Plan in 1924 to formalise the payment schedule (Yee 2020, p. 49; Schuker 1988 for a general overview). The Dawes Plan included a feature that gave commercial creditors preferential treatment to reparations and resulted in a debt-to-GDP ratio around 68 percent in 1925.¹⁸ Germany had a need to attract capital in the form of debt to finance its expenditures and reparations. Commercial international investors, particularly American investors, lent money to Germany which helped finance reparations. Capital outflows from Germany during the 1920s were significant, but was matched by external investments, which allowed Germany to keep rolling over debt at reasonable interest rates (Farquet 2019). By the end-1920s, the economy went into crisis and by 1931, U.S. President Hoover had initiated a moratorium on reparations payments after pressure from Germany. The moratorium was followed by a standstill and a negotiated end to reparations at the Lausanne Conference 1932 (see e.g., James 1986 for a detailed history of the political developments). Following the de facto cancellation of reparations, Germany started to default on its sovereign debt in 1933.¹⁹ Full capital controls were introduced in Germany in 1934 (Schuker 1988, p. 47-82). The role sovereign debt and enforcement of sovereign debt played is discussed further in chapter 4.

Debt levels for everyone coming out of WWI were large. Britain's debt was 144 percent of GDP and France's was 135 percent (Ritschl 2012a, p. 945-46). Even taking reparations into account, Germany's debt burden was comparable to that of other European nations. Regardless, it was a large reparation payment which required the issuance of bonds because not enough foreign currency was available and Germany ran persistent current account deficits throughout the 1920s (Figure 2.4). Investments were consistently higher than

¹⁸ Using the present value of the Dawes annuity, as per Ritschl (2013). See chapter 4 for details.

¹⁹ Chapter 4 details how the sovereign debt default occurred. This brief section is only a brief overview.

savings, even when reparations payments are netted out, and wage growth and expenditures consistently outpaced revenues.²⁰ The consistent deficit financing of the public sector meant the private sector was scarce for resources resulting in low and falling investments throughout the 1920s (James 1986, p. 110-61, 132-46).



Sources: Jones and Obstfeld (2001) online appendix; Ritschl (2012a, p. 953) for reparations figures. Replication file, *plot_sicag.m.*

Figure 2.4: German savings, investments, and current account (1925-33).

The cancellation of reparations and later sovereign default had wider implications for the issue of inter-Allied war debt following World War I. Italy had significant external debt to the U.S. and the U.K as it had borrowed money from the Allies. Italy received reparations from Germany, and it was understood the two were linked (Astore and Fratianni 2019, p. 200-10). Italy managed to get significant debt relief in 1926 but nonetheless defaulted in 1934 (Reinhart and Trebesch 2016a; Astore and Fratianni 2019). Until then, loans had been forthcoming—as they had been for Greece or China.

2.1.4. World War II reparations

Four countries paid reparations after World War II: Finland to the Soviets; Germany, Japan, and Italy to the Allies. The Peace Treaties of Paris of 1947 also specified reparations should be paid by Hungary, Romania, and Bulgaria, mainly to the Soviet Union. The payments were meant to be paid in kind (i.e., in non-monetary goods), but neither country was able to produce any goods of value. As the countries fell under the Soviet umbrella, reparations were

²⁰ There was a "general wage push," in the late 1920s in Germany (James 1986, p. 68). Chapter 4 discusses the economic implications of reparations in detail.

cancelled (Nevakivi 1996, p. 95-97).²¹ The reparations actually paid ranged from one percent (Italy) to four percent (Japan) but were largely offset by American economic assistance (DeLong and Eichengreen 1993). The reconstruction policy after World War II absorbed the lessons of Keynes (1919, 1929a) and the focus was on industrial disarmament, not punishment, to ensure the peace (Cohen 1967, p. 270). German reparations were in the form of explicit payments to Israel, indemnities to prisoners, indemnities for expropriated property, and other restitutions. All payments amounted to 5.2 billion U.S. dollar between 1953 and 1965, around three percent of 1960 output (Cohen 1967, p. 282-88).²² Italian reparations were paid in kind to Yugoslavia (125 million), Greece (105 million), the Soviet Union (100 million), Ethiopia (25 million), and Albania (5 million). An additional payment of 6 million in interest brought the total to 366 million U.S. dollar, with some minor payments to other countries (Cohen 1967, p. 272-73).

Japan was, like Germany, forced to dismantle its war industries in order not to pose a threat. The Japanese Peace Treaty of 1951 considered Japan did not have the capacity to pay. In the end, only minor transfers to poor Asian countries were made to Burma, Cambodia, Indonesia, Laos, Philippines, South Korea, Vietnam, and Thailand (ibid). In total, Japanese reparations in goods and money came to 1.5 billion U.S. dollar, or about four percent of GDP.

Finnish reparations were paid in kind (mainly in goods and timber) and were by far the largest as a share of the economy. They were paid primarily to the Soviet Union and the money-equivalent was around 20 percent of GDP (Pihkala 1999, p. 32). I return to Finnish reparations in more detail in the second paper (chapter 4). For the moment, suffice it to say that Finland had easy access to credit. Most of the goods were produced thanks to loans from abroad. As Figure 2.5 shows, internally generated financing was not available: the trade balance—like Germany 20 years earlier—was negative. On the contrary, Finland s level of savings increased dramatically, as did the level of domestic investments.²³

²¹ However, Kramer (2009) notes there was a large flow of money from the periphery to the centre in the years following World War II, regardless of whether the transfers were regarded as reparations.

²² GDP data is from World Bank Indicators. Germany also paid significant restitutions, largely domestically, under the Restitution Act, so the amounts here are specific to the period before 1965. East Germany is not included but paid substantial amounts.

²³ Note that the right-hand side of Figure 2.5 shows net goods exports, rather than current account because of unavailability of data.



Sources: Official Statistics of Finland; Pihkala (1999, p. 35). Replication file, plot_sicaf.m.

Figure 2.5: Finnish savings, investments, and net goods exports (1945-52).

The smaller World War II reparations were the only reparations not funded by debt (White 2001, p. 354-55). The reason was that sovereign debt was not needed to finance relatively minor liabilities. Reparations following World War II was modelled to not follow the issues of World War I. They were small in value and targeted specifically to deter industrialisation.

The post-war period did, however, include significant non-monetary transfers. Gimbel (1990) argues that the U.S. took reparations from Germany in the form of intellectual property. Patents and scientific know-how were transferred from Germany to the Allies, which included visits to Germany and the migration of scientists to especially the U.S. The value of the transfer is hard to estimate because it consisted both of people and information. O'Reagan (2019) shows the flow of information from Germany to the Allies in the post-war period was significant and had an impact on diplomacy, as well as industry and science. Fisch (1992) argues that the inability to obtain large reparations meant that the Soviet Union did so indirectly through Eastern Germany, although it does not show up as war reparations in the national account.²⁴ Finland alone followed the example of previous reparations and issued sizable amounts of sovereign debt to finance the payment.

²⁴ One curious side note is that in 1946, the U.S. offered France debt relief but with conditions: In three of every four weeks, French cinemas had to show American movies. They were allies, as such this is not considered reparations, but a condition for loans. After two years, the French reneged (Ulff-Møller 2001, p. 144).
2.1.5. Iraqi reparations after the Gulf War

The most recent war reparation— Iraqi payments after the Gulf War—is the longest lasting and most complicated. Yet it is insufficiently covered in the literature. It is the sole focus of the third paper (chapter 5). Early attempts include Morrison (1992) and Alnasrawi (1994) but most mention reparations as a side-note to other, Iraq-related research, such as Caron (2004) and Momani and Garrib (2010). Studies such as Chaney's (2008) that detail market reactions to Iraqi political developments from 2006 based on bond yields are impossible for earlier periods because of data gaps.

Iraqi reparations are the largest ever repaid, as a share of output. The reparations-to-GDP of over 400 percent in 1991 alone testifies to a total output collapse, but even in absolute terms the Iraqi reparation is large, at 52 billion U.S. dollars. Chapter 5, a key contribution of this thesis, provides a full historiography.

Two important points are worth mentioning now, however, to understand the uniqueness of the Iraqi case. First, the isolation of the Iraqi economy. Following the creation of the United Nations Compensation Commission to oversee reparations, Iraq was effectively shut out from the global economy. In the absence of any global relations, a two-currency system emerged (King 2004, p. 11-16). In 1993, it was announced the 25-Iraqi dinar note would be exchanged with locally printed notes. In southern Iraq—where Saddam Hussein was in charge—the exchange went through. In the Kurdish areas in northern Iraq, meanwhile, the old 'Swiss dinar' kept being used.²⁵ From 1993, the Swiss dinar had a fixed money supply (it had gone out of circulation) and no government backing. The exchange rate between the new Saddam dinars and the old Swiss dinars is shown in Figure 2.6. Inflation Provisional Authority (the temporary government set up by the U.S.) announced one Swiss dinar would be exchanged for 150 Saddam dinars. In ten years, a fixed-supply currency with no government backing had increased its value by 150 times compared to the official currency.

²⁵ The currency was called the 'Swiss Dinar' because the plates used to produce it were from Switzerland.



Source: Data from King (2004) shared with the author. Replication file, *plot_iraqcy.m.*

Figure 2.6: Iraqi dual-currency values (1998-2003).

The second major feature is the unprecedented legal tools used in the Iraqi restructuring. Iraqi oil assets abroad were immunized from creditor attachment as part of U.N. Resolution 1483 (2003b). No one had ever put a comparable blanket stay in place. The closest historical precedent was during the Iranian revolution in 1979, when Tehran repudiated all foreign debt and President Carter froze all Iranian assets in the U.S. in retaliation. There were subsequently 400 lawsuits against Iranian property (Christopher and Mosk 2007, p. 165-67). The executive branch of the U.S. government immunized certain assets based on national security interests, to ensure they could not be attached as judgments. As part of the negotiated settlement following the 1981 hostage crisis (the Algiers Accords), Iranian assets were unfrozen and all lawsuits dropped (Buchheit and Gulati: 2019, p. 6-7).²⁶ But even the earlier case does not come close to the Iraqi immunization case in scope and political significance.

This thesis presents the story for the first time, devoting to it a full chapter.

²⁶ It ended up in the Supreme Court, which sided with the Executive (Dames & Moore v Regan, 1981). In 1999, another case involving a Swiss company, Compagnie Noga, won a judgment against Russia in Swedish courts. After Russia's 1998 sovereign default, it stopped payments on a deal to Noga. The jurisdiction went through New York where Noga tried to seize assets related to uranium, stored in Kentucky, that Russia had given up as part of an arms deal. Uranium linked to the HEU Agreement was immunized by President Clinton (see Buchheit and Gulati 2019, p. 6; Timbie 2004, p. 183-84). Noga managed to seize less protected assets in France but not many other examples come close.

2.1.6. Common themes

The general perception since the German interwar default is that reparations are disastrous. Yet, they have mostly been repaid, despite many of them being significant in size. To compare how reparations have affected growth rates across, let us start by looking at long term real (inflation adjusted) growth rates, as measured by Bolt et al. (2018). Data for real GDP per capita is available for every episode mentioned in sections 2.1.1 to 2.1.5, except for Mexico and China. GDP growth needs to be detrended because it is the cyclical component of GDP growth that is of interest, which is found by log-quadratic detrending.²⁷ The choice of detrending method does not alter the results but is chosen for the general fit across the different countries studied. Similar results are obtained by log-linear detrending and HP(100) filter, as shown and explained in Appendix 4a (section 4.6).

An ordinary least squared (OLS) regression is estimated for the secular parameters *a*, *b*, and *c*

$$y_t = a + bt + ct^2 + \epsilon_t, \tag{2.1}$$

where y_t is real GDP per capita, the secular trend is $y_t^{secular}$, and the cyclical component $y_t^{cyclical}$, are defined as

$$\begin{split} y^{secular}_t &= a + bt + ct^2, \\ y^{cyclical}_t &= \epsilon_t. \end{split}$$

Data across France, Finland, Germany, Greece, Bulgaria, Italy, and Japan is available from 1870, although data for Bulgaria is less frequent before 1924 and has been interpolated before that. The result is plotted in Figure 2.7. On the left-hand side is the level of real GDP per capita y_t , while the right-hand side shows the cyclical component $y_t^{cyclical}$. The cyclical component is shown as percentage deviation from the secular trend (not shown).

²⁷ This is not to neglect structural changes from paying reparations, which can occur.



Source: Bolt et al. (2018). Replication file, lqtrend.m.

Figure 2.7: Long run secular and cyclical real GDP (1870-1960).

As it can be seen, real GDP growth is volatile. Changes in cyclical GDP in the countries studied is correlated, especially around the two world wars. The long run trends have the same direction of each country, but at different income levels it is hard to conclude anything. If we focus on the years following the first payment, a similar picture emerges. Figure 2.8 shows the cumulative change in detrended GDP after the first payment at t_0 to the left, and the year-on-year growth change to the right.



Source: Bolt et al. (2018). Note: Year in legend denotes to. Replication file, lqtrend_reps.m.

Figure 2.8: Change in detrended real GDP per capita (after first transfer).

The two German output collapses in the interwar period stand out and are shown twice (in blue), starting in 1922 and 1930, because of the magnitudes. The two contractions are comparable in size to recent defaults in emerging market economies (Arellano 2008). But

looking only at output growth is not enough, despite most sovereign debt models showing that default occurs during contractions. The second paper explores how the question of enforcement, willingness to pay, and the ability to roll over debt is important as well.

2.2. The transfer problem

In the international finance literature, reparations have mostly been studied as a transfer problem. The transfer problem originates with Mill (1844) and seeks to understand what, if any, consequences unilateral fiscal transfers have on savings and the current account (Obstfeld and Rogoff 1995, p. 1755-59). Reparations are one such transfer. The transmission mechanism is the level of interest rates and terms of trade, where the latter is defined as the price of exports in terms of imports. If the terms of trade improve, a country can buy more imports for the same amounts of exports.

The transfer problem states that a transfer is either mitigated or worsened by terms of trade movements. In several papers, Keynes (1929a, 1929b, 1929c) stated that reparations would have negative second-order effects. He suggested the debtor would experience a worsening of the terms of trade, due to low import and export elasticities. A large transfer of capital abroad puts downward pressure on the real exchange rate, as the reparation is paid. If import and export elasticities are low and not adjusting, the lower real exchange rate means that imports become relatively more expensive in terms of exports. On the contrary, Ohlin (1929a, 1929b) posited that a reparation would improve the terms of trade, because the debtor would have lower purchasing power. The lower purchasing power means less money spent on imports, which lowers their relative price. The adjustment in the relative price of nontraded goods means the debtor's terms of trade will improve to offset the capital flow, and the cost of the reparation would be the stipulated sum. The Keynes-Ohlin debate about German reparations thus came down to discussions about how the terms of trade reacted to a fiscal transfer. Keynes' (1919) critique of Versailles ended up as the theoretical framework for much of the debate.

The problem of transfers in high capital mobile economies was formalised in models in the same tradition as a standard part of open economy macroeconomics (Metzler 1942; Johnson 1955, 1956). Samuelson (1952, 1954) showed how Keynes' insights held *in theory*. In a competitive two-good, two-country model, the terms of trade will deteriorate if the debtor s marginal propensity to consume its export goods is larger than the recipient s. In other words, if the debtor s consumption basket, that is no longer purchased, is the same as what the creditor chooses to purchase, there is no transfer problem. But in any instance when preferences differ, the terms of trade of the debtor will deteriorate. As Keynes' views were formalised, the assumption underlying Samuelson's original analysis was that the current account balance would remain unchanged, i.e., that the trade balance would match the capital flow.²⁸ He was wrong. Machlup (1964) and Gavin (1992) noted that this did not match the evidence from French reparations after the Napoleonic Wars or the Franco-Prussian War indemnity; nor the German World War I reparation. Though war reparations were the origin of the Keynes-Ohlin debate, the subsequent literature has mostly ignored it. A deep theoretical literature has evolved, albeit one with little historical perspective to reparations.

The problem was that the prevalent static models did not incorporate the importance of the political economy in explaining economic performance, with full employment simply assumed to occur (Brakman and van Marrewijk 1998). Balogh and Graham (1979) first noted that if there was no active aggregate demand policy in the receiving country, the paying country would have to incur unemployment. Similarly, by changing preferences of substitution, the sign on the terms of trade adjustment could change (Djajic et al. 1998). The literature evolved towards more dynamic models of small open economies with Obstfeld and Rogoff (1995, 1996) using an intertemporal approach to the current account to show that a wealth transfer causes deterioration in the terms of trade.²⁹ It happens because the households in the recipient country choose to spend some of the financial gains on leisure, which lowers total output and raises prices. Brock (1996) viewed the transfer problem as fundamentally one of adjustments in the relative price of nontraded goods, allowing for borrowing in a small open economy setting. Building on the resource discovery literature (the 'Dutch disease'), he considered the transfer as a permanent increase in income in an economy facing fixed terms of trade. Cremers and Sen (2009) showed how impacts from an increase in world net wealth affect the terms of trade, but also raise welfare in both countries. Corsetti et al. (2013) accounted for product varieties in their study of the transfer in the context of the U.S. current account deficit. Most dynamic models of the terms of trade, such as Uribe and Schmitt-Grohé (2017), emphasize the difference between a permanent and temporary shock, with no long-run effect from the latter.

The level of debt influences at what rate countries can borrow. Countries borrow to smooth consumption at a rate that reflects the world risk free rate, plus a country premium that depends primarily on the debt stock. It matters because most countries that lose wars have no foreign assets, having previously sold them to pay for the war. It suggests that where

²⁸ Meaning that if the reparations payment is one billion, the capital account will see an outflow of one billion which will be matched by an inflow of one billion through the trade balance.

²⁹ Backus et al. (1994a, 1994b) developed the terms of trade modelling.

reparations are due, the transfer will be financed by debt or taxes. Without any foreign assets, gross debt becomes net assets. A higher level of net debt has been shown to empirically affect the real exchange rate (Lane and Milesi-Ferretti 2004). This in turn leads to a lower real exchange rate, with the adjustment coming through changes in the relative price of nontraded goods.³⁰

Some scholars have addressed the original empirical question of whether war reparations are worsened or mitigated through the terms of trade, but the studies are few and far between.

2.3. Sovereign debt

Sovereign borrowing by a polity in the form of marketable securities has existed since around 1000-1400 AD (Eichengreen et al. 2019, p. 8-12). Sovereign debt markets require tax revenues to base repayment on, which requires institutional credibility. Earlier borrowings were in the form of individual loans to sovereign rulers, but Eichengreen et al. show the necessary institutions required for a public debt market (well-defined city states and borders, accounting systems, contract laws, and creditors able to lend enough money) did not exist before 1000 AD. As institutional credibility increased in the first half of the second millennium, sovereign debt was increasingly used to finance wars. From the year 1650, large states also began to borrow to purchase other public goods than military spending. Aided by the rise of financial sectors and diversification of the investor base (to banks and individual investors), sovereign debt stocks rose from that time. British public debt-to-GDP was 190 percent in 1822 following the Napoleonic Wars while French public debt-to-GDP peaked at 96 percent in 1896 (ibid, p. 24). Large-scale sovereign borrowing to finance wars was common but so was subsequent repayment. France and Britain reduced their debt stocks in the nineteenth century by running large primary balance surpluses, essentially smoothing out tax rates by paying for wars out of future taxes financed by borrowing.³¹

In the twentieth century, sovereign debt stocks in advanced countries peaked around the two world wars, because of increased public spending and low growth (ibid, p. 29). Sovereign debt before the 1930s was used to smooth taxes but not to manage the business cycle. It was because before Keynes (1936) the prevailing theory was that any increase in government spending would be offset by higher savings elsewhere, as households anticipate higher taxes in the future to pay for the spending. The idea originated with Ricardo (1821) and is now

³⁰ Broner et al. (2019) show that the distribution of debt matters, with significant crowding out effects from high domestic ownership of government debt.

³¹ The next section deals with sovereign defaults and when countries do not repay.

known as Ricardian equivalence. Barro (1974) reintroduced the idea, which contends that there is no difference between taxes and sovereign debt, and that as such, government spending financed by debt has no expansionary effect.³² The government might nevertheless see itself running higher than optimal deficits because of political or institutional factors (Alesina and Tabellini 1990) or to smooth out tax rates (Barro 1979).³³ It was mainly for those reasons that sovereign debt was used to finance public spending until Keynes. The Great Depression changed the argument around fiscal policy. Because output could be constrained by low demand, deficit spending increasingly had a role in business cycle management. It meant sovereign debt was used for more than smoothing out taxes.

A popular interpretation of Keynes' ideas is found in Hicks (1937). He suggested, in the (now-called) IS-LM model, that the *General Theory* argument for expansionary fiscal policy applied under very specific conditions: A liquidity trap where interest rates hit the zero-lower bound. At the zero-lower bound for interest rates, monetary policy is unable to return the economy to full employment.³⁴ In such a scenario, expansionary fiscal policy can return the economy to its capacity, as Samuelson (1947, 1948) popularised in economic textbooks. Increased public spending can increase the overall level of income under the right conditions because of positive fiscal multiplier effects. Recent evidence, from the financial crisis of 2008, show that countries that tightened fiscal policy experienced negative output shocks (Blanchard and Leigh 2013).³⁵ Financing for expansionary fiscal policy can come either from the issuance of sovereign debt or money printing. As a result, throughout the twentieth century, sovereign debt management became an important tool managing the political economy. But, as Bianchi et al. (2019) show, the presence of sovereign debt risk can complicate matters because increased spending can lead to sovereign debt crises.

Especially in emerging markets, governments tread a delicate line balancing austerity and stimulus because they can lose market access easily. The countercyclicality of government spending is only observed in developed countries, while it is non-cyclical in emerging markets (Uribe and Schmitt-Grohé 2017, p. 9). Emerging market governments have historically tried to avoid expansionary fiscal policy in a downturn, but austerity can exacerbate output losses. The risk is that high debt levels might make it hard to service the debt. It is easier to borrow

³² Barro made no reference to Ricardo, which Buchanan (1976) noted in his rebuttal two years later.

³³ Alesina and Passalacqua (2016) provides an overview of the literature on why governments might deviate from the "optimal" path of government debt.

³⁴ Hicks' analysis differs from the *General Theory* (see e.g., Keynes 1937, p. 222-23) but the important point for this section is that deficit spending (and therefore implicitly sovereign debt financing) has a role in managing the business cycle (for a history of Keynes and Keynesian thought, see e.g. Carter 2020).

³⁵ Japanese interest rates hit the zero-lower bound in the 1990s (Krugman 1998), as did most of the developed world in 2008 (e.g., Bernanke 2017)

money if you start out with low debt-to-GDP ratios, as shown by Romer and Romer (2019), which is intuitive. The risk of facing a credit constraint and sudden stop in credit availability is therefore juxtaposed with the benefits from smoothing macroeconomic costs, like countries facing reparations.

The question to ask, then, is whether the benefits of borrowing are worth the costs of incurring debt. History shows that most countries facing large reparations payments have used sovereign debt markets to smooth the costs over time. Only the minor reparations following World War II in this study were repaid from current taxes. Sovereign debt markets have changed in the last 200 years, but the use and frequency of public borrowing has been ever present. As have sovereign debt defaults. Because if countries borrow, they must also consider if they can or want to pay back the loans. It is the subject of sovereign debt defaults I turn to next.

2.4. Sovereign debt defaults

A sovereign debt default is in essence a broken promise, as suggested by Ams et al. (2019). But it can be surprisingly hard to define. The reason is that sovereign defaults can take many forms. Some events of default, such as not repaying a loan due, are easily identified by debt contracts. But a sovereign default can be economically costly without breaking any debt contracts. An example is a forced renegotiation and restructuring of a debt stock that is undertaken while the debt is still being serviced.

The first thing to do is therefore to define the different types of sovereign defaults. Defaults fall into one of three categories.³⁶ The first are minor *technical defaults*. They include covenant breaches or administrative errors, that are broadly ignored by creditors and third parties (such as rating agencies). This first category plays a minor role in sovereign debt management. The second category are *contractual events of default*, specified in legal contracts and defined as defaults by rating agencies. An example is failure to pay interest or principal after a standard 30-day grace period. Contractual defaults include both negotiated defaults (also called a 'soft default') where payments are missed, as well unilateral defaults ('hard default'). The third and final category are *substantial defaults*, which are not contractual defaults but have the same economic effects. Examples of the latter include distressed debt exchanges, the use of Collective Action Clauses ("CACs") to renegotiate debt contracts, or a restructuring by a change to the local law.

³⁶ This is based on the discussions and definitions in Ams et al. (2019).

The type of default does not necessarily say anything about why a sovereign might default (unwillingness or inability to pay), the severity of a default (macroeconomic costs, market exclusion, trading restrictions), how the process of a default occurs (negotiated or unilateral), or what the outcome is (repudiation, debt restructuring, financial autarky). Each of these are discussed below.

2.4.1.When to default

Countries have historically mostly paid back their sovereign debt. It has occurred even though creditors have few remedies to enforce repayment should the debtor choose to default (Gelpern 2016). Countries can avoid attachment of their sovereign assets in a bankruptcy, unlike private debtors, because there is no bankruptcy regime for sovereign states. Rather, it is a negotiation between a sovereign state and other sovereign or private parties. Courts in a creditor country, say the U.S., can tell the debtor to pay but have no way of forcing repayment.³⁷ Historically, military force has therefore often been used (or threatened) to ensure payments, especially before World War I. Following the interwar years, enforcement of debt contracts by military power became less common (Mitchener and Weidenmier 2010). Countries might in theory only pay back war loans if they win, as suggested by Eichengreen (1990), but in practice political uncertainty, international monetary conditions (Ghulam and Derber 2018) or a rise in political popularity (Herrera et al. 2020) are better predictors for default. Politicians are influenced by local factors in deciding when and how to default. The paradox of why countries repay sovereign debt, despite a lack of enforcement options, is prominent in the literature on sovereign debt.

Three strands of the literature have come up with explanations. The first originates with Eaton and Gersovitz (1981). They suggest that countries repay their debt because they want to maintain their reputation as a good credit. They offer no distinction between types of default, and a missed coupon payment will have the same effect as a full default. Any sovereign default renders a country unable to borrow again because no one wants to lend it money. Because the choice is based on debt incentives, Eaton et al. (1986) proposed the theory of international lending should concern itself with whether the borrower is likely to repay. The second strand suggests that countries repay sovereign debt to avoid facing economic sanctions in the event of default (Bulow and Rogoff 1989a, 1989b). Unlike in the Eaton and Gersovitz framework, legal considerations play a role as debt renegotiations and

³⁷ There are exceptions provided by a global financial system. These are discussed in Section 2.4.4.

partial defaults can occur. The sanctions literature makes explicit the assumption that countries in default must have no ability to invest or purchase insurance contracts abroad. If the country can purchase cash-in-advance abroad, the reputational model breaks down. Creditors have certain financial remedies to confiscate financial assets and seize exports to incentivise payment. The definition of default is more nuanced than in the reputational strand, but the approach is a bit less common in quantitative studies of sovereign debt, as discussed below.³⁸ The third strand originates with Grossman and van Huyck (1988). They show that defaults are more likely if the state of the world is bad, which they define as excusable defaults. Inexcusable defaults occur when there is no negative exogenous shock. It is, however, quite hard to distinguish between excusable and inexcusable defaults in practice, even though sovereign defaults tend to come in waves and clusters. Actual debt issuances by governments have almost exclusively come in the form of fixed, non-state contingent debt, despite theoretical economic benefits of issuing state-contingent debt (e.g., Krugman 1988). If a debt restructuring imposes too harsh conditions on the debtor country, the total resources available to service the debt might decrease as a result.³⁹

In the last 200 years, many sovereign defaults have been caused by a variety of external factors. Sturzenegger and Zettelmeyer (2006, p. 6) point to worsening terms of trade, recessions in creditor countries, increases in interest rates, and a crisis in one debtor country that spreads to other debtor countries. Sovereign defaults through the 1980s and 1990s exhibited several common characteristics as well: output contractions, interest rate spikes, and a deteriorating current account. Aguiar and Gopinath (2006) and Arellano (2008) used these insights to build on Eaton and Gersovitz' framework to create a formalised sovereign debt model. The main feature was that countries default in bad times when incentives for repayment of non-contingent debt is lowest. Mendoza and Yue (2012) provide a general equilibrium model with endogenized output costs, where imports require financing and a sovereign default force the country to use suboptimal inputs because no such financing is possible from borrowing. The model has been extended to better reflect the data by several authors. Hatchondo et al. (2009) and Chatterjee and Eyigungor (2012) include long-duration bonds, rather than the single-bond framework of earlier studies, while Dvorkin et al. (2021) add maturity extension as an option for countries in a restructuring. They show that because income recovers from the time of default to the restructuring, it often makes sense for countries to negotiate a maturity extension rather than just haircuts to nominal debt.

³⁸ There are many exceptions, e.g., Asonuma and Trebesch (2016).

³⁹ The same is the case for war reparations. If too large a sum is imposed, the chance of repayment goes down because it can create economic and political instability.

Na et al. (2018) show that sovereign defaults are typically accompanied by exchange rate devaluations, which occurs to adjust the real wage downwards. A default frees up domestic capacity away from debt service, while a devaluation lowers the unemployment rate by adjusting the relative real wage. In this model, a capable central bank can therefore isolate an external crisis so that it does not spread to the domestic sector by devaluing the currency. The type of framework became the literature standard for models of the Eaton-Gersovitz tradition. A sovereign default occurs when the cost of repaying debt is larger than the benefits from continued market access.

2.4.2. Frequency of defaults

In the last sixty years, more than half of all nations have defaulted in one way or another. In the last 200 years, the number of defaults is higher (Beers and Mavalwalla 2018), as shown in Figure 2.9. The figure shows the percentage of sovereign nations in default at any point in time since 1800. The blue line shows the number of defaults measured by their contribution to world output. The orange line is the unweighted percentage of nations in default at any time. The blue line is interpreted as follows: if, hypothetically, the U.S. was half of the world economy, and only the U.S. was in default (all other nations were not in default), then the blue line would show 50 percent. Over the last 200 years, at any point in time, on average about 20 percent of nations are in default or undergoing a restructuring. The number falls to seven percent if measured by output, with considerable parts of the world s nations in default during the Great Depression.



Source: Reinhart and Rogoff (2009) online appendix. Replication file, plot_ltdefaults.m.

Figure 2.9: Countries in default (1800-2020).

Defaults on reparations or reparations-linked sovereign debt are rare. But, as Figure 2.10 shows, sovereign defaults are not. The yellow rectangle box in Figure 2.9 denotes reparations-related defaults measured by output. The yellow box is only the Germany default in the 1930s, and Germany was about five percent of the world economy at the time. In general, post-war periods have rarely resulted in sovereign defaults. It is the case even as countries are strained for economic resources (Shea and Poast 2018). The sovereign debt literature has tended to focus on more recent defaults. The historical studies tend to compare many events throughout history (e.g., Reinhart and Rogoff 2009 or Tomz and Wright 2013).

2.4.3.How to default

Countries can default in many ways. The type of default a country engages in depends on the debt instrument as well as its creditors. Different types of default range from full repudiations through to unilateral or negotiated defaults to minor technical defaults. Defaults can either be partial or on the full debt stock, as well as on domestic debt or on external debt. Creditors can broadly be defined as belonging to either multilateral official creditors (such as the IMF, the World Bank, or regional development banks), bilateral official creditors (other countries), or commercial private creditors.⁴⁰ Debtors can discriminate by defaulting selectively on some creditors or on some debt instruments. This section gives a brief overview of the myriad of complexities that sovereign defaults can entail.

The doctrine of state succession says that successive governments must honour previous regimes' debt, as a matter of public international law. A new government inherits both the assets and liabilities of their predecessor, regardless of differing political philosophy. This historical norm of continuous repayment by states is well-covered in Lienau (2014) and Roos (2019). The most drastic sovereign default is a full repudiation of debt, but it is rare in modern times. Repudiation of debt is when a country says that its debt is *odious*. Odious debt would be an exception to state succession, were it to be recognised in international law (Jayachandran and Kremer 2006).⁴¹ The doctrine of odious debt states that if debt was issued with no benefit and no consent of the people, and the creditors knew it at the time, then a new government should not be responsible for the old regime's debt. Repudiation of debt has occurred throughout history, most famously after the Russian Revolution in 1918, but recent invocations of odious debt have been rare.⁴²

⁴⁰ The breakdown of creditors and types of defaults follow Ams et al. (2019) and Buchheit et al. (2019).

⁴¹ There is an argument by King (2016) that the doctrine of odious debt already exists in international law, but it has never been used in practice.

⁴² Exceptions include Ecuador in 2008 and the Greek Parliament's Truth Committee on Public Debt.

Much more normal are unilateral or negotiated defaults, which can both involve a debt restructuring later. The terms "hard" and "soft" defaults are hard to define. A hard or unilateral default generally means a payments default combined with a refusal to negotiate with its creditors. A unilateral default often sees the debtor extend a restructuring offer but not in good faith. A "soft" or negotiated default might not constitute a legal default, as interest rate payments might be made during the negotiation process. Soft defaults might therefore fall under the substantial default default, while the debtor sees unfriendly creditors. As Ams et al. (2019) write, most defaults fall somewhere in the middle. In the last 200 years, the median haircut in sovereign restructurings is below 50 percent, as shown by Meyer et al. (2019).

The actual event of default can take several forms. Most common is a *payment default*, where the debtor fails to make interest or principal payments. The country can claim insolvency or illiquidity but decides not to pay. Unlike in repudiations, the country does not dispute the validity of the debt but rather decides not to pay for other reasons. A country can also choose to invoke a moratorium, where a legal act in the debtor country suspends payment. In a moratorium, if the creditor agrees, it can negotiate that it does not constitute a payment default (which makes it a negotiated payment suspension). A *covenant default* occurs when the debtor breaches a debt contract. Examples include subordination, false representation of data, or lack of authority to borrow at the time of the contract. Cross default is when a default on one instrument triggers a default on another (related) debt instrument. Another recent type of default is a *credit default swap credit event*, as defined by derivatives contracts. CDS was invented in the 1990s and pays out the difference between the principal and the recovery value. A credit event can be defined as all three types of default (technical, contractual, or substantial) but is of more interest to investors in derivatives markets, and not to the sovereign itself. Finally, *policy-related defaults* are linked to official borrowing and is usually bespoke. They are more common in corporate borrowing, but can include maximum debt-ratios, sanctions, or ineligibility to borrow from the IMF.

The different types of default can affect different instruments and creditors. The most common distinction is whether the default occurs on domestic or external debt. Local debt and external debt can either differ because it is different currencies (see e.g., Ottonello and Perez 2019) or because it is governed by different law (see e.g., Buchheit and Gulati 2017). A restructuring on local law bonds is easier because the law can be changed by the government. When external debt is governed by foreign law, such as New York law, then

the jurisdiction for creditor lawsuits is in a foreign country (the topic is explored in chapter 5.) Two-thirds of total outstanding debt since 1990 has been local debt (Reinhart and Rogoff 2011a, p. 322) but since reparations were mostly paid in hard currency, the debt raised to pay was mostly in foreign currency.

Default on debt to multilateral official creditors is the rarest because they often have preferred creditor status. It means their debt are senior to other debt. Especially debt to the IMF is known to be senior because it provides bridge loans if a country experiences a sudden stop (see next section for details). The World Bank and the regional development banks also have senior status, although sovereigns do default on multilateral official creditors sometimes. War reparations are most alike senior, multilateral official debt, except with the added feature that it is often enforced militarily. Sovereign defaults on these types of loans and creditors are the rarest, even if the seniority is not necessarily legally enforced or written in debt contracts.

Once the debtor has defaulted, creditors have certain actions available to them, although the specifics depend on the debt contracts. Most sovereign bonds include acceleration clauses, whereby creditors can demand immediate repayment of the remaining principal if a country defaults (see e.g., Buchheit and Gulati 2002). It is common that 25 percent of bond holders can accelerate a bond in the event of default and that a majority can reverse the decision if the country starts repaying again. If the default occurs on debt to multilateral creditors, one option is to suspend or cancel further disbursements. If the loan documents state so, it can also result in a refund to the multilateral creditors, but that is specific to the creditor group. Loan agreements or sovereign bonds can be modified if they include Collective Action Clauses ("CACs"). CACs offer a way to restructure sovereign bonds if a stated majority of creditors agree and are included in many new bond issues. They force the remaining creditors to participate in a restructuring and eliminate any holdouts. The early generation of CACs had bond-by-bond votes. Newer CACs vote on the entire debt stock (or across multiple bonds).

Countries can choose to discriminate on who it wants to default on. Sturzenegger and Zettelmeyer (2008) found domestic and foreign holders of debt were treated similarly, but that different debt instruments were not treated equally. Sovereign debt restructurings undertaken at the Paris Club (see section 2.4.5) require comparable treatment of all creditors, but it has not always happened. Countries can default in full on all debt instruments, or partially on some. Countries also look at who owns the debt, especially if it is the domestic banking sector. It might make sense to spare some debt instruments if a default creates a financial crisis (the so-called *doom-loop* that was a problem during the Eurozone crisis).

Seniority in sovereign debt is therefore complicated. Schlegl et al. (2019) show that since at least 1979, private creditors have been de facto senior to bilateral creditors, while multilateral creditors are senior to both. Banks are generally junior to bilateral creditors and are only ahead of trade creditors. The difference between how creditors are treated is likely to do with the cost of default and enforcement of debt claims by creditor group. War reparations as sovereign liabilities are therefore senior to other claims because they were almost always enforced by occupation, making it difficult if not impossible to default on them.

2.4.4.Costs of default

The costs of a sovereign debt default depend on the macroeconomic conditions and what type of default the country engages in. The costs to the country can come from lower economic growth, spill over effects from financial markets, exclusion from sovereign debt markets, or disruption to international trade. The cost to creditors is simply that they will not receive all or some of their investment (loan) back.

The main explanation in the literature for why countries pay back their sovereign debt is that a default is costly for economic growth. Most sovereign debt models therefore assume a direct loss of output because of default, in addition to the inability of smoothing consumption by borrowing. The reason is that most sovereign debt defaults occur when economic growth drops. The highest estimate of lost output from default is found in De Paoli et al. (2009). They suggest that the median debt crisis lasts ten years and carries a loss of output of over five percent per year. Furceri and Zdzienicka (2012) find that output is ten percent lower eight years after a sovereign default. The average cumulative output decline in the three years before a default is similarly high. Sosa-Padilla (2018, p. 97-99) finds the decline to be around seven percent, while Reinhart and Rogoff (2009, p. 129-30) find it is around eight percent. Despite the high output costs around default, there are some arguments against defaults causing output to fall. One is that sovereign defaults generally mark the trough of a contraction, as suggested by Yeyati and Panizza (2011). The second is the need to differentiate between the types of default. Trebesch and Zabel (2017) show that hard defaults are followed by large output collapses, while negotiated (soft) defaults often have a limited impact on growth.

Another reason that the cost of default can be real and long-lasting is if the country will have to pay more to borrow in the future. Cruces and Trebesch (2013) find evidence of this. They show that defaulting countries pay a higher interest rate on subsequently issued bonds. The higher interest rate compensates for higher default because countries that default once are more likely to do it again. A related channel, albeit a relatively recent phenomenon, is that defaulters carry lower credit ratings (Ams et al. 2019). Lower credit ratings generally increase the risk premium that investors require to lend to a country. A default therefore increases long-term costs of issuing sovereign debt.

A sovereign default can also impact participation in international trade, although the empirical evidence is mixed at best. One theory was that because creditors would be less likely to trade with a defaulter, or indeed impose sanctions, international trade would be negatively affected by a default. Martinez and Sandleris (2011) show that trade sanctions do not account for any reduction in bilateral trade following a default, because the decline in bilateral trade can be accounted for by the overall reduction in economic activity. The data therefore seems to suggest that there is no causal effect from trade sanctions. One interpretation of the Martinez and Sandleris' results, offered by Uribe and Schmitt-Grohé (2017), is that trade sanctions have no effect in the short run but do have an effect in the long run. They show that if the time horizon is 15 years, then there is a cost to defaulting that is noticeable in international trade.

Another cost of default comes from potential collateral damage to the economy and the country's economic and political institutions. If a sovereign debt crisis coincides with a banking crisis, economic costs triple compared to a sovereign debt crisis with no banking crisis (e.g., Reinhart and Rogoff 2011a or Wright 2007). Both Hébert and Schreger (2017) and Andrade and Chhaochharia (2018) show that default costs are imputable to disruptions in the financial market intermediation of credit. They measure the cost through stock market declines and exchange rate volatility, where higher probability of default cause stock markets to decline and exchange rates to depreciate. Exchange rate depreciation is a common feature and often coincides with sovereign defaults (see chapter 4).

Balance of payments crises models show how countries can be forced to devalue their currency by speculative attack. The literature that originates with Calvo (1988) explains how sovereign debt crises are sometimes accompanied by a currency crisis.⁴³ Calvo posits that a devaluation can be considered an implicit default, albeit on locally denominated debt. The mechanism through which the implicit default happens is that a country over-extends itself

⁴³ More recent contributions are Da-Rocha et al. (2013) or Corsetti and Dedola (2016).

financially. The policy leads to capital outflows, as investors expect economic conditions to be unsustainable. The unsustainable policies can either be fiscal policies (Krugman 1979) or happen through balance-sheet effects (Corsetti et al. 1999a, 1999b; Kaminsky and Reinhart 1999; or Burnside et al. 2004). In the latter type crises (balance-sheet effects), banking crises precede currency crises because firms or households hold assets in local currency and have debt in hard currency (dollars or euros). If the currency falls, then liabilities increase while assets stay the same, which create imbalances. Devaluations do not mark the trough in output because a devaluation exacerbates the imbalances.

A final cost of default is a direct cost that stem from lawsuits and holdouts creditors. If a country defaults but does not restructure its debt with all its creditors, holdout creditors might engage in legal action. A cost might be that courts in third-party jurisdictions agree with the creditors. An example could be an attempt to block payments to other creditors (such as already restructured loans), as happened in the case of Argentina (see section 5.2). Legal disputes in sovereign debt restructurings have become frequent throughout the 1990s and early 2000s because most bonds are issued under New York or English Law jurisdiction (Schumacher et al. 2018). The direct and indirect legal consequences of a sovereign default are therefore increasingly high.

Anil et al. (2018) found that the higher the share of senior bonds in the debt stock, the higher the likelihood of repayment. The reason is that governments are committed to repay because the cost of default increases with the stock of senior debt. Reparations-linked debt is in most cases considered senior and enforceable, so the cost of default is likely higher than in many other cases of sovereign defaults.

2.4.5.Sovereign debt restructurings

Sovereign debt defaults often, although not always, result in a restructuring of the debt stock. The outcome of a sovereign debt restructuring can be a reduction of the debt stock in nominal or net present value terms. Nominal reduction in the debt stock is through nominal debt haircuts, while a reduction in the net present value of liabilities can occur either through maturity extensions or coupon reductions.

Before World War I, sovereign defaults often resulted in blockades or sanctions (Mitchener and Weidenmier 2010). Famous banking houses played an important role in preventing full scale defaults, acting as a liquidity provider for countries that found themselves in a liquidity crisis (Flandreau and Flores 2012). But countries could not be forced to restructure through legal means, and often the only remedy was force (Gelpern 2005, p.

396-97). This slowly changed throughout the twentieth century, but it was not until the end of World War II that restructurings became formal affairs with a playbook (Sgard 2016).⁴⁴ In the aftermath of World War II, several institutions were set up to manage the new world order, of which two dealt with sovereign debt: the IMF founded in 1944 and the Paris Club in 1956. Since then, three types of negotiation have occurred frequently during defaults. One, countries negotiate with the IMF to provide balance-of-payment funding for the short-term. Two, there are negotiations with official creditors to reduce the debt burden at the Paris Club. Three, private creditors engage to restructure their claims, often via the London Club (Rieffel 1985, p. 2). The three negotiations can happen simultaneously or in steps and are outlined below.

The IMF was set up to provide help to countries facing balance of payments crises. The Bretton Woods system, meant to govern global economics affairs, was designed to avoid competitive devaluations (Boughton 2004, p. 4-7). The lessons from German reparations and the Great Depression were institutionalised into the Fund, in a framework its creators hoped would avoid autarky, protectionism, competitive devaluations, and would also foster economic growth. The U.S. would return to the gold standard, while all other currencies would be pegged to the dollar (and gold). The IMF would govern the system and provide short-term lending for balance of payments adjustments (Bordo and James 2000). IMF lending increased throughout the decades, as debt crises occurred more frequently in emerging markets.⁴⁵ The debt crises of the 1980s, the Mexican (tequila) crisis in 1994-95, the Russian default in 1998, and the Argentinian default in 2001 all involved the Fund (Orastean 2014). As crises changed—from currency and convertibility crises in the Bretton Woods era, to sovereign debt and financial crises from the 1980s on—the IMF adapted. It increasingly started to offer large loans and helped facilitate sovereign restructurings (Reinhart and Trebesch 2016b).

⁴⁴ Formal in the sense of recurring institutions involved; not as in Chapter 11 for corporations.

⁴⁵ For a general history of the IMF since the fall of the Berlin Wall, see Boughton (2012).



Sources: Cheng et al. (2018, p.184) online appendix with added restructurings from 2020 from the Paris Club (30 in total following the Covid-19 crisis, most of which are suspension of repayments). Replication file, *plot_pc.m.*

Figure 2.10: Paris Club restructurings (1956-2020).

The Paris Club is an informal group of 22 official creditors that has negotiated 463 restructurings with 96 countries between its founding in 1956 and September 2020.⁴⁶ The Club has been housed at the French Treasury in Paris since the 1970s.⁴⁷ The Paris Club has a set of procedures for countries to negotiate debt restructuring, where participants vary depending on the creditors (Rieffel 1985, p. 3). Restructuring of external debt by official creditors are more common than with private creditors, with several countries recurring as defaulters (Das et al. 2012). Countries needing assistance can contact the Paris Club to start negotiations, but a prerequisite for engaging in Paris Club talks is an IMF Stand-By Agreement, to provide short-term financing. The Paris Club works on five principles (Cheng et al. 2018, p. 183):

- 1. Solidarity, meaning the members of the Club act as one creditor (no side-deals);
- 2. Consensus, i.e., there is consensus on the restructuring offer;
- 3. Conditionality, i.e., a deal is conditional on the terms of IMF programmes;
- 4. No boilerplate terms, with each restructuring based on its merits and needs; and
- 5. Comparability of treatment for non-Paris Club creditors.

⁴⁶ http://www.clubdeparis.org/en (accessed 5 September 2020).

⁴⁷ There were discussions in the early days about moving the operation to the IMF or the World Bank, but the French prevailed (Rieffel 1985, p. 23-26).

Initially, only countries close to default could be considered ("imminent default rule"), and the Paris Club was a last resort (Rieffel 1985, p. 3-7). From 1956 to 1987, countries could only receive flow treatment, i.e., rescheduling maturities and changing coupons, with no nominal haircuts. The Paris Club changed the rules allowing for stock treatment of debt in 1994 (Naples Terms). It allowed for debt stock relief for highly indebted countries with no imminent default in 1996, while the 2003 Evian Approach offered stock and flow treatment to all countries. The first use of the Evian Approach was for the Iraqi restructuring (ibid, p. 10). The changing governing structure meant the Paris Club was used frequently from the late 1980s. The change in Club principles coincided with an increase in sovereign debt restructurings in the 1980s (ibid, p. 7-16).

In the 1970s, the London Club was formed to deal with commercial restructurings (Rieffel 2003). It is like the Paris Club, but with a broader scope. The London Club also has a set of procedures but for a group of private creditors. Early on it consisted mostly of commercial banks and it is more flexible than the Paris Club (Rieffel 1985, p. 22-23). No IMF Stand-By Agreement is necessary to deal with the London Club; terms are flexible; and the debt relief can be done pre-emptively. The loan providers of external private debt have historically been commercial banks but as the Bretton Woods system collapsed, new players emerged. Creditors suddenly consisted of hedge funds, asset managers, investment banks, trade creditors, state-owned enterprises, contractors, and suppliers. They could hold a variety of different claims: bonds, loans, notes, bills, or trade credits. Some claims were not even against the debtor, such as credit default swaps. These changes made it hard to find one creditor committee to represent the interests of all the creditors, as they were not necessarily aligned.

All restructurings include a power struggle between debtor and creditors. U.S. policy has consistently been in favour of negotiated settlements, with neither debtor nor creditor obtaining structural leverage (Buchheit and Gulati 2019).⁴⁸ Until the late 1980s, creditors had no legal remedies to ensure payments. This changed in the 1990s. In the case of the Argentine restructuring, creditors forced Argentina out of global financial markets through a series of legal victories in New York courts (ibid, p. 8-10). The boilerplate legal prospectus used in most debt contracts included a *pari passu* clause, ensuring equitable payment. Restructurings imply exchanging old claims for new instruments. The rise of 'vulture fund' creditors meant the rise of holdouts (Fang et al. 2020). These holdouts sued for *pari passu* payments with the new, restructured bonds. The holdouts won (Buchheit and Gulati 2017). Because of the

⁴⁸ See e.g., brief for the U.S. as Amicus Curiae, NML Capital Ltd v Republic of Argentina, 2012, WL 1150791.

globalisation of financial markets, a legal victory in one major financial centre can cut of market access worldwide. Argentina could not pay interest on any of its bonds until it paid off the old holdouts. Creditors thus gained one way of enforcing sovereign debt, hitherto impossible. The story of restructurings is increasingly one of creditors having remedies not previously available (Schumacher et al. 2018). The issue of legal enforcement of debt contracts is further exploited in chapter 5.

2.5. Methodology

The methodological choice for each of the three papers is different, drawing on the best from both economics and history.

In the first paper, I use a small open economy dynamic stochastic general equilibrium (DSGE) model to imply an impulse response from the terms of trade shock. The model is a centralised version of the economy that aims to capture the movement in the trade balance. The point of a stylised model is to help explain the economic reaction from a shock to the economy. By using such a model, I can formalise the economic intuition and test the prediction against the (limited) economic time-series available. DSGE models have their limitations and have come under criticism because of their inadequacy in responding to the financial crisis in 2008. Simpler models leave out the complexities of the economic system, but often more complex models fail to predict key macroeconomic variables (Uribe and Schmitt-Grohé 2017, p. 256-86). That purpose of the first paper is to understand what the economic consequences of the reparations-induced terms of trade shock were. A historical narrative approach already exists in the literature but does not set up a formalised framework. The DSGE model does not provide all the answers, of course, but is an analytical way of thinking through a transfer's likely transmission mechanisms.

The model is chosen to take data limitations into account. Medium-to-large scale models are impractical because they would require robust inputs that are unavailable, including granular data on prices, interest rates, sector and labour compositions of the economy, and variances to shocks. It would require monthly or, at least, quarterly data rather than the yearly data available. Medium-to-large scale models like the New York Fed s include several shocks unavailable in simpler models, such as a credit spread shock, but it would be unrealistic to specify it for an economy in the 1810s.⁴⁹ A DSGE model in the style of Uribe and Schmitt-Grohé 2017, p. 73-90) but with a terms of trade shock taking the place of the standard

⁴⁹ The New York Fed (Del Negro et al. 2013) uses a medium-to-large-scale DSGE model in the Smets and Wouters (2007) and Christiano et al. (2005) style, which includes financial frictions and credit shocks as per Bernanke et al. (1999).

productivity shock is therefore preferred. It gives predictions for output, consumption, investments, and the trade balance, which can be tested against historical data I collected.

In the second paper, the model must likewise be able to answer the research question: why has only Germany defaulted on reparations? The framework is a sovereign debt model like that of Na et al. (2018), where default and devaluation occur simultaneously. It quantifies the gains from continued market access and compares it to the cost of repaying debt. The methodology creates an optimal default policy for the government, which can be compared to historical reparations. The idea is to quantify the benefits of being able to borrow on sovereign debt markets and compare it to the costs of repaying debt. The macroeconomic history is then compared to the model prediction. The importance of enforcement of sovereign debt is inferred as macroeconomic characteristics are similar for defaulters and non-defaulters alike.

The model follows the real business cycle models, with the debt stock considered external rather than local. Reparations were financed largely by debt denominated in foreign currency, and the real economy is therefore more important than suggested in Calvo's models (see section 2.3). Obviously, every model has its limitations: This one has no explicit financial sector. Sosa-Padilla (2018), for instance, estimates a standard sovereign debt model, but includes bankers as the transmission shock to the real economy. Such a model has several useful assumptions for more contemporary studies, but those make it less useful for historical comparisons. The main feature is that defaults and banking crises happen simultaneously, where the transmission mechanism is via the financial system. A default causes a loss on banks' balance sheets, which in turn tightens lending standards. While still empirically true, in earlier periods the financial sector was simply smaller, and the financial sector is therefore left out.

The third paper uses archival and oral sources to write the history of Iraqi debt. The paper begins in 1979 as Saddam Hussein took power. It uses primary and secondary sources to trace the build-up of debt throughout the Iran-Iraq War (1980-88). Primary sources are mostly government reports, press releases, official documents, laws, resolutions, and annual reports of creditors. The second half of the paper uses oral history and primary sources to put together the history of the restructuring as it occurred from 2003 to 2006. I conducted interviews with key players of the restructuring. The interviews included U.S. and U.K. government officials, lawyers for the Iraqi government, and the bankers involved. Models such as the ones used in the first two papers require data. The third paper pulls together this data for Iraq, hopefully providing a wealth of information for future studies.

The combined methodology of the three papers allows for an investigation of reparations and the role of sovereign debt across time. It enhances the knowledge of known cases (first paper), reinterprets past cases (second paper), and tells a new story with new evidence (third paper), using a mix of economic and historical methodologies.

Chapter 3

How France's terms of trade paid the Napoleonic Wars reparations

3.1. Introduction

France lost the Napoleonic Wars in 1815 which ended decades of revolution and counterrevolution. The French had been fighting wars against external enemies since 1792. Throughout the Revolutionary Wars (1792-1802) and the Napoleonic Wars (1803-15), most European nations were involved somehow, with the five Great Powers of Austria, Britain, Prussia, Russia, and France deciding the peace at the Congress of Vienna in 1815 (Chapman 1998, p. 16-31). After Napoleon's final defeat at Waterloo, France was forced to pay just under two billion francs in reparations, around a quarter of output in 1815, over the following five years. With French government revenues of around 700 million francs in 1816, the transfer represented almost three times the annual budget (Oosterlinck et al. 2014, p. 1077). That is a big transfer, even more so as France faced significant credit constraints because earlier defaults prevented it from tapping sovereign debt markets.⁵⁰ Not until 1817 did France manage to borrow large amounts of money, paying back reparations with two years to spare.

How did France manage to pay the large reparations transfer? I argue that France benefited economically from a positive shock to its terms of trade as the war wound down. The French peacetime economy was structurally different in terms of its imports and exports, which had been changed during many years of war and blockades. The French terms of trade improved dramatically as a result. Even as France later borrowed large amounts of money on sovereign debt markets, there was no subsequent reversal in the relative price level.

⁵⁰ Bordo and White (1991) show how French war financing was affected by its poor fiscal reputation.

White (2001) and Oosterlinck et al. (2014) have previously conducted economic studies of the Napoleonic Wars reparations, while Greenfield (2016) focused on the political history. They found reparations imposed serious costs on France, but consumption was somewhat smoothed by the ability to borrow internationally. What they do not fully address is the size of the expected adjustment and the effect on output from the terms of trade.

In a small open economy model, I show how the economic change in France can be interpreted. I use the exogenous change in the terms of trade to explain how France managed to pay back the reparation in a short amount of time, even under economic stress. The model is in the style of Uribe and Schmitt-Grohé (2017, p. 73-140) but with a terms of trade shock instead of a productivity shock. Because of the lack of historical data—only data for the trade balance, the government budget, the debt stock, and the terms of trade data are available—the model is calibrated to fit the trade balance. As the terms of trade shock is permanent, there is only a small effect on the trade balance. The improved terms of trade created an economic windfall similar in size to the transfer. The suggested interpretation is that the entire gain from the improved terms of trade goes toward paying the transfer.

3.2. French reparations

By 1814, the Napoleonic Wars had been running for eleven years, and France had been in political and economic turmoil for some time before that. War-weary and still without a decisive victory, Britain suggested a defensive alliance with Austria, Prussia, and Russia in 1814. Initially, the goal was peace; war reparations were not discussed. The Treaty of Chaumont of 1814 suggested a peace alliance of 20 years, threatening continued war if Napoleon did not agree to a cease-fire and the reversion to pre-revolution borders. The British would subsidise it all (Artz 1934, p. 110-18). The settlement risked peace with Napoleon still on the throne of France, but almost certainly ensured a victory for the Allies (Schroeder 1996, p. 501-14). Reparations were not part of *Chaumont*, and the offer suggests the goal was not to destroy France. On the contrary, ending the war was prioritised over full surrender. This proposal, however, was rejected. Napoleon ordered his army to continue fighting, forcing the Allies to assault Paris on March 31, 1814. Their assault was successful, and Napoleon was expelled to Elba on April 11 (Treaty of Fontainebleau 1814). The armistice was signed on April 23, followed by the Treaty of Paris on May 30. According to the Treaty of Paris, French borders returned to their 1792 lines, allowing France to keep some revolutionary gains in Belgium, Italy, and Germany. Allies' soldiers left Paris three days later (White 2001, p. 338).

These treaties managed the wars' immediate end. However, the alliance between the four major powers that had ended the war (Austria, Britain, Prussia, and Russia) did not last long. Prussia and Russia had agreed in the 1813 Treaty of Kalisz to divvy up Saxony and Poland, substantially altering the balance of power in Europe. The Congress of Vienna was convened for October 1, 1814, to settle the peace more durably. In January 1815, Austria and Britain aligned with their former French foe to force them to abandon it. The issue was settled with all five countries recognised as the Great Powers of Europe (Chapman 1998, p. 16). It was during these negotiations that Napoleon escaped from Elba, raised an army, attempted to launch an attack on Britain – and was promptly defeated at Waterloo, ending what became known as the Hundred Days War.

This escape had nearly allowed France to become the European hegemon once more. The following peace settlement was therefore renegotiated on much less generous terms. 150,000 Allies soldiers occupied France. Each nation provided 30,000 men and commanders, with an additional 10,000 soldiers from Bavaria and 5,000 from each of Denmark, Saxony, Hanover, and Württemberg. The French government paid all their expenses, including 50 million francs for wages (Veve 1989, p. 99). Louis XVIII was allowed to return to France to rule, with backing from the Allies. The Second Treaty of Paris reduced France's borders even further, to their 1790 limits (Chapman 1998, p. 33-60). Reparations were introduced, this time with a dual purpose: to ensure there was no third attempt at war, and as an incentive to gradually reintroduce France into the balance of power in Europe. Occupation would only end upon full repayment (White 2001, p. 355-56).

The Second Treaty of Paris set out a payment schedule for the war reparations, indemnities, and occupation costs. War reparations were set at 700 million francs, as a punishment for Napoleon's failed Hundred Days War. Reparations were to be paid in fourmonth instalments over five years, beginning December 1815. Late payment would carry an interest rate of five percent (White 2001, p. 340). Reparations were not the sole expense France had to shoulder; it also had to bear the costs of occupation for as long as repayment lasted.

In 1815, the reparation cost was 180 million francs, with 150 million each subsequent year until 1821. The occupational costs were structured as a bond: France delivered seven million *rentes*, that is 140 million francs face-value consols, carrying a five percent coupon, for the duration of the occupation. The bond could be sold in case of non-payment (Vuhrer 1886, p. 59-100). France was able to repay ahead of schedule, which also reduced occupation costs. Actual occupation costs therefore amounted to 660 million francs, instead of 930

million, including 27 million for the removal of troops from France. Finally, indemnities worth 321 million francs were specified in the Treaty. Originally, each country had claimed far higher numbers, citing pre-war debt, wartime borrowing, and requisitions. Over 1.5 billion francs of claims were submitted which France managed to negotiate down to 321 million (Vuhrer 1886, p. 96).

The French legislature approved the indemnity payments in May 1818, alongside a more centralised control of taxes and expenditures (Oosterlinck et al. 2014, p. 1086). In addition, France ended up paying a further 180 million francs in indemnities to foreign individuals (Nicolle 1929, p. 186-89). Table 3.1 summarises the required and actual payments made between 1815 and 1819.⁵¹

	Second Treaty of Paris	Payments made
War reparations	700	686
Occupation costs (five years)	930	660
Indemnities	321	501
Penalties	-	17
Foregone foreign debt	-	43
Total	1,951	1,907

Sources: Second Treaty of Paris (1815); Nicolle (1929, p. 186-89); White (2001, p. 341).

Table 3.1: French reparations (million francs).

The French paid reparations quicker than set out by the Second Treaty of Paris, with very little difference between the agreed and actual sums. Given the speed of repayment, France incurred lower occupational costs, but indemnity payments turned out higher than initially anticipated. Data for France's total output is unreliable, with the best estimates found in Oosterlinck et al. (2014) and Toutain (1997). Average GDP for the period (1815-19) is estimated at around 8.6 billion. The 8.6 billion GDP is used throughout but is not useful to measure model fit because it is an estimate.⁵² With this in mind, total reparations payment represented around 22 percent of average GDP. A sizeable expenditure to finance for a government whose share of output was only estimated at around nine percent of the economy – even more sizeable when one considers the need to rebuild infrastructure after years of war.⁵³ The payment is visible in French trade and government budget balances (Figure 3.1), where the dotted lines are the balances net of reparations payments.

⁵¹ As noted by White (2001), France also had a range of (domestic) budgetary arrears related to Napoleon's 1815-16 campaign. Revolutionary-related confiscations were settled between 1816 and 1825.

⁵² Levy-Leboyer and Bourguignon (1990, p. 322) estimate 9.1 billion GDP and White (2001) use 9.2 billion francs as a yearly average GDP estimate throughout the period.

⁵³ Total government expenditures were 799 million francs in 1815. General government finances are found in Vuhrer (1886), Mallez (1927) and Séguin (1824), available at the Banque de France and Bayerische



Sources: Nicolle (1929, p. 186-89) for reparations; Toflit18 database as presented in Charles and Daudin (2015) for the trade balance, where I have netted out specie flows; Oosterlinck et al. (2014, p. 1077) for the fiscal balance; GDP see text. Note: The entire reparations payment is used for the dotted line, even if financed off-balance sheet. Replication file, *plot_france_tbg.m.*

Figure 3.1: French trade balance and fiscal balance (1815-20).

The French paid a combination of reparations, indemnities, occupational costs, and penalties from 1815 to 1819, meaning that the average annual expenditure was just under 4.5 percent of GDP per year. As Figure 3.1 shows, initially France was close to financing the payment from the government budget and the trade balance, although as payments grew it had to raise debt as well. The solid lines are the actual trade and government budget balance. The trade balance is net of specie flows. One interpretation of the gap between the lines is that it is the forgone net domestic investment amount from financing the transfer, which was as high as nine percent in 1818.

Regarding the government budget balance, France ran an austere policy. When the indemnity is discounted, the fiscal balance was positive. Both the trade and fiscal balances show that funding was available without borrowing; that more goods were sold than bought; and that more taxes were collected than money spent. If the combination of the trade and fiscal balances were higher than reparations, no debt would need to be raised. France needed little external financing in the early years of the repayment, as fiscal revenues increased by 20 percent from 1816 to 1817 (Oosterlinck et al. 2014, p. 1077).⁵⁴ The full reparations amount is included in the figure, even though most of the indemnity was structured as an off-balance sheet issuance of rentes (White 2001, p. 343). While it had the effect of circumventing the

Staatsbibliothek online archives. Calmon (1870) is available at the Banque de France online archive. Fiscal expenditures from 1816 are found in Oosterlinck et al. (2014, p. 1077).

⁵⁴ A chicken-and-egg problem, as the figure can also be interpreted to mean that balances went negative *because* France raised money internationally. As these are accounting identities, the causality can be argued both ways.

government budget balance, the macroeconomic effects are the same: interest must be paid, and net foreign assets shift accordingly. Consequently, French debt-to-GDP doubled from under 20 percent in 1815 to over 40 percent in 1819, as seen in Figure 3.2.



Sources: Debt data shared by Oosterlinck et al. (2014, p. 1074-75); GDP data see text. Replication file, *plot_french_d.m.*

Figure 3.2: French government debt stock (1800-30).

The French revolution had destroyed France's credit profile, and Napoleon had financed the war mostly by taxes rather than debt or money printing (Bordo and White 1991).⁵⁵ The French ability to borrow internationally had returned somewhat during the war, but large-scale borrowing was not initially undertaken to finance the payments (Greenfield 2016). The long war (and preceding revolution) had impoverished France. Raising large loans in addition to increasing taxes was 'ridiculed' by French bankers at the time, who said that the market would not absorb loans to France (White 2001, p. 345). The initial outlays were therefore mostly funded by attempts to run balanced budgets, which meant that the government had to run large, net-of-reparations surpluses. As Figure 3.1 shows, this was mainly the case. However, the pay-as-you-go budget policy of using incoming taxes to pay for expenditures meant that the government ran into trouble when taxes were not forthcoming. Interest rates were not exorbitant, but debt could only be issued in small amounts. France issued some

⁵⁵ This was in stark contrast to the British, whose fiscal and monetary capacity to raise funds had been key to victory (Antipa and Chamley 2017).

debt in 1816 and 1817,⁵⁶ but not enough to pay the reparations and jobs were cut while taxes were raised (White 2001, p. 342-43).⁵⁷

France still missed payments, which resulted in penalties and arrays. Some of the occupational forces threatened to increase the number of their soldiers, which would have worsened the fiscal outlook even further. As it became clear borrowing would be required, the interest rate France would have to pay on longer-term bonds increased (Figure 3.3), with markets unwilling to offer large loans. Negotiations were happening with foreign banks but broke down because of opposition to repayment by French Ultras, the conservative landholders (Oosterlinck et al. 2014, p. 1081-83).

It was not until two international banks, Barings Brothers in London and Hope & Company in Amsterdam, offered to underwrite a debt issue that large-scale debt financing was attempted (ibid). Until early 1817, large debt issuances were considered impossible. As Greenfield (2016) shows, higher interest rates, lower placed amounts, and domestic politics indeed made such issuances impossible. In February 1817, the French government tried anyway and went to the market to raise 100 million francs. It succeeded, paying an average yield of 8.6 percent. Perhaps surprisingly given the previous statement by French bankers, over half of the issue was sold on the Paris Bourse. The bond sale was followed by another 100 million in March, and a further 115 million in July (Calmon 1870, p. 139-230; White 2001, p. 346-49). The issues were successful, with oversubscription for a 292 million loan in May 1818. This enabled a full settlement of the reparations in 1819.⁵⁸ French interest rates, came down after the war, as Figure 3.3 shows. The figure shows the long-term interest rate, which is the most important, as it was in the bond markets that France financed reparations.⁵⁹

⁵⁶ 36 million francs of *rentes* were issued at 9.8 percent yield in 1815; a further 70 million was raised abroad in London and Hamburg in 1816. Additional funds were raised from shorter-term bills, although at significant cost of 12 percent (Calmon 1870, p. 139-230). As a comparison, during the same period the British issued debt with a yield below five percent (Homer and Sylla 2005, p. 192).

⁵⁷ For example, because of austerity-imposed hardship and a failed harvest, the government was forced to subsidise the price of bread in 1816 (White 2001, p. 344).

⁵⁸ It oversimplifies the story, which includes attempts to corner the market in government debt, failed negotiations, and extensions. However, for the purpose of this paper, it is plenty. See White (2001) and Oosterlinck et al. (2014) for more.

⁵⁹ The short-term rate interest rate (not shown) was the interest that the central bank, Banque de France, offered to discount paper overnight. In practice, the short-term rate corresponds to the price at which firms can finance themselves in the money markets. Throughout the first half of the nineteenth century, it was generally static (Homer and Sylla 2005, p. 224-25).



Source: Homer and Sylla (2005, p. 217). Replication file, plot_france_r.m.

Figure 3.3: French long-term bond yields (1799-1830).

French public debt levels increased significantly during the period, as expected, with an annual interest rate cost of around 1.4 percent of GDP (White 2001, p. 351-52). It is doubtful that France had many assets left after the war; the assumption of no change in assets is therefore that it remained at zero and gross debt can therefore be thought of as negative net foreign assets. The ability to raise loans coincided with the improved terms of trade, which generated an economic windfall.

3.3. Terms of trade

The end of the Napoleonic Wars caused the French terms of trade to improve dramatically. The improvement came with significant volatility, as seen in Figure 3.4 which shows the terms of trade for the period from 1805 to 1820.⁶⁰ The changes to the relative price level suggest a fall in the demand for imports and an increase in the demand for exports. The change in prices was not simply due to the end of the war but was caused by a structural change to French trade that occurred during the war. Especially the Continental Blockade between 1806 and 1814 was influential in changing the French structure of trade, as Crouzet (1964), O'Rourke (2006), Davis and Engerman (2006), and Juhász (2018) have all offered detailed accounts of.

⁶⁰ Data quality is poor, as would be expected for the period, and several of the data points require some or full interpolation. However, different estimates for commodity prices show similar behavior for the terms of trade (O'Rourke 2006, 2007).



Source: Estimated based on Esteban (1987). Note: The export price index for 1817 is extrapolated from 1816 and 1818. Replication file, *plot_france_tot.m*.

Figure 3.4: French terms of trade (1805-20).

The Continental Blockade from 1806 affected international trade structures and relative prices. Import prices in France went up a lot during the blockade. The relative price of imports from non-European countries (such as sugar or raw cotton) was particularly elevated during the blockade. The linen industry was already suffering before the war, but the loss of export opportunities accelerated the decline. Marseilles went from producing industrial output worth 50 million francs in 1789 to 12 million francs in 1813 (Crouzet 1964, p. 571). O'Rourke (2006) suggests a welfare loss of between three and four percent for France in the years during the blockade because of higher import prices. The structural changes to the economy were significant, as exemplified by the important sector of textiles. Juhász (2018, p. 3372-73) show that France turned from a net importer of cotton manufactures at the start of the war to become a net exporter by the end of the war.

The blockade was officially lifted in 1814 having collapsed a year earlier. French (and other continental) industries were hurt by the loss of overseas trading due to the blockade and European ports lost a lot of trade. If the changes to import and export prices were simply due to the end of the war, the relative level would not necessarily change as the same effects would be present to France's trading partners. As France turned from a war to a peace economy, the terms of trade turned in its favour. Peacetime demand for French luxury products, an improved manufacturing export sector, and a re-opening of the global trading

system all acted as positive catalysts for a large positive economic shock to France. This positive shock coincided with the negative shock from the reparations transfer.

In recent empirical studies, Schmitt-Grohé and Uribe (2018) find that terms of trade shocks explain less than ten percent of movements in output, studying 38 emerging market economies between 1980 and 2011. But the terms of trade improvement in France was large and coinciding with the reparations transfer. To fully understand the economic impact, a model of the terms of trade shock is required.

3.4. A small open economy model with a terms of trade shock

The previous section outlines how France experienced a positive terms of trade shock as the war came to an end. The historical context provides the backdrop for many assumptions and modelling choices. In this section, I attempt to explain the French history in a theoretical setting to infer the reaction of missing historical variables such as the level of output, investments, and consumption.⁶¹

In addition to the historical context, several assumptions and limiting factors lead to the choice of model. First, France is treated as a small open economy: in 1820, it only made up about five percent of the world economy (Maddison 2007, p. 379). It means France was likely a price-taker on international markets, with exports accounting for less than ten percent of its economy (Levy-Leboyer and Bourguignon 1990, p. 322-27). Second, the economy had no significant capital controls or frictions. France increased tariffs in 1815 and 1819 but the magnitude was minor (Pahre 1998, p. 487), and all indications are that capital flowed freely across borders.⁶² Third, it is assumed there were few product varieties which allows for some simplifying assumptions about the structure of the economy. Fourth, because of no detailed consumption and output data, I am looking for predictions that can be compared to historical data available (terms of trade and the trade balance).

The model follows the one outlined in Uribe and Schmitt-Grohé (2017, p. 73-140) but with a terms of trade shock taking the place of the standard productivity shock. The economy is assumed to be centralised, with production happening at the household level. It could easily be extended to include firms and a marketplace, but the equilibrium would be the same (Uribe and Schmitt-Grohé 2017, p. 77-80). A decentralised economy with real wages, firm

⁶¹ As described earlier, output data is static and consumption data is not available. Reliable data on the total investment share of the economy are hard to come by. Toutain (1997) and Levy-Leboyer and Bourguignon (1990) suggest that investments did not expand but with little elaboration.

⁶² Capital controls in small open economy models are often modelled as a tax on external borrowing (e.g., Schmitt-Grohé and Uribe 2016), but as shown in section 3.2 capital flowed into France with few restrictions. The sovereign debt model in chapter 4 has explicit capital controls.

profits, and a stock market is closer to reality, but the predictions of the model cannot be tested against the French economy.⁶³

The choice of model does leave some things wanting. For example, there is an implicit assumption that output is exported, and consumption and investment are imported. The model thus does not include nontradable goods. But introducing nontradable goods means further data predictions such as the relative price of nontradables. Therefore, a model in which terms of trade is the sole fluctuation is chosen, which can be calibrated to the trade balance.⁶⁴ Another thing is the lack of financial frictions or nominal rigidities. In that sense, the simple model presented here is like that of earlier real business cycle studies. Certain predictions, especially that of consumption, might lack as a result. Despite this, the model is judged to perform its role: France experiences a terms of trade shock, which captures the trade balance well and can be understood in the context of previous historical studies, adding a quantitative element to our understanding of the period.

3.4.1.The model

France is considered a small open economy, which consists of identical households that provide hours of labour h_t and consume c_t goods. It is assumed that each household is infinitely lived, and at each period t receives an endowment of one good, which is exogenous and stochastic. Preferences are given by a constant relative risk aversion period utility function

$$E_0 \sum_{t=0}^{\infty} \beta^t U(h_t, c_t). \tag{3.1}$$

The utility function is assumed to be concave, decreasing with hours worked, increasing with goods consumed, and discounted at $\beta \in (0,1)$. E_t denotes the expectations operator. Consumption and investments are assumed to be importable goods, while output is exported. Households have access to borrow to smooth out income shocks and face a budget constraint

$$y_t + d_t = d_{t-1}(1 + r_{t-1}) + c_t + i_t + \Phi(k_{t+1} - k_t), \tag{3.2}$$

⁶³ The distribution of wealth and ownership of firms is therefore left unanswered, even though Piketty et al. (2006) show that France in 1815 was unequal when it comes to real estate ownership.

⁶⁴ Country-level predictions for 38 emerging market economies also shows that adding a non-tradable sector does not increase model precision (Uribe and Schmitt-Grohé 2017, p. 282-84).

where y_t is domestic output, d_t is the debt position of households at the end of t, r_t is the interest rate households pay on said debt, i_t is gross investments, k_t is physical capital, and the function Φ ensures there is an adjustment cost to investments to avoid excessive volatility. It is assumed that there are no adjustment costs in the steady state, so $\Phi(0) = \Phi'(0) = 0$ and $\Phi''(0) > 0$. The stock of capital at t + 1 is the stock of capital at t plus gross investments minus the depreciation rate $\delta \in (0,1)$, formally

$$k_{t+1} = k_t (1 - \delta) + i_t. \tag{3.3}$$

The shock to the economy comes in the form of a terms of trade shock. Output is produced by labour and capital in a linearly homogenous production function

$$y_t = tot_t \ F(h_t, k_t), \tag{3.4}$$

where tot_t is the terms of trade, defined as

$$tot_t = \frac{P_t^x}{P_t^i},\tag{3.5}$$

assumed to be exogenous and stochastic, where P_t^x is a price index of exports (output) and P_t^i is a price index of imports (consumption and investments) for France. The law of motion for the log deviation of the terms of trade follows an AR(1) process

$$\widehat{tot}_t = \rho \ \widehat{tot}_{t-1} + \nu \ \epsilon_t^{tot}, \tag{3.6}$$

where ρ is between negative one and positive one and denotes the persistence of the terms of trade shock (the autocorrelation). ϵ_t is an i.i.d. with parameter ν standard deviations. At the start of each period, households choose the level of consumption c_t , hours worked h_t , output y_t , investments i_t , debt d_t , and capital k_t that maximizes the utility function, subject to a non-Ponzi constraint

$$\lim_{j \to \infty} E_t \left(\frac{d_{t+j}}{\prod_{s=0}^j (1+r_s)} \right) \le 0, \tag{3.7}$$

as well as equations (3.2) to (3.4) above. Households borrow intertemporally via an international bond, which makes them indifferent at the margin between saving and consumption. The equations that govern the capital stock (3.3) and output (3.4) can be used to write the budget constraint forward

$$\begin{array}{l} tot_t \ F(h_t,k_t) + d_t = d_{t-1}(1+r_{t-1}) \\ \\ + \ c_t + k_{t+1} - (1-\delta)k_t + \ \Phi(k_{t+1}-k_t), \end{array} \tag{3.8}$$

which together with the no-Ponzi conditions yields first-order maximization of households

$$\begin{array}{ll} \lambda_t = & E_t \lambda_{t+1} \beta(1+r_t), \\ (3.9) \end{array}$$
$$\lambda_t = U_c(h_t, c_t), \tag{3.10}$$

$$\lambda_t \ tot_t F_h(h_t, k_t) = -U_h(h_t, c_t), \tag{3.11}$$

$$\begin{split} \lambda_t [1 + \Phi'(k_{t+1} - k_t)] \\ &= \beta \lambda_{t+1} E_t [tot_{t+1} F_k(h_{t+1}, k_{t+1}) + (1 - \delta) + \Phi'(k_{t+2} - k_{t+1}], \end{split} \tag{3.12}$$

and

$$tot_t \ F_h(h_t, k_t) = -\frac{U_h(h_t, c_t)}{U_c(h_t, c_t)}.$$
(3.13)

The left-hand side of (3.13) is the marginal product of labour. If capital is constant, it is a decreasing function of additional labour. The right-hand side is the marginal substitution for workers between work and time off.

The interest rate is assumed to be an increasing function of the level of French debt. This follows Kollmann (2002) and Schmitt-Grohé and Uribe (2003) to ensure stationarity. Empirically, Lane and Milesi-Feretti (2001) found a negative relationship between net foreign assets and the real interest rate differential. The intuition is that as the level of debt increases, a higher interest rate is required to lend to households, while households start to save more as they face higher debt levels. Formally the interest rate is defined as

$$r_t = r^* + p(\tilde{d}_t), \tag{3.14}$$

where the function $p(\tilde{d}_t)$ increases as the level of average debt \tilde{d}_t increases and r^* is the world interest rate, assumed to be constant. For simplicity, the discount factor is assumed to be equal to the foreign interest rate, so that $\beta(1 + r^*) = 1$. There is no term structure of interest rate in the model. Before the middle of the nineteenth century, central banks rarely changed the short-term discount rates (Homer and Sylla 2005, p. 224). The short-term interest rate is less important because it is assumed reparations are funded in the bond market, as was the case per section 3.2, and therefore there is just one domestic interest rate in the model.

3.4.2.Equilibrium

The level of debt for each household in equilibrium must equal the average as they are identical, meaning that

$$\dot{d}_t = d_t. \tag{3.15}$$

The equilibrium for debt, consumption, hours worked, the capital stock in the next period, and the terms of trade—given initial levels of debt, the capital shock, terms of trade and the terms of trade shock—that satisfy (3.6) and (3.14) are

$$\begin{split} d_t &= d_{t-1} [1 + r^* + p(d_{t-1})] + c_t + k_{t+1} - k_t (1 - \delta) \\ &\quad + \Phi(k_{t+1} - k_t) - tot_t \ F(h_t, k_t), \end{split} \tag{3.16}$$

$$U_c(h_t, c_t) = \beta \left(1 + r^* + p(d_t) \right) E_t U_c(h_{t+1}, c_{t+1}), \tag{3.17}$$

$$\begin{split} U_c(h_t,c_t) \big[1 + \Phi'^{(k_{t+1}-k_t)} \big] &= \beta E_t U_c(h_{t+1},c_{t+1}) \\ & [tot_{t+1} F_t(h_{t+1},k_{t+1}) + (1-\delta) + \Phi'(k_{t+2}-k_{t+1})], \end{split} \tag{3.18}$$

$$\lim_{j \to \infty} E_t \left(\frac{d_{t+j}}{\prod_{s=0}^j (1+r^* + p(d_s))} \right) = 0.$$
(3.19)

It is then possible to combine equations (3.3), (3.4), and (3.14) to get an equilibrium process for the trade balance

$$tb_t = tot_t F(h_t, k_t) - \Phi(k_{t+1} - k_t) - i_t - c_t.$$
(3.20)

The reaction of the trade balance then depends on whether the terms of trade shock is permanent. If the shock is permanent, the trade balance deteriorates because there is an increase in investments to take advantage of higher export prices. If the shock is transitory, the trade balance improves as households will save the windfall and no new investments will be undertaken. Notice how the trade balance in the deterministic steady state, implied from the resource constraint and the trade balance, is $tb = r^*\overline{d}$. This is to ensure France generates enough foreign currency to repay its external debt. The current account is then the change in net foreign assets, or the income from investments and the trade balance

$$ca_t = tb_t - r_{t-1}d_{t-1} = d_{t-1} - d_t. aga{3.21}$$

3.4.3.Calibration

The model is calibrated to the French economy in the years following 1815. Because of no historical time series for output, consumption, or investments to compare against, the model is calibrated to fit the level and volatility of the trade balance. The reaction of other macroeconomic variables is then inferred. It is assumed that the only shock to the model is a terms of trade shock, which is positive and of similar size as the historical shock described in section 3.3. The time unit of the model is one year.

Production is described using a Cobb-Douglas specification, and the functional forms for capital adjustment costs (quadratic), debt, and utility are

$$\begin{split} F(h,k) &= h^{1-\alpha}k^{\alpha}; \alpha \in (0,1), \\ \Phi(x) &= \frac{\phi}{2}x^2; \ \phi > 0, \\ p(d) &= \psi \big(e^{d-\bar{d}}-1\big); \psi > 0, \end{split}$$

$$U(h,c) = \frac{G(h,c)^{1-\sigma}-1}{1-\sigma}; G(h,c) = c - \left(\frac{h^{\omega}}{\omega}\right); \omega > 1; \ \sigma > 0.$$

Where α is the capital elasticity in the production function, ϕ is the magnitude of capital adjustment costs, ψ is the debt sensitivity of the interest rate, σ is the relative degree of risk aversion, ω is the wage elasticity of labour supply, which is independent of consumption, and all are parameters. Combining those with δ , r^* , \bar{d} , ν , and ρ described earlier, there are ten structural parameters needed in the model, shown in Table 3.2.

	Parameters	Value
σ	Degree of relative risk aversion	2
δ	Depreciation rate	0.1
r*	World risk free rate	0.045
α	Capital elasticity of production function	0.36
\overline{d}	Debt level	0.428
ω	Wage elasticity of labour supply	1.455
ψ	Debt sensitivity of interest rate	0.000742
þ	Capital adjustment cost	0.028
ν	Volatility of terms of trade shock	0.0129
ρ	Persistence of terms of trade shock	0.25

Table 3.2: Model parameters.

The relative degree of risk aversion σ and the depreciation rate δ are standard in the literature and follow Uribe and Schmitt-Grohé (2017, p. 85).⁶⁵ The world risk free rate is set at 4.5 percent because yields on British bonds (three percent *consols*) were between four percent and five percent at the time (Homer and Sylla 2005, p. 192). The capital elasticity of the production function follows the study of later French indemnity payments after the Franco-Prussian War (Devereux and Smith 2007) and α is set equal to 0.36.

The level of debt \overline{d} can be solved for because we know the trade balance must be big enough to service the debt stock

$$\bar{d} = \frac{tb/y}{r^*}y$$

where

$$y = [(1-lpha)\kappa^{lpha\omega}]^{1/(\omega-1)}$$
 and $\kappa = [lpha/(r^*+\delta)]^{1/(1-lpha)}$

The French trade balance is assumed to be one percent in the steady state, as it was approximately in the years following 1815 and \bar{d} is then equal to 0.4278. The wage elasticity of the labour supply ω , like that of the debt sensitivity of interest rates ψ , capital adjustment

⁶⁵ See e.g., Thimme (2017) for a review of the literature.

costs ϕ , and the standard deviation of the terms of trade shock ν follow the literature as set out in Uribe and Schmitt-Grohé (2017). A numerical solution for the endogenous variables can be obtained, with h = 1.154, k = 4.779, and c = 1.428. The persistence of the terms of trade shock is calibrated to the historical French trade balance and set to 0.25. Figure 3.5 shows the reaction of the trade balance to a positive terms of trade shock of ten percent, for different values of ρ . The best fit is an autocorrelation of 0.25, implying a lasting but not dominant positive terms of trade shock, as we saw in Figure 3.4 earlier.



Source: Charles and Daudin (2015) Tolflit18 database. Replication file, *plot_tot_impulse.m.*Figure 3.5: Trade balance impulse response for different values of *ρ*.

Figure 3.5 shows that the reaction of the trade balance depends on how persistent the terms of trade shock is. It would perhaps suggest a higher value of ρ than 0.25, but the model in the next section is nonetheless calibrated to a value of 0.25 because the fit is better. It might be that people did not anticipate the terms of trade shock to be permanent, or that distortions from the payment meant the actual impulse response to the trade balance was muted.

3.4.4.Results

The model is solved by log-linear approximation of the equilibrium conditions, in their steady state. The shock to the model comes from the terms of trade shock, where t + 1 is assumed to be in 1815. As shown in section 3.2 and 3.3, the end of the war and the blockade, as well as the reparations shock, was not anticipated. The impulse described here is to a ten percent improvement in the terms of trade, as per Figure 3.4, of semi-persistent nature ($\rho = 0.25$).

The terms of trade shock could be bigger, but given the uncertainties around the data, a ten percent improvement is chosen, which is the average change over a five-year period.

The reaction of the trade balance to a shock to the terms of trade follows Obstfeld (1982) and Svensson and Razin (1983) where only a transitory improvement in the terms of trade increases the trade balance, as shown in Figure 3.5. This is because the marginal product of capital in terms of imports for j > 0 is $tot_{t+j}F_k(h_{t+j}, k_{t+j})$. It means that if the improvement in the terms of trade is permanent, there will be an increase in investments to take advantage of higher marginal product of capital, which increases imports (investments). The immediate effect on the trade balance will then be negative in the short run, as the surge in investment is larger than the gains from the terms of trade. If the shock to the terms of trade is transitory, then households will save the money, which improves the trade balance, as per equation (3.20).

Figure 3.6 shows the reaction to a ten percent improvement in the terms of trade for the trade balance-to-output, output, consumption, and investments, where the latter three are shown as percentage deviation from steady state.



Note: Replication file, *plot_model.m*.

Figure 3.6: Response to a terms of trade shock for $\rho = 0.25$.

The trade balance-to-output ratio is captured well in the model (Figure 3.5), but given the calibration targeted the trade balance it should come as no surprise. The rest of the macroeconomic variables are therefore of more interest. Output is predicted to increase in the first five years, converging to the steady state. As output is a factor of hours worked, capital employed, and the terms of trade shock (equation 3.4), this is intuitive. Consumption increases as the overall impact is positive, but less than output as some of the gains are saved. Similarly, hours worked (not shown) increase because of its correlation with output. To see why, notice that the log-linear version of (3.13) describing the labour market is $\omega \hat{h}_t = \hat{y}_t$. Figure 3.6 also shows investments increasing sharply by 30 percent as higher returns make it profitable to increase the capital stock. Because the initial increase in investments is large, the trade balance does not improve much, despite much higher output. The adjustment to the capital stock (3.3) is short-lived, which pushes up the trade balance at t + 1 (1816).

The next section discusses if the results are consistent with French historical economic data for the period.

3.5. Discussion

It is possible to imply certain macroeconomic reactions. First, after decades of war and blockade, French infrastructure needed rebuilding. The wars did not see the same degree of physical destruction as wars in the nineteenth century, but expenditures on roads, housing, and utilities were likely neglected in favour of war-related spending. In addition, the blockade caused a structural change to the manufacturing sector. It is possible to imagine that in response to a large positive trade shock, households exchanged leisure for work. The increase in investments is similarly believable, as the marginal product of capital increases, which follows results in Juhász (2018) who find that the capital-labour ratio did not change. France's export sector expanded as described earlier to take advantage of new opportunities that occurred following the transition to a peacetime economy and expansion of international trade. As seen in section 3.2 though, the economy was not booming for households, which had to pay higher taxes to finance the reparations transfer.

There is no explicit government sector in the model, so government consumption does not feature explicitly. But data is available for government expenditures, which can be used to disaggregate the reparations transfer from normal consumption. Overall government spending saw a sharp increase from 1815, as shown in Figure 3.7. The figure breaks government spending into non-reparations related ('normal') expenditures and reparationsrelated expenditures. Regular expenditures were relatively stable, with the entire rise in government consumption being reparations. The predicted increase in consumption from the model is around 20 percent of GDP. We know from section 3.2 that the transfer was equal to around 22 percent of GDP. It would imply that the entire gain in terms of consumption from the improved terms of trade goes towards paying the reparation.



Source: White (2001, p. 343). Replication file, *plot_france_gc.m.*

Figure 3.7: French government expenditures (1815-20).

Imagine a counterfactual where France did not experience an improvement to its terms of trade at the end of the war. In this counterfactual, demand for French exports do not increase and do not generate an economic windfall. It means that to pay the reparation, the trade balance must adjust upwards by lowering the level of imports, to repay the higher level of debt. Figure 3.7 would likely look the same, but with no improvement in the terms of trade, the transfer would have to be paid without higher levels of economic activity. The economic hardship of households would therefore be even worse. The improvement to the terms of trade was bigger than what followed other episodes of reparations. German terms of trade improved by less than ten percent from 1923 (the earliest date of which data is available) and remained flat for the rest of the decade. France experienced a deterioration in its terms of trade of around five percent from 1871 following the Franco-Prussian War. The economic gains following the Napoleonic Wars was therefore much larger than comparably sized reparations in terms of output.

The suggested interpretation is therefore that the Napoleonic Wars reparations were paid out of the terms of trade improvement that followed the end of the war. In the model in this paper, the economic windfall of the terms of trade shock is similar in size French war reparations. That is not to say that it is measurable directly in the national accounts, but the economic windfall helped drive output and exports higher, which generated money to repay the transfer and help with debt sustainability.

3.6. Conclusion

The paper estimates that French reparations after the Napoleonic Wars were aided by an improvement in the terms of trade which followed the end of the war and the end of the Continental Blockade. The improvement in the terms of trade was followed by a relaxation of the credit constraint in 1817, which allowed France to pay the transfer ahead of schedule. Despite early repayment and largescale borrowing, the improvement in the terms of trade was persistent as the structure of French trade had changed during the war.

In a small open economy model, calibrated to fit the available French historical data from 1815 to 1819, the gains from the improvement in the terms of trade approximates the size of the transfer.

Chapter 4

Enforcement of sovereign debt under war reparations

4.1. Introduction

Sovereign debt is paid back most of the time, despite creditors not having many remedies to enforce debt contracts. Countries pay back their loans because they want to be able to borrow again, or to avoid financial sanctions. Unlike in corporate bankruptcies, and outside of military intervention, no one can force a country to pay its sovereign liabilities. One such extreme and rare example is that of war reparations, which has often been directly linked to the removal of occupying troops. As a result, sovereigns generally do not directly default on war reparations.⁶⁶ The reason that defaults on reparations are rare is that they have political consequences far and above normal sovereign defaults, which themselves are not costless. Recent sovereign defaults in Greece saw political interference in exchange for financing during the Eurozone crisis, and China has taken possession of critical infrastructure from its debtors.⁶⁷ The most famous example of reparations is probably that of German World War I reparations. Germany defaulted on its sovereign debt in 1933 but did not default on reparations themselves.⁶⁸ Reparations were negotiated to a standstill and effectively ended at the Lausanne Conference in 1932, a year before the sovereign debt default.

This paper shows how episodes of war reparations exhibit many of the same characteristics of sovereign defaults yet were repaid. The literature on sovereign debt defaults has shown that defaults typically occur after a sharp contraction in output, are followed by a devaluation of the currency, and are costly. The devaluation of the currency lowers the

⁶⁶ Examples are discussed in section 2.1.

⁶⁷ An example is Sri Lanka handing over control of its Hambantota Port to China in 2017 (Abi-Habib 2018).

⁶⁸ The 1922 refusal to pay reparations is discussed later in the paper. The sovereign default is dated according to Hjalmar Schacht (1967, p. 137-41), but various debts were defaulted on at different times.

relative price level and real wages. Governments choose to default when it is economically beneficial not to pay interest and principal and instead incur the loss associated with a default and financial autarky. The costs of default are both the inability to smooth consumption, by not being able to borrow again, as well as an explicit output loss that occurs because of the default. To account for these stylised facts, I apply a sovereign debt model by Na, Schmitt-Grohé, Uribe, and Yue (2018) to the Franco-Prussian War indemnity, to German interwar reparations, and to Finnish World War II reparations. This narrow set of reparations cases are the largest transfers (over 20 percent of GDP) where there was agreement to pay in a relatively short time span (less than ten years). I collected data for the output, interest rates, debt stocks, wages, and exchange rates (nominal and real) for each episode. Common for them was that reparations were paid because they were enforced by military or political power, even if the country was situation in the default set of the model.

The case of Franco-Prussian War indemnities features several default-like characteristics (output contraction and high debt levels) but sees no devaluation nor a fall in real wages. Its stock of foreign assets allowed France to borrow money quickly to repay the indemnity, and despite briefly being strictly in the default set, I argue that repayment made sense. Conversely are the cases of German and Finnish reparations. German real output contracted by over 20 percent during the hyperinflation of the Weimar Republic (1921-23), as Germany refused to pay reparations in 1922. It was forced to resume negotiations by military force after the Allied occupation of the Ruhr. Reparations were rescheduled in 1924 and were subsequent paid throughout the 1920s, financed by capital inflows (Feldman 1993, p. 631-69). Once capital flows reversed by the 1930s, austerity replaced debt which translated into output losses and a downward adjustment to real wages, which were too high because of the gold standard (for an overview of this debate, see e.g., James 1986, Borchardt 1990, Holtfrerich 1990, or Ritschl 2002). At this point, the European nations did not have the ability to enforce debt contracts and the U.S. agreed to a de facto cancellation of reparations. Despite no obvious nominal devaluation accompanying the default, once stealth interventions and export subsidies are accounted for, the German default is well explained in the model. Finnish reparations in the 1940s were repaid under great economic strain and the economy exhibited all the characteristics normally associated with a default. Unable to default because of geopolitical considerations, it took Finland longer to grow because large parts of its domestic resources went to produce reparations.

In all three historical episodes, the level of debt and output losses lie within the default set at one point, implying that the optimal economic policy would be to default. Because it was not possible to default on war reparations because they were enforced, economic policy was suboptimal in the cases of Germany and Finland.

4.2. Related literature

Sovereign defaults are unlike private defaults because creditors generally cannot take control of sovereign assets through enforcement of debt contracts. Commercial assets can be seized, but official foreign assets (such as embassies, military bases, or consulates) tend to be immune from creditor attachment (Buchheit 2013). Despite the limited enforcement mechanism, most sovereign debt is still repaid. Two reasons have generally been offered to explain why: countries want to maintain a good reputation, and they want to avoid facing financial sanction. The reputational explanation originating with Eaton and Gersovitz (1981) explains repayment of sovereign debt as an incentive to borrow again. A default causes an exclusion from capital markets for a period, which means the country cannot borrow to smooth consumption.⁶⁹ The incentive to repay sovereign debt is thus not a legal one. In the literature on sanctions, meanwhile, creditors have certain legal remedies to force economic sanctions on the defaulter (Bulow and Rogoff 1989a, 1989b).⁷⁰

Recent sovereign defaults have carried high costs, but countries were nevertheless able to make the decision to default (see e.g., Kuvshinov and Zimmermann 2019). War reparations are different. They are a special case of sovereign debt because the enforcement mechanism is binding, often by military occupation or the threat of occupation. The case of war reparations is thus an extreme version of 'gunboat diplomacy'. Gunboat diplomacy, or imposed fiscal control, was commonly used to ensure repayment after default before World War I. In the period between 1870 and 1913 more than 40 percent of sovereign defaults resulting in sanctions (Mitchener and Weidenmier 2010). Sanctions and enforcement of debt contracts happened either through creditor countries' legal or military power, or because international banks got involved. Banks were able to set conditions on loans because they had legal and military remedies to monitor and enforce their claims, and thus acted as a lender of reputation to ensure payment (Flandreau and Flores 2012).⁷¹ The practice of militarily enforcing sovereign debt became much less common after the Drago Doctrine was adopted

⁶⁹ Defaults occur when countries find debt service to be costlier than a default (e.g., Arellano 2008 or Bocola et al. 2019). Most papers specify a time-period where the country is excluded from capital markets.

⁷⁰ See e.g., Aguiar and Amador (2014) for a recent contribution. An example of a sovereign asset seizure was when the hedge fund Elliott seized an Argentine navy ship in Ghana in 2012 to collect on defaulted bonds from the 2001 restructuring (Cotterill 2012).

⁷¹ For a list of case studies during the period, see e.g., Tunçer (2015).

by the Hague Conference in 1907. The Drago Doctrine states that military force should not be used to enforce sovereign debt payments.

The reparations studied in the paper were paid under the threat of violence, or after direct occupation. They were inspired by the quick repayment of Napoleonic Wars reparations from 1815, where France was occupied until reparations were repaid (see e.g., Oosterlinck et al. 2014). The withdrawal of Prussian troops from France was directly linked to repayment of the Franco-Prussian War indemnity, which was repaid in three years (Devereux and Smith 2007). German World War I reparations had to be enforced by occupation of the Ruhr in 1923, after Germany refused to pay initially (Ritschl 2012a), while Finnish war reparations following World War II were paid because of its close relationship and dependency on the Soviet Union. Table 4.1 shows the size of each reparation in terms of GDP and in annual cost, as well as Napoleonic Wars reparations for comparison.⁷²

	Debt stock before		Annual debt service	Reparations and interest costs	
	reparations	Reparations	and reparations cost	(percent of government taxes)	
1815-19: Napoleonic Wars	15	22	7	70	
1871-73: Franco-Prussian War	55	25	9	72	
1923-33: WWI (Germany)	72	100	13	44	
1945-52: WWII (Finland)	61	20	3	15	

Sources: Calculated from Oosterlinck et al. (2014); White (2001, p. 351); Ritschl (1996, 2012); and Pihkala (1999, p. 32-35). Note: Finnish reparations were paid in-kind but converted to money equivalent.

Table 4.1: Comparison of reparations (in percent of GDP).

When estimating Germany's capacity to pay after World War I, diplomats and politicians looked to what amounts France paid fifty years earlier (Marks 2013). German headline reparations were bigger in terms of GDP, but not in terms of the government's capacity to levy taxes. French reparations in the nineteenth century represented 70 percent of government tax revenue, while in Germany it was 44 percent and for Finland as low as 15 percent. All three countries saw steep declines in output around the time that reparations were imposed, with growth shocks bigger than what is normally associated with sovereign defaults. The difference from many other cases of sovereign debt defaults was an inability to default due to military occupation or political pressure. The amounts paid for war reparations in all cases were large, both in an absolute sense and relative to state capacity, with debt stocks already sizeable after each war.

How did the countries manage to pay the transfers under stretched capacity to pay? Was it simply that creditors could enforce reparations, or did market access gains outweigh the cost of repaying the total debt including reparations? To answer the questions, it is worth to

⁷² See section 2.1 for a discussion of other war reparations.

understand when countries are normally willing to repay debt. One way is to look at sovereign debt models where the government is in control of both the decision to default and conducts optimal monetary policy. The latter ensures the government can devalue its currency, to lower real wages, while the decision to default is taken when the benefits from continued borrowing no longer outweighs the costs of default. Such a model allows to characterise a default set, which can be compared to the historical episodes of reparations. The combination of default and devaluation is empirically founded as it has been observed in many emerging markets during defaults (Reinhart 2002). The goal is to figure out if reparations are considered payable in terms of a standard sovereign debt analysis. If the macroeconomic conditions lie outside what is normal willingness to pay, the reason for repayment is likely to be found in the political economy.

4.3. A model of optimal default

Sovereign debt models can provide a framework in which the cost of servicing sovereign debt is quantified against the benefits of repayment. In the model on the following pages, a benevolent government can free up domestic balance sheets by defaulting, but it results in an output loss and removes the country's ability to borrow money.⁷³ In the model, the government chooses to default or repay sovereign debt, based on a value function. The nominal exchange rate is set unilaterally by the government, which can counteract any (potential) distortions from wage rigidities via monetary and exchange rate policies. The predictions of the model can then be used for both the nineteenth century with limited wage rigidities and the twentieth century.⁷⁴ In the nineteenth century wages lower (see section 4.4.3 for a discussion of how this applies to Germany under the gold standard). Because of the adjustment mechanism, if it makes sense to default in a floating exchange rates regime, it makes even more sense in a world of fixed exchange rates.⁷⁵

The model is the optimal monetary policy version of Na et al. (2018). The point of the analysis is to understand if the macroeconomic conditions, with and without reparations, should lead to default. One complicating factor in the analysis of sovereign debt is that defaults are often endogenous. Defaults can be caused by a series of negative shocks to the

⁷³ As is standard in the literature and an empirical feature of sovereign debt defaults (see e.g., Borenztein and Panizza 2008, Furceri and Zdzienicka 2012, or Hébert and Schreger 2017).

⁷⁴ See Eichengreen (2008) for a general discussion of wage rigidities.

⁷⁵ To adjust the relative real wage and the price of non-traded goods in a fixed exchange rate system, unemployment would have to rise. A devaluation would adjust this via the exchange rate instead.

economy *and* defaults can cause a loss of output. Both are common, as shown by Esteves et al. (2021) who use a narrative approach to find that historically exogenous causes of default are more common, but endogenous factors are becoming more frequent. They find that 62 percent of sovereign defaults between 1870 and 2010 can be explained by exogenous factors, with terms of trade shocks and political factors the most regular causes of default. In their sample, they also find evidence that default causes output to fall.⁷⁶ The latter evidence is generally, and in this paper, used as a justification for an exogenous cost of default.

The model allows us to observe certain stylised facts around sovereign debt defaults, with the default set a function of the benefits and costs of repaying debt. The value functions allow for a characterisation of what can be considered optimal policy in terms of whether to default or not. The model can then be measured against the historical setting of war reparations and whether the cases lie in the default set. It is calibrated to the French economy in 1870-73, the German economy in 1930-33, and the Finnish economy in 1945-48. The model helps to quantify if the costs of repaying reparations were above a level at which countries normally default. If the answer is yes, it suggests that countries should have defaulted on reparations and entered autarky but were unable to because sovereign debt was enforced by occupation. The next few pages present the model.

4.3.1.Government

The model is of a small open economy where the government borrows on international debt markets. The economy consists of the government, homogeneous firms that are perfectly competitive, and households that have identical preferences. The government can either be in default or not. If the country is repaying its debt, $R_{t-1} = 1$, whereas if the country defaults at the start of the period, then $R_t = 0$. Default implies that the country has lost all access to borrowing on international debt markets. If the country is in default, it exits default in t + 1 with probability θ and remains in default with $1 - \theta$ probability. A default is defined as a total default on all external debt.⁷⁷ If $R_t = 1$ then households receive a lump-sum payment for the debt tax that the government levies, F_t , which is expressed as $g_t = F_t/P_t^T$ in terms of tradable goods, where P_t^T is the nominal price of tradables. If the country is in default, the

⁷⁶ Their sample does not include the Iraqi default in chapter 5, which experienced a large negative output loss both before and after the sovereign default.

⁷⁷ It means there is no recovery value on defaulted bonds. Cruces and Trebesch (2013) show that higher haircuts lead to longer exclusion from capital markets, which can be captured by lowering the parameter θ .

payments that households would have made to foreign lenders are confiscated and returned to the households. The sequential government budget constraint is then

$$g_t = d_{t+1} q_t^d \tau_t^d + (1 - R_t) d_t, \tag{4.1}$$

where d_{t+1} is the level of debt at t to be repaid at t + 1, q_t^d is the price of one unit of face value debt; and τ_t^d is the tax collected on debt. The debt is denominated in tradable goods so that the effect can be measured in consumption. It follows the standard Eaton-Gersovitz allocation of debt with centralised borrowing and centralised default. Households take the country premium on borrowing as exogenously given, while the government internalises it into the country risk premium it pays on its external debt. The price of debt must satisfy a risk-neutral foreign lender that wants to cover their opportunity cost of capital, i.e., lenders are expected to earn the same return abroad as at home

$$\frac{Pr\{R_{t+1}=1|R_t=1\}}{q_t} = 1 + r^*.$$
(4.2)

Which means that the country spread is simply the probability of default in the next period.

4.3.2.Firms

Each firm will want to maximize profits, Π_t , and produce nontraded output according to

$$y_t^N = F(h_t), \tag{4.3}$$

where the function is concave and increasing. The input is simply labour h_t , provided by the households who are paid nominal wages, W_t . Firms maximise profits according to

$$\Pi_t = P_t^N F(h_t) - h_t W_t, \tag{4.4}$$

which can be rewritten as

$$p_t F'(h_t) = w_t, \tag{4.5}$$

with $w_t = W_t/P_t^T$ being the real wage in terms of tradable goods, and $p_t = P_t^N/P_t^T$ the relative price of nontradables in terms of tradables.

4.3.3.Households

Households are alike and make decisions based on information available to them at present time, with constant relative risk aversion. Their utility is maximised with respect to

$$E_0 \sum_{t=0}^{\infty} \beta^t U(c_t) = \left(\frac{c_t^{(1-\sigma)} - 1}{(1-\sigma)}\right),$$
(4.6)

with c_t being total consumption, the parameter $\beta \in (0,1)$ denotes the discount factor, and U is assumed to be concave and increasing. c_t is a composite of the two types of consumption: traded c_t^T , and non-traded c_t^N , and is given by its CES aggregator function

$$c_t = A(c_t^T, c_t^N) = \left[ac_t^{T1-\frac{1}{\xi}} + (1-a)c_t^{N1-\frac{1}{\xi}}\right]^{\frac{1}{1-\frac{1}{\xi}}},$$
(4.7)

where A is a linearly homogenous function that is concave and increasing, a is the percentage of tradables in the total consumption basket, and ξ is the elasticity of substitution between tradables and nontradables. The firms are owned by the households in a uniform manner, and they therefore receive the profits from said firms. The household budget constraint is given by

$$P_t^T c_t^T + P_t^N c_t^N + P_t^T d_t = h_t W_t + \Pi_t + F_t + (1 - \tau_t^d) P_t^T d_{t+1} q_t^d + P_t^T \tilde{y}_t^T.$$
(4.8)

The left (top) side of the equation is each household's spending, which consists of consumption of tradable and nontradable goods, plus their debt. The right-hand side of the equation is each household's income from their labour, profits from firms they own, the lump-sum payment (F_t), τ_t^d a tax on debt income received from the ownership of foreign debt, with \tilde{y}_t^T being each household's endowment of traded goods, which is given and stochastic. In reality, τ_t^d can be thought of as a tax on capital flows, such as reserve requirements on banks or capital controls.

People in this economy are subject to no-Ponzi conditions. The relative price of nontradables, p_t , can be written as

$$p_t = \frac{A_2(c_t^T, c_t^N)}{A_1(c_t^T, c_t^N)},\tag{4.9}$$

$$\Upsilon_t = U'(c_t) A_1(c_t^T, c_t^N), \qquad (4.10)$$

$$\beta E_t \Upsilon_{t+1} = (1 - \tau_t^d) q_t^d \Upsilon_t. \tag{4.11}$$

The household budget constraint therefore uses the Lagrange multiplier, Υ_t/P_t^T . Households supply inelastic labour \bar{h} and it is assumed that $\bar{h} = h_t$, meaning the economy is at full employment. The assumption here is that the central bank stands ready to counteract any distortions from nominal wage rigidities by devaluing the exchange rate, to ensure that the real wage is lowered.

4.3.4.Equilibrium

Households optimise their utility subject to their budget constraints and choose the composition of their consumption basket and borrowing. In equilibrium, the market for nontradables clears

$$c_t^N = y_t^N. (4.12)$$

Each period, the country receives y_t^T endowment per household, stochastically and exogenously decided. To ensure there is a cost associated with default, it is assumed that $L(y_t^T)$ is a loss-function that is positive and increasing, so that

 $L(y_t^T) = max\{0, \delta_1 y_t^T + \delta_2 (y_t^T)^2\}.$

If the country is not in default, output is simply equal to the endowment y_t^T . The lossfunction also dissuades countries from defaulting during boom-times. The natural logarithm of tradable output y_t^T , follows the law of motion and is given by

$$ln(y_t^T) = \rho \ ln(y_{t-1}^T) + \eta \ \mu_t, \tag{4.13}$$

where μ is an independent random variable with mean equal to zero and standard deviation η , while ρ is a positive parameter with a value between zero and one governing the autocorrelation of output. The total consumption of tradables is chosen according to

$$c_t^T = y_t^T - (1 - R_t)L(y_t^T) + R_t[q_t d_{t+1} - d_t].$$
(4.14)

When the country is not in default, the price of its debt q_t^d , must equal what is offered by foreign lenders q_t , otherwise nobody would be willing to offer credit, so that

$$R_t(q_t^d - q_t) = 0. (4.15)$$

It follows that the law of one price also holds for actual prices, like with the price of money, so that

$$P_t^T = P_t^{T*} \varepsilon_t,$$

where ε_t is the nominal exchange rate from last period to t.⁷⁸ The price of foreign traded goods is normalised to one for simplicity. Finally

⁷⁸ When ε_t goes up, the currency for the donor country depreciates.

$$(1 - R_t)\tau_t^d = 0, (4.16)$$

$$(1 - R_t)d_{t+1} = 0, (4.17)$$

$$R_t \left[q_t - \frac{E_t R_{t+1}}{1+r^*} \right] = 0, \tag{4.18}$$

$$\frac{A_2(c_t^T, F(h_t))}{A_1(c_t^T, F(h_t))} = \frac{w_t}{F'(h_t)}.$$
(4.19)

Given the assumption of optimal monetary policy, the government can set the exchange rate ε_t and the level of the debt tax τ_t^d . Then the stochastic processes of consumption c_t^T , labour h_t , debt in the next period d_{t+1} , and the price of debt q_t , are given by processes of traded output y_t^T and the choice of default R_t , and initial condition of debt d_0 .

4.3.5.Default

The government only engages in default when it is economically beneficial to do so. Default occurs when the loss of output by repayment v^r , is bigger than default v^d , or

$$v^r(y_t^T, d_t) < v^d(y_t^T).$$
 (4.20)

The left-hand side of the equation is the value of being able to access international capital markets, and the right-hand side is the value of being in default. Continued repayment $R_t = 1$, has a value of

$$v^{r}(y_{t}^{T}, d_{t}) = \max_{\{d_{t+1}, h_{t}, c_{t}^{T}\}} \left\{ U\left(A\left(c_{t}^{T}, F(h_{t})\right)\right) + \beta E_{t} v^{g}(y_{t+1}^{T}, d_{t+1})\right\}.$$
(4.21)

Where the last expression is the value of continued markets access, the optimal level of $h_t = \bar{h}$, and it is subject to

$$\boldsymbol{c}_t^T + \boldsymbol{d}_t = \boldsymbol{y}_t^T + \boldsymbol{q}(\boldsymbol{y}_t^T, \boldsymbol{d}_{t+1})\boldsymbol{d}_{t+1}$$

The value of default (v^d) and the value of having access to capital markets (v^g) are

$$v^{d}(y_{t}^{T}) = \max_{h_{t}} \left\{ \begin{aligned} &U\left(A\left(y_{t}^{T} - L(y_{t}^{T}), F(h_{t})\right)\right) + \\ &\beta E_{t}\left(\theta v^{g}(y_{t+1}^{T}, 0) + (1 - \theta)v^{d}(y_{t+1}^{T})\right) \end{aligned} \right\}, \tag{4.22}$$

$$v^{g}(y_{t}^{T}, d_{t}) = max\{v^{r}(y_{t}^{T}, d_{t}), v^{d}(y_{t}^{T})\}.$$
(4.23)

The default set is then given in terms of tradable-output levels of d_t

$$D(d_t) = [y_t^T : v^r(y_y^T, d_t) < v^d(y_t^T)].$$
(4.24)

Equation (4.24) can be thought of as the optimal policy reaction of when to default, given the government's wish to maximise the full-employment real wage

$$w^{f}(c_{t}^{T}) = \frac{A_{2}(c_{t}^{T}, F(\bar{h}))}{A_{1}(c_{t}^{T}, F(\bar{h}))} F'(\bar{h}).$$

The probability of default in the next period if the country is repaying is

$$Pr\{R_{t+1} = 0 | R_t = 1\} = Pr\{y_{t+1}^T \in D(d_{t+1})\},$$
(4.25)

and the price of the country's debt as a function of tradable output and the debt level is

$$q(y_t^T, d_{t+1}) = \frac{1 - Pr\{y_{t+1}^T \in D(d_{t+1}) | y_t^T\}}{1 + r^*}.$$
(4.26)

It is therefore possible to give the optimal size of the devaluation by, specified by the policy rule that stabilises nominal wages

$$\varepsilon_t = \frac{w_{t-1}}{w^f(c_t^T)}.\tag{4.27}$$

It is assumed that the government sets the optimal level of exchange rates as the regime is that of optimal monetary policy. As shown by Na et al. (2018), the value functions under the assumption of optimal monetary policy are similar to Arellano (2008).

4.3.6.Calibration

The model is calibrated to France in the 1870s (the Franco-Prussian Wars indemnity); Germany in the 1930s (World War I reparations); and Finland in the 1940s (World War II reparations). The output process of (4.13) is estimated using ordinary least squares for each of the episodes. Figure 4.1 shows real GDP per capita from 1860 to 1960 for the countries studied, with the log of output and the structural trend on the left, and the cyclical component obtained by log-quadratic detrending on the right.⁷⁹

⁷⁹ The choice is motivated by the fact that a log-quadratic approach explains a lot more of the cyclical deviations than a log-linear approach. Appendix 4a (section 4.6) shows that a log-linear and HP(100) filter approach does not alter the results.



Source: Bolt et al. (2018) data for output. Note: log-quadratic detrending used to obtain cyclical trend. The dashed line is the secular trend (left-hand). Replication file, *lqtrend_p2.m*.

Figure 4.1: Secular and cyclical components of real GDP (1860-1960).

The autocorrelation and standard deviation of the cyclical trend used in the model are estimated from 1860 to 1930 before the German default. It therefore avoids the volatile period of the Second World War in the standard deviation parameter.⁸⁰ The output process yields the following for the three countries

$$\begin{split} &ln(y_t^T)_{France} = 0.932 \ ln(y_{t-1}^T) + 0.037 \mu_t, \\ &ln(y_t^T)_{Germany} = 0.932 \ ln(y_{t-1}^T) + 0.039 \mu_t, \\ &ln(y_t^T)_{Finland} = 0.932 \ ln(y_{t-1}^T) + 0.043 \mu_t. \end{split}$$

In addition to the autocorrelation of output, several parameters are used across the three episodes. All are standard in the literature and follow Na et al. (2018). The inverse of elasticity of intertemporal substitution of consumption is set at $\sigma = 2$, while the elasticity of consumption between traded goods and nontraded goods is $1/\sigma = 0.5$. The share of tradables in consumption is a = 0.26. Steady state traded output y^T and the labour endowment \bar{h} are both set at unity. The value of the subjective discount factor $\beta = 0.85$, which might seem low but higher values of β worsens the overall fit of the model.⁸¹ The range for traded output is set between 0.7 and 1.5.⁸² The debt range for France and Finland is set between 0 and 1.5, while for Germany the upper range is 2. Appendix 4b shows the

⁸⁰ Autocorrelations of the cyclical component of real GDP are 0.958 (France), 0.941 (Germany), and 0.907 (Finland) for annual data. To avoid unrealistic distributional assumptions in making the number into quarterly to fit the model, the standard parameter in the literature is used for ρ . The standard deviations would be 0.072, 0.083, and 0.042 if the full period to 1960 was used.

⁸¹ Appendix 4c (section 4.8) shows the sensitivity of output for various values of β .

⁸² Following Na et al. (2018), 200 grid points are assumed for both output and debt. Their simulation approach for computing the transition probability matrix for tradable output is used.

debt density graphically for the two debt ranges, which are well outside each country's actual minimum and maximum debt levels, as per Table 4.1 earlier. The time unit of the model is in quarters of a year.

			France	Germany	Finland
			(1870-73)	(1930-33)	(1945-48)
	α	Labour share in the non-traded sector	0.64	0.60	0.75
	r*	Risk free return (quarterly)	0.0092	0.0035	0.0024
Episodo sposifio	θ	Probability of escaping default	0.0385	0.0312	0.0385
Episode specific	δ_1	Loss-function	-0.35	-0.32	-0.32
	δ_2	Loss-function	0.44	0.42	0.40
	η	Standard deviation of µ	0.037	0.039	0.043
	ρ	Autocorrelation of output		0.932	
	σ	Inverse of elasticity of substitution in consumption	2 0.5 0.26		
Standard	ξ	Elasticity of substitution between traded and non-traded			
parameters	а	Share of tradables			
(same across)	\mathbf{y}^T	Steady-state traded output	1		
	\overline{h}	Labour endowment		1	
	β	Discount factor	0.9		
		Debt range	0 to 1.5	0 to 2	0 to 1.5
Discretization of		Traded output range		0.7 to 1.5	
state space		Grid points for output		200	
		Grid points for debt	200		

Table 4.2: Model parameters.

The rest of the model parameters are episode specific. For the calibration of the French economy between 1870 and 1873, I follow Devereux and Smith (2007). The labour share of the non-traded sector is $\alpha = 0.64$, which is slightly lower than the literature. It is justified by a larger share of profits and rents to fixed factors than is the case in more recent studies. The annual world risk-free interest rate at the time was 3.7 percent. The time-unit of the model is a quarter, so $r^* = 0.0092$. It is the average interest rate of U.K. prime bank bills between 1870 and 1873, which was the largest bond market at the time.⁸³ Because France did not default, the parameter setting the length of default is $\theta = 0.0385$ following Chatterjee and Eyigungor (2012). The value implies that the country is in default on average for around 6.5 years.⁸⁴ The first loss-function parameter, δ_1 , is calibrated to -0.35 while the second is estimated, $\delta_2 = \frac{(1-\delta_1)}{2}/max(y^T)$. Taken together with $\beta = 0.9$, it implies an average debt-to-GDP ratio around 72 percent for France when it is not in default, close to its actual debt-to-GDP in 1871.

⁸³ Chiţu et al. (2014) show the U.S. dollar overtook Sterling as the dominant currency for bond issuance around the Great Depression. Accordingly, the U.S. is used as the risk-free rate for Germany and Finland.
⁸⁴ A default of 6.5 years is around the average for 100 systemic crises (Reinhart and Rogoff 2014, p. 50).

For the German 1930-33 calibration, labour's share of income is set at $\alpha = 0.60$ as the aggregate labour share of national income was close to 0.6 leading up to the default (Ritschl 2002, table b.5). Imputed wages would have to be calculated in trade and agriculture but given the lack of data and a low degree of mechanization in these sectors, it is assumed they are close to the aggregate. The average annual risk-free rate on U.S. 3-month Treasury bills was 1.4 percent, so that $r^* = 0.0035$. $\theta = 0.0312$, which implies a length of default of around eight years. Germany first defaulted on its sovereign debt in 1932 and was in default until the end of World War II but forcibly regained access to borrowing in 1940 (Klug 1993, p. 9-12). The loss-function parameters $\delta_1 = -0.32$ and $\delta_2 = 0.42$ are calibrated for a debt-to-GDP ratio of close to 110 percent, as German debt-to-GDP exceeded 100 percent in 1931 (Papadia and Schioppa 2015, p. 6).

For the calibration of the Finnish economy from 1945-48, $\alpha = 0.75$ which is standard in the literature. The world risk-free rate is still the U.S. 3-month Treasury bill, rate which averaged 1.0 percent, so that $r^* = 0.0024$. Like in France, given no default $\theta = 0.0385$. The loss-function parameters $\delta_1 = -0.32$ and $\delta_2 = 0.40$ are calibrated for a debt-to-GDP ratio of close to 65 percent.

4.3.7. Stylised macroeconomic facts about sovereign debt defaults

The model allows for the characterisation of certain stylised facts that typically accompany a sovereign debt default. It is simulated under optimal monetary policy, where the government can freely choose the exchange rate and the debt tax, across 1.1 million quarters for each of the three calibrations, where the first 0.1 million simulations are discarded.⁸⁵ The median values are calculated for y_t^T , c_t^T , d_t , w_t , ϵ_t , p_t , and the credit spread on external debt. The time of default is then normalised at t_0 . Figure 4.2 shows the median of each macroeconomic indicator in the two years before and two years after default at t_0 , for the French (orange), German (blue), and Finnish (purple) calibration. The time scale is in quarters of a year.

⁸⁵ The approach follows Na et al. (2018).



Note: Replication file, plot_model.m.

Figure 4.2: Stylised reaction around sovereign debt defaults.

Three stylised facts can be observed: *first*, like in most models of sovereign debt, a default occurs after a continuous contraction in tradable output across a short period of time. y_t^T falls 12 percent (France), 13 percent (Germany), and 14 percent (Finland) in less than one year before the government defaults at t_0 which triggers the loss-function $L(y_t^T)$. The government chooses to default when the cost of debt service is higher than the benefits of continued ability to borrow, as specified by the value functions (4.20) to (4.24). As the risk of default increases, the risk premium on external debt goes up. Higher interest rates

discourage borrowing so that the consumption of tradables c_t^T falls more than y_t^T . Second, default is accompanied by a large devaluation of both the nominal exchange rate ϵ_t , and the real exchange rate, shown by the relative price of nontradables p_t . The devaluation is not followed by a bout of inflation as nominal prices remain stable. *Third*, the reason there is no inflation is that the real wage w_t declines, which lowers the real labour costs of firms. The three stylised facts are all characterised in equilibrium.

The output contraction that leads to default is mostly a function of subjective discount factor β , the volatility of the economy η and its autocorrelation ρ . With a higher level of β , households will be more patient and ready to forego current for future consumption. The cost of default goes up with a higher β which makes countries default less often. Fewer defaults decrease the country risk premium and increase the level of sustainable debt. Section 4.8 shows the effect of increasing β . An increase in the level of volatility in the economy η has the reverse effect. A higher permanent volatility of output drives up the default frequency because there are more large negative income shocks, which increases the risk premium on external debt. The level of desired savings increases to protect against the volatility which lowers the level of debt. Increasing the autocorrelation of output ρ increases the default frequency and lowers the level of debt. The reason is that output costs of default are present at high levels of output. The lower ρ is, the more likely it is that output will be higher soon, which lowers the frequency of defaults. The level of real wages and the relative price level are affected by changes to a and α , but the direction of the adjustment before a default is not, neither is the frequency of default. Section 4.9 shows the model's sensitivity to different values of these parameters. The loss-function parameters (δ_1, δ_2) are calibrated to ensure the model matches the level of debt-to-GDP as observed.

The central bank can set the nominal exchange rate ϵ_t , which ensures that the external crisis does not spread to the nontraded sector. The government can also set the level of taxes on external debt τ_t^d , which in a historical setting is best interpreted as the introduction of capital controls. Using the same estimation for τ_t^d as for the other macroeconomic indicators, Figure 4.3 shows the median level of capital controls in the two years before a default. The model thus captures the introduction of capital controls in the years leading up to a sovereign default, as was the case in Germany in the 1930s.



Note: Replication file, plot_tau.m.

Figure 4.3: Estimate of capital controls.

The model as outlined above assumes optimal policy from the government with respect to the default decision and in setting the exchange rate and capital controls. As we will see in the next section, governments have not always had the option to do that historically. Countries might not have the option to default or devalue their exchange rate or been discouraged from levying capital controls from their neighbours or creditors. Why assume optimality in policymaking? It is certainly possible to include wage and currency rigidities, alongside explicit financial sanctions. But the point of the analysis is to explain *optimal* sovereign debt policy and compare it to reparations policy. By judging the historical episodes through a sovereign debt framework, it is possible to understand how extraordinary times of war reparations were. If the macroeconomic conditions are far worse than when countries default, it tells us that the enforcement mechanism for reparations debt is more binding than for other types of sovereign debt.

4.4. When default is optimal

The stylised facts of sovereign default presented in section 4.3.7 can help analyse the special case of war reparations. To apply the analysis to historical cases, the following three sections provide the context around how the reparations, as outlined in Table 4.1, were paid. The default set (equation 4.24) is shown graphically in Figure 4.4 for each of the three calibrations, with the level of debt on the y-axis and tradable output on the x-axis. The colour blue denotes the area in which the government repays debt, while the yellow area denotes where the



government defaults (white is outside the grid of the model). The figure shows how to interpret the model and compare to the repayment of war reparations.

Note: The dark blue area is the state denotes repayment while the yellow area is default. The white area is outside the ergodic distribution and not part of the grid. Replication file, *plot_default_sets.m.*

Figure 4.4: Default sets.

The model output is compared to historical data, which I collected for real GDP, credit spreads, debt levels, real wages, nominal exchange rates, and real exchange rates for the three cases.⁸⁶ To apply the model to historical data, the reparation is interpreted as an unexpected increase in the state variable d_0 . At t_0 the country learns that it must pay the reparation, which is captured by a decrease in net output by the term $y_0 - d_0$. It is then possible to see where the level of net output lies in the default set, given historical data for the other macroeconomic variables. It will allow us to understand the costs of paying reparations and whether the optimal policy would have been to default. Sections 4.4.1, 4.4.2, and 4.4.3 discusses the model in the context of war reparations for the three cases. The difference and the issue of enforcement is discussed in section 4.4.4.

4.4.1. The Franco-Prussian War indemnity

France was forced to pay an indemnity to Germany after losing the Franco-Prussian War in 1871. The origin for war was a power struggle between the great nations of Europe. Prussia was victorious in its 1866 war against Austria, which put it in a dominant position over France. A diplomatic dispute led France to declare war in July 1870, with the first battle in August the same year. By September, Germany had won a series of decisive military battles and the war ended in early 1871 with Germany as winner. Germany annexed Alsace-

⁸⁶ Because of the lack of sectoral GDP for the period, tradable output is proxied by detrended real GDP per capita, available yearly.

Lorraine, and as part of the peace settlement Prussian Chancellor Otto von Bismarck imposed an indemnity of five billion francs starting in 1871. The indemnity had the purpose of curbing French power.⁸⁷

The indemnity had to be paid in four instalments over three years, with the majority (three billion) due by March 1874. The total size of the indemnity amounted to around 25 percent of French output (Monroe 1919, p. 269). At the time, it was considered too big to be payable (Gavin 1992, p. 175). As shown in Table 4.1, it was slightly larger in terms of output and taxes collected than the Napoleonic Wars reparations, with annual debt service costs and repayment of the indemnity amounting to nine percent of output a year. The first payment of 500 million francs was due 30 days after the Treaty of Frankfurt, which meant France had to borrow money quickly. In June 1871, France opened subscriptions for a 5 percent *rentes* perpetual bond, which was issued at a price of 82.5, equivalent to an interest rate of 6.1 percent. The bond was oversubscribed, and the total size of the loan was two billion, covering the first three of four instalments. In July 1872, a second bond was announced, this time targeting a size of three billion to repay reparations fully. The loan was oversubscribed 12 times and issued at a price of 84.5 (interest rate of 5.9 percent). By then, France had raised enough money to pay back the indemnity in three years.

According to Gavin (1992, p. 176) France had 13 billion francs in net foreign assets by the end of 1869. Between 1871 and 1874 when France paid the indemnity, its foreign investments fell but net exports rose, as money was diverged towards the bond issues (Monroe 1919, p. 273). The bond issues had high subscriptions from foreign investors, but the primary financiers of the loans were via Paris. At the same time, the French current account was consistently positive and French accumulation of net foreign assets continued in the 1980s. The loans issued were general purpose bonds guaranteed by the government. The indemnity was de facto senior to these loans, as the indemnity was linked to the removal of German troops, but there is no indication that a default was seriously discussed. Because the investor base for the loans was largely domestic, a subsequent default would hit French investors. Devereux and Smith (2007, p. 2392) show that the French terms of trade deteriorated during the repayment from 1871 to 1873 but conclude that the ability to borrow the money meant the impact on consumption was muted. The primary cost was a lower stock of net foreign assets.

⁸⁷ The history provided here is neither complete nor conclusive but is meant to offer a brief context for why the indemnity was imposed. This section follows Monroe (1919) for how the indemnity was financed and paid. For a general history of the period, see e.g., Kindleberger (1993, p. 241-50).

France's status as a net creditor might have influenced its debt and repayment strategy. Figure 4.5 shows the French default set, as well as where France was in 1871 and 1872. On the x-axis is deviation from trend real growth, and on the y-axis is the debt stock. The yellow area denotes areas where the model considers default to be optimal, while the blue area denotes areas where repayment is optimal. The red dots are French output and gross debt stock excluding the indemnity, while the black dots include the indemnity. As can be seen, once the indemnity is included in France's debt stock in 1871, it seems to be in the default area because of high debt and low output. Yet, France did not default and did not seem to seriously consider it. I propose four reasons for why France did not default, even though, as we will see, some macroeconomic indicators suggest a default was optimal.



Note: The dark blue area is the state denotes repayment while the yellow area is default. The white area is outside the ergodic distribution and not part of the grid. The dots denote French debt excluding the indemnity (red dots) and including the indemnity (black dots) on the y-axis and detrended output on the x-axis. Replication file, *plot_default_set_france.m*.

Figure 4.5: French default set, debt stock, and detrended output.

Before discussing the reasons for why France paid the indemnity, Figure 4.6 compares the macroeconomic predictions of the model to historical data, collected for the years 1870-73. The figure shows historical data two years prior to the announcement of the indemnity at t_0 and two years after. The two years prior to a hypothetical default coincides with the end of the war (1871). Detrended output falls during the war but expands after, with GDP increasing by 10 percent from 1871 to 1872 back to 1870 levels. In the upper left of the figure is detrended output where the median default occurs when output is 12 percent below its trend. French growth was below trend by around six percent but the fall in net output $y_0 - d_0$ is significantly bigger. Unlike in the model, the credit spread on French government bonds during the period were static, trading around 5 to 6 percent from 1870 to 1873, with no spike as the risk of default did not increase. The level of debt in the model before default is around 65 percent, close to the pre-indemnity level of 55 percent debt-to-GDP but below the 80 percent ratio in 1871 after the indemnity was announced.

The level of real wages in the nineteenth century was generally flexible, but for the period 1870-73 both nominal and real wages were stable. Monroe (1919, p. 278) provides evidence that wages went up in the mining industry which benefitted from higher exports, but the aggregate wage level was generally stable during the period according to the sources cited below Figure 4.6. The nominal exchange rate was stable because France was on the bimetallic standard (Flandreau 1996). The indemnity was paid in gold, silver, notes, and bills of exchange, with the latter being the primary way of payment. It meant that there was a large flow of specie underlying the indemnity as France were to provide bills of exchange in Germany, and therefore sold gold and silver in the market for bills, which influenced prices of both goods and money. However, because of the bimetallic standard, the overall level of nominal and real exchange rates fell relatively little.



Sources: Bolt et al. (2018) for output; Ljungberg (2019) for nominal and real exchange rates; Insee and Bank of England for bond yields; see Table 4.1 for debt. Data on real wages is an estimate based on BL (1898, p. 668) for Paris wages. A similar trend is found in Bowley (1898, p. 488). Replication file, *plot_france.m*.

Figure 4.6: Model estimate and French historical data (1870-73).

Despite a large loss of output, higher interest rates than in the model, and a large increase in debt, France nevertheless repaid both the indemnity and its debt. France borrowed five billion francs (25 percent of GDP) in 13 months and Devereux and Smith (2007) suggests that consumption was largely unaffected. I suggest four reasons for how France was able to repay without entertaining the idea of default.

The first is that France was in an exceptionally good position to borrow large amounts of money because of its large stock of foreign assets at the end of the war. The Franco-Prussian War was over in less than a year and France did not have to sell all its foreign assets to finance the war. According to Ritschl (1996, p. 185), the French debt stock was around 55 percent of GDP in 1869, which is around 11 billion francs. Gavin (1992, p. 176) notes that at the same time, French foreign assets were around 13 billion francs, which is estimated to yield around five percent. We know from section 2.1.1 earlier that the current account, net of the indemnity, was negative of around two billion francs. It means that at the end of the war, France had no net debt, as its gross debt roughly equalled its foreign assets.⁸⁸ The debt stock in Figure 4.5 might therefore be overstated substantially because it is gross debt. In fact, it provides an additional incentive for repayment. A default might induce sanctions on France, as per the work of Bulow and Rogoff. Because France had little net debt, it might be especially vulnerable to sanctions or confiscations of its foreign assets, which might yield a higher return than the cost of its debt.

The second reason is that France could borrow enough money quickly to pay the indemnity, which meant the costs could be smoothed over many years. The type of debt that France used to borrow was a *rentes* bond, which is a perpetual bond with no maturity. The speed at which it issued debt meant that the upfront costs was minimal. The ease was shown both by the speed and by the large oversubscriptions to its loans, from both domestic and international lenders.

The third reason is related to how the bonds were issued. The bonds were underwritten by de Rothschild Frères (the Paris house), N M Rothschild & Sons (the London house), and the Barings Brothers in London.⁸⁹ In addition to underwriting the loan, the London house of Rothschild also guaranteed foreign exchange stability to facilitate the transfer to Germany. The loan required the combined effort of the Rothschild and Barings families, as outlined by its private documents (Ayer 1904, p. 55). The underwriters lent France credibility and enhanced scrutiny of the loans. Underwriters played an important role during the time, as has been outlined by in a series of papers by Flandreau, Flores, Gaillard, and Nieto-Parra

⁸⁸ The timing might even underestimate the level of net foreign assets a little because the French current account was around 1.1 billion francs in 1870, and the indemnity only started in 1871. But since the indemnity flows were known by then, it can be assumed that they were included in the debt strategy.

⁸⁹ The source for the loans is Ayer (1904, p. 54-57), which was a privately published book on the history of the London house of Rothschild.

(2009) and Flandreau and Flores (2012). The underwriters helped to place the bond and made the financing operation possible, but they also played a role in monitoring and enforcing repayment. Because the underwriters were heavily involved, the likelihood of being able to borrow money went up. It also increased the probability of repayment because the banking houses enforced market access.

The fourth reason is that France might have taken the optimal trajectory in terms of output, consumption, and wages. Looking at Figure 4.6, French output grew in the year after the war. It might have been clear to the French government that output losses in 1870-71 were war-related, and it would be costly to default. If the government knows that it can smooth out one bad year, it does not make sense to take the output loss associated with default (neither in the real world or in the model). The trajectory and stability of French wages and nominal and real exchanges rates would seem to confirm this view.⁹⁰ Had France defaulted on the indemnity in 1871, two things would likely have happened. The first is military intervention. Germany annexed Alsace-Lorraine but in the event of no payment, it might have intervened militarily, either to confiscate the money or grab more land. The second is that a default would have cut France off from borrowing internationally. The international banking houses and its neighbours would have stopped the flow of credit, possibly confiscated French foreign assets, or placed sanctions on France.

All four reasons for repayment can be true at the same time. The lower level of net output and the use of export proceeds to pay the indemnity, rather than accumulate foreign investments, suggests there was a real cost of resources to France. But France's external position meant it was well positioned to repay the indemnity quickly, and France would have incurred large political and economic costs had it attempted a sovereign default.

4.4.2. Finnish World War II reparations

Finland was on the losing side of World War II and had to pay reparations to the Allied forces, as agreed at the 1945 Potsdam Conference. The Peace Treaties of Paris (1947) set up the Allied Control Commission and the War Reparations Commission allocated the Finnish accumulated debt to the Soviet Union. In addition to incurring the cost of the Commission, Finland faced significant reparations and lost territory to the Soviet Union.⁹¹ Reparations were to be paid entirely in kind, at an estimated cost of three percent of output per year

⁹⁰ It is also possible that the economy adjusted by lowering the level of real wages, but that it does not show up in the limited data source on French wages for the period.

⁹¹ The Marshall Plan helped rebuild Europe but was politically offensive to the Soviets and Finland was pressured not to participate by the Soviet, an added indirect cost.

between 1945 and 1952 (Pihkala 1999, p. 26-37). The total size of the reparation was 300 million U.S. dollar, which was specified in the treaty. In terms national output, reparations were almost the same size as the Franco-Prussian indemnity. The uncertainty around prewar GDP and GDP levels during the first repayment means that the reparations-to-GDP can only be estimated at somewhere between 17 and 30 percent. I will use the most reliable GDP number implying a 20 percent reparations-to-GDP.

From 1944 to 1947, Finland received loans from the U.S. worth 126 million U.S. dollar while paying out the equivalent of 232 million in reparations. Pihkala (1999, p. 32) estimates that the required dollar funding, had Finland bought only American goods and used them to pay the in kind reparations, would have been between 546 and 570 million dollar. It corresponds to around a third of total industrial production in 1945, though by 1952 it had fallen to four percent as the economy had grown. Finnish reparations were mostly funded by loans and foreign debt, which increased from 229 million dollar in 1945 to 661 million dollars in 1951 (Pihkala 1999, p. 46). During the period, Finland paid its sovereign debt and reparations despite exhibiting all the characteristics of a sovereign default, as explained in the model.



Note: The dark blue area is the state denotes repayment while the yellow area is default. The white area is outside the ergodic distribution and not part of the grid. The dots denote Finnish debt excluding the reparation (red dots) and including the reparation (black dots) on the y-axis and detrended output on the x-axis. Replication file, *plot_default_set_finland.m*.

Figure 4.7: Finnish default set, debt stock, and detrended output.

Figure 4.7 shows the default set of Finland for the years 1945 to 1948. Like in the previous section, the red dots denote Finnish sovereign debt excluding reparations on the y-axis, while the black dot are total liabilities including reparations. On the x-axis is detrended real output per capita. Finland came out of the Second World War with low output and a high debt stock. The level of Finnish debt-to-GDP was 60 percent in 1945 before the announcement of reparations. It jumped to 80 percent of GDP in 1945 as reparations were 20 percent of GDP. Only 28 percent of Finland's debt stock was foreign in 1945 but it grew to more than half by 1949 (Pihkala 1999, p. 46). Because Finland experienced such output loss in the immediate years following the war, Finland was in the default set from 1945 to 1947 if reparations are included in the debt stock. Only by 1948 did output rebound and its sovereign debt was reduced, placing it in the repayment area. Unlike in the French case earlier, the period from 1945 to 1947 was marred by economic crises in which wages fell drastically and the exchange rate was devalued.

Figure 4.8 plots the model predictions against Finnish historical macroeconomic data collected from 1945 to 1948. The largest output loss came in 1945 at the end of the war, where detrended real output per capita fell nine percent. Net output $y_0 - d_0$ decreased 25 percent as initial reparations were announced in 1945, before recovering slowly from 1946 onwards. The level of debt after the announcement of reparations was significantly above the level of d_0 in the model. The Finnish debt stock was negotiated at the end of the war and is therefore unchanged before 1945. Until the end of 1946, interest rates did not move much, hovering between six and seven percent, using Helsingfors municipal bonds as a proxy. But in 1947 the price of the five percent government bond maturing in 1961 dropped, which increased interest rates. Real wages fell by 50 percent from 1945 to 1948 and Finland devalued their currency the *markka* three times in 1945. Like the real wage, the real exchange rate (bottom right) overshoots the prediction of the model significantly.



Sources: Bolt et al. (2018) for output; Ljungberg (2019) for exchange rates; Federal Reserve for bond yields; Pihkala (1999) for wages and debt. Replication file, *plot_finland.m.*

Figure 4.8: Model estimate and Finnish historical data (1945-48).

The Finnish economy performed worse in terms of exchange rates and real wages than the model would predict for a default. In the model, the government's goal is to maximise full employment real wages, and a default marks the trough in real wages and output. An economic crisis does not spread to the domestic sector, because the government uses optimal monetary policy (by devaluing the currency and increases tariffs) alongside a default. Finland's output, credit spreads, debt stock, real wages, nominal, and real exchange rates all performed worse in the years 1945 to 1947. One reason could be that Finland was unable to default on its sovereign debts, which meant that increased levels of domestic resources went to debt service. The only policy option was to devalue the currency, but because its debt was foreign debt, devaluations increased the value in domestic currency. While its loans were in foreign currency, however, reparations were paid in kind.

The reason Finland was unable to default on reparations was the political economy realities of its close relationship with the Soviet Union. Similarly, it was in the interest of Finland to have closer relations with Western Europe and the U.S., which meant a default on its debt to the U.S. was impossible. The only policy-option was a devaluation and export growth, especially to Western Europe. It meant that as reparations were paid, Finland could grow its way out of its debt problems, which meant that by 1948 it was no longer in the default set. When Finland joined the IMF and the World Bank in 1948, debt-to-GDP was already declining. It was, however, a path that did not include a default because it was impossible politically, even though it might have been a better economic policy.

4.4.3.German World War I reparations

The Treaty of Versailles (1919) stipulated that Germany pay reparations for World War I. The size of reparations was to be negotiated after Versailles by the Reparation Commission, but the Germans expected 30 billion to be an upper limit.⁹² In 1920 news leaked of a larger-than-expected reparations bill of around 80 billion. It sent shockwaves through the German public. In 1921, the London Schedule of Payments set the total reparations bill at 132 billion gold marks, far above initial estimates. It would be payable in three tranches: A-bonds (for war damages) worth 12 billion or around 25 percent of 1913 GNP; B-bonds (for inter-Allied war debt) worth 38 billion or around 75 percent of GNP; and C-bonds, the majority, at 82 billion totalling 150 percent of GNP. The implicit understanding was that the C-bonds would not need to be repaid (Ritschl 2012a, p. 945). The total size of the A-bonds, the war reparations, added together with the existing German debt stock in 1920 of around 50 percent of GNP. The French indemnity was specifically discussed in setting the reparations amounts after World War I (see section 2.1). Adding in the B-bonds for inter-Allied war

⁹² See James (1986), Schuker (1988), or Ritschl (2002) for a comprehensive history. This section follows from there.
debts took German debt levels well above historical precedents, but total debt levels were close to that of Britain and France after the war, even though Germany had relied more on debt and less on taxes to finance the war compared to Britain (James 1986, p. 49-50).



Source: Bolt et al. (2018). Replication file, lqtrend_p2a.m.

Figure 4.9: German secular and cyclical real output per capita (1860-1940).

Germany experienced an extremely volatile business cycle in the interwar years, as the economy swung from hyperinflation to deflation and depression. Figure 4.9 shows German real GDP per capita as well as detrended GDP (to the right) for the period 1860 to 1940. As can be seen in the figure, the period from the start of World War I until the mid-1930s saw large output swings. Albrecht Ritschl (2012a) suggests that Germany had three distinct economic phases during the interwar years, which are shown in Table 4.3. Each phase saw different growth rates, capital flows, and inflation regimes – and reparations played a key role in each economic phase.⁹³

	1921-23	1924-29	1930-33
Real growth (deviation from trend)	-14.0	0.8	-7.7
Current account	-	-3.1	0.4

Source: Bolt et al. (2018); Jones and Obstfeld (2001). **Note**: The numbers are mean deviation from trend growth and mean current account in percent of GDP for the years in each column.

Table 4.3: German economic phases between 1921 and 1933.

⁹³ There are different ways to break down Germany's economic phases. Harold James (1986, p. 213) suggests a different breakdown based on the structure of German wages after the stabilisation of the Mark, where 1924-25 saw rapid wage growth from a low base; mid-1925-26 saw a temporary slowdown in wage pressures; from 1927-28 wages increased with the civil service leading; 1928-30 wages kept rising while employers resisted unsuccessfully; and from 1931 wage rates fell dramatically.

The initial phase from 1921 to 1923 was characterised by hyperinflation. During 1920, the German economy had stabilised but after the size of the reparations bill became clear, tax revenues plunged. The much higher-than-anticipated reparations bill resulted in tax "boycotts" from the German public (Ritschl 2012a, p. 950).⁹⁴ The government had to make up for lower tax revenues from the boycotts, so the central bank had to print money. During this period, only the minimal required transfers were forthcoming as the financial system collapsed, external creditors saw their claims reduced in real terms, and political instability increased alongside unemployment. Germany's capacity and willingness to finance reparations on international capital markets was limited. Its debts in 1921 were mostly foreign debt which increased its incentives to default. By late 1922, Germany refused to pay what they considered an intolerable and odious debt, as output losses made the debt burden worse. Germany was forced back to the negotiation table in January 1923 when the Allied occupied the Ruhr to enforce payment of reparations.

The second phase occurred from 1924 to 1929. The period was the mirror-imagine of the earlier years (see Table 4.3) as growth rebounded, inflation stabilised, and capital started to flow into Germany, which increased debt levels. Output was still more than ten percent below trend in 1924, but by 1925 output had almost recovered. In 1924, the Dawes Plan settled the reparations question and ended Allied occupation of the Ruhr (see e.g., Lutz 1930, p. 41-48 or Yee 2020). The payment scheme included only reparations (the A-bonds) but did not provide any explicit debt relief. The liability of reparations was therefore still significant, with the present value of the Dawes Plan annuity almost equal in size to the combined Aand B-bonds (Ritschl 2013, table 4.1). The Dawes annuity was considered unpayable by many at the time, even though the German commercial debt stock had been inflated away and was negligible by 1924 (see e.g., Costigliola 1976).⁹⁵ Germany had to attract large capital inflows from 1924 to finance the reparations transfers, something which it was successful in doing until 1929. The reason it was successful was that the Dawes Plan embedded investor protections into reparations, as shown by Ritschl (2002, p. 193-217). The protections were in the capital structure under the Dawes Plan. The Plan stipulated reparations remained junior to corporate debt claims in the central bank's foreign exchange window, providing a

⁹⁴ The literature also suggests that distributional conflicts and delayed stabilization played key roles in stoking hyperinflation. The section focuses on reparations as the key issue, but I do not suggest that to be the definite cause of hyperinflation. See e.g., James (1986, p. 126-32) for a discussion about the role of industry and investments on inflation.

⁹⁵ Fleisig (1976) argued Germany would have defaulted even without a global depression. Neto (1986), on the other hand, suggested the German government never tried to raise taxes or cut spending to produce the required primary surplus.

remedy to enforce commercial debt claims. The protections were needed in 1924 to ensure that Germany could borrow abroad to finance the transfers, as German debt was not sustainable. By 1924 German detrended output was 11 percent below trend and the present value annuity of the Dawes Plan was almost 75 percent of GNP. The combination of low output and high debt puts Germany in the default set, as can be seen in Figure 4.10. The figure shows the default set of Germany, with yellow area denoting default and the blue area denoting repayment, as a function of the debt-to-GDP stock and deviation from trend growth (the white areas are outside the grid of the model). The red dots show German commercial debt was negligible and is left out of the graph for the years 1924-25 (James 1986, p. 40-43). The black dots in the figure show German total liabilities, which are commercial debt plus reparations annuities (the black dots are the present value of the Dawes Plan and the Young Plan for the years in brackets). By 1925, the rebound in output meant that Germany was no longer in the default set.



Note: The dark blue area denotes repayment while the yellow area is default. The white area is outside the ergodic distribution and not part of the grid. The red dots denote German debt commercial debt *excluding* reparations and the black dots is German *total liabilities* (including reparations). **Sources**: Ritschl (2012a, p. 945-6) for commercial debt in 1920; IMF data for commercial debt in 1924-5 (negligible); Ritschl (2013) for the net present value of Dawes Plan annuity and GDP in 1924 and 1925; Papadia and Schioppa (2015, p. 6) for data from 1928-33. The x-axis is deviation from trended output. Replication file, *plot_default_set_germany_all.m*.

Figure 4.10: German default set, debt stock, and detrended output.

Germany was incentivised to borrow from foreign creditors to pay reparations in several ways. Borrowing the money externally naturally eased domestic budgetary constraints and freed up money to be used for other purposes. Domestic credit expansion was difficult because hyperinflation had eroded both trust and wealth. Increased external debt also meant that private creditors would be incentivised to ally with Germany in future reparations negotiations. The end of reparations was the primary stated goal of economic policymakers, something they thought worth taking considerable financial risk over (Schuker 1988, p. 35). There were incentives for foreign creditors to lend to Germany as well. The first was that German debt levels by 1925 were low if reparations are excluded. German debt service was only 0.6 percent of government expenditures in 1925, compared with 28.4 percent in Britain (James 1986, p. 48). In an overall creditworthiness assessment, the reparations annuity must be included, but because commercial creditors had an enforcement mechanism on the foreign exchange reserves at the Reichsbank, it meant they were senior debt claims (Yee 2020). The invasion of the Ruhr in 1923 had showed that enforcement of reparations was binding, even though France and Belgium experienced high political costs of military intervention. As a result, the commercial debt stock increased from 1925 as Germany borrowed abroad and money was recycled from the U.S. in what Stephen A. Schuker (1988) termed "American Reparations' to Germany". From 1924 to 1929, Germany issued corporate and sovereign bonds across Europe and private foreign credit flowed into Germany which was used to finance reparations transfers (Accominotti and Eichengreen 2016, p. 476-78). The borrowing meant there was no transfer of resources between 1924 and 1929, because the current account matched the reparations flow. Germany paid 2.5 percent of national income every year from 1925 to 1932 in reparations, which peaked at 3.5 percent in 1929 (Machlup 1964, p. 374-95). In present value terms, the transfer was quite real of course because debt increased.

The third phase from 1929 to 1932 was marred by austerity and deflation. Already in 1927, the first financial troubles had started. The government issued a RM 500 million loan with a five percent interest, which had to be converted to a six percent loan to avoid the price of the loan falling too drastically in the secondary market (James 1986, p. 50-52). By 1929, the issue of financing began to dwarf other economic problems. The government tried and failed to issue the full RM 500 million of the Hilferding Loan despite big tax concessions to investors (ibid) and at the same time, tax revenues started to fall which led to a budget crisis in late-1929. The post-war economic structure was under pressure, as calls for both tax and spending cuts intensified with support from the Reichsbank. The problem of loan

financing got worse throughout 1929, as Germany tried and failed to obtain long term credit from international banking houses JP Morgan and Dillon Read (James 1986, p. 54-59). The government increasingly had to rely on short term treasury issuances which increased the rollover risk when the debt matured. The cause of the crisis was not simply due to a reversal of capital flows. James (1986, p. 39-110) has argued that the difficulty the government had in financing growing public expenditures stemmed from distributional effects. A larger bureaucracy, increased level of spending on agriculture and social welfare, and no reform of the many levels of government (Reich, Länder, and communes) helped redistribute wealth and income away from pre-war rentiers (James 1986, p. 51). The public financing issue was worsened by the weakness of the banking system, which turned into a full-blown banking crisis in 1931 (see e.g., James 1986, p. 281-323). The economic crisis thus had domestic as well as global origins, because when the domestic economy started to weaken it did so alongside the start of the Great Depression. Germany's reliance on foreign debts hit a wall, and with it a looming balance of payments crisis.

The Young Plan negotiations occurred simultaneously with the increased financing troubles. There were signs of a run on the foreign exchange reserves in the spring of 1929 during the negotiations as it looked like there was no agreement (James 1986, p. 284), but a deal was reached in August 1929 and formally approved in 1930. The economic and political impact of the Young Plan was big. It was expected that the plan would offer some relief, but as Ritschl (2002) shows the outcome was instead a change in the structure of debt. The present value of the new reparations annuity under the Young Plan was slightly lower than the Dawes Plan, but the debt seniority of commercial creditors over reparations transfers was reversed. The implicit understanding during the Dawes years, as argued by Ritschl (2002) and Schuker (1988), was that reparations would be reduced dramatically. In the context of Figure 4.10, the implied belief during the Dawes years was that de facto debt levels were the red dots (commercial and sovereign debt) but not the black dots (which includes reparations annuities). The Young Plan made clear that German liabilities included reparations. The Young Plan was accompanied by an official loan ('the Young bond'), but private credit access dried up during 1929 (Ritschl 2012a, p. 954-57). Foreign loans became unavailable and domestic credit expansion was not possible under the Young Plan, as at least parts of the annuity payments became senior to commercial debt (Schuker 1988, p. 52). The debt sustainability of Germany became an acute problem because the total stock of reparations was not written down, but only reprofiled. Short-term creditors began to demand austerity policies to roll over existing loans, and because the government had lost access to long-term

foreign credit, the Brüning government engaged in austerity policies to regain long term debt solvency. Until the reversal of capital flows, high real wages in Germany had not affected the unemployment rate but after 1929 they did. The Young Plan ruled out a devaluation and made Germany unable to alleviate the pressure from high real wages, which translated into a sharp output contraction, as first outlined by Borchardt (in e.g., 1984, 1990).

The last French troops did not leave Germany until 1930, so there was very likely still a binding enforcement mechanism on reparations in 1929. A hard German default in 1929 might therefore not have been possible, which goes some way to understand why the Young Plan was agreed by both sides. A second reason is found in Figure 4.10. The present value of the Young Plan annuity in 1929 was 42 percent of GDP, while its outstanding commercial debts was 35 percent of GDP, for a combined 76 percent debt-to-GDP. The Dawes Plan annuity had a present value of 52 percent in 1929. Even though the German economy slowed during 1929, it was still above its long-term trend. Germany was therefore still outside the default set in 1929, even with a debt stock of 86 percent of GDP under the Dawes Plan and 76 percent under the Young Plan. An outright reading of the model affirms the view that by 1929, it was still in Germany's interest to have access to capital markets, which a unilateral default would have cut off. Germany gave up transfer protections from reparations in exchange for some debt relief and 300 million U.S. dollars in loans, which was hoped to be followed by additional credit. Instead, loans from U.S. and Canadian banks dried up in 1930 following the Young Plan (Schuker 1988, p. 50-63). With no new loans available to pay off existing interest and reparations, the money had to come from domestic sources.

The result was austerity and deflation, which came at extremely high social and political cost. By 1930, as Ritschl (2002) has argued, if Germany was committed to repaying reparations while not defaulting on its commercial creditors, it had no other options than austerity policies because of years of external debt-financing. But austerity policies lead to deflation, high unemployment, and a collapse in growth. Austerity policies came in the form of decrees from Brüning from December 1930 to December 1931, and the policies were a mix of tax increases (explicit and implicit), cuts to state welfare, and reductions in civil service pay (James 1986, p. 36). It is easy to see that Germany ends up in the default set a by 1931, with a high debt stock and much lower growth. In that sense, much economic and political pain was for nothing. The foreign credit constraint was self-fulfilling, as it made it impossible for Germany to escape its debt-deflation regime. The remedy for previous periods of high debt and low output was to borrow money, but by 1929 that was no longer possible. Schuker (1988, p. 63) notes that Brüning hoped to engage in foreign credit expansion in the spring of

1932, as it was expected the reparations issue would be resolved. The end of austerity was never enacted by Brüning, despite the Reichstag passing a law allowing more borrowing. The effect of austerity was a vicious cycle of lower revenues and problems of financing increasing deficits (James 1986, p. 60-73).

The public financing issue was a problem because of the structural weaknesses in the low-growth economy. Even small increases in nominal debt could not be sustained because output fell dramatically and increased the debt burden. The difficulty in rolling loans forced a tightening of credit and a reduction in the money supply (James 1986, p. 293) and continued austerity fuelled the economy into a debt-deflation crisis. By 1931, the political and military situation in Europe had changed and was markedly different than it was in 1923. Germany pushed for and received a moratorium on reparations payments from U.S. President Hoover in 1931 as the financial and economic situation deteriorated (James 1986, p. 34-35). At the same time, Germany obtained a 100 million U.S. dollar loan from a consortium of central banks as private credit flows stopped, to keep up payments on its other debt (Clement 2004, p. 36).⁹⁶ The central bank loan was the only real option of long term credit because political uncertainty made financing German deficits difficult, even though the deficits were relatively small compared to its European neighbours (James 1986, p. 71-73).⁹⁷ The other European nations and the U.S. had no appetite for a costly enforcement of reparations amidst an economic crisis. The Hoover moratorium had not cancelled reparations, but according to Schuker (1988, p. 64-65) the debate within the German business community throughout 1932 was whether to service foreign debts or default. The economic situation did not improve in 1932, and Germany negotiated a standstill with its short-term commercial creditors. At the Lausanne Conference in July 1932, reparations were de facto cancelled. The Lausanne Conference did not result in a German default on its sovereign debt, because Article 7 explicitly protected bond holders. But the agreement removed the direct repayment from reparations annuities that was previously embedded and meant that the debt had to be serviced out of the government's general-purpose finances (James 1986, p. 71-73). As can be seen from Figure 4.10, Germany was by 1932 well in the default set even without reparations (the red dots), as autarky policies became optimal to repayment of debt.

The standstill and de facto cancellation of reparations removed an important obstacle to a German sovereign debt default. Domestically in Germany, both the Nazis and the Communist Party advocated for a default, which was an alternative to austerity policies of

⁹⁶ The New York Federal Reserve, the Bank of England, the Banque de France, and the Bank of International Settlements.

⁹⁷ In 1931 German debt service as a share of public expenditures was 2.9 percent (James 1986, p. 48).

the Brüning cabinet. The outcome of the Lausanne Conference meant that the capital structure of German debt changed once again, as the long-term debt prioritised during the Young Plan years became junior to shorter term debt. Most of the long-term debt was to commercial creditors in the U.S. (Papadia and Schioppa 2015) but Germany could engage in discriminatory debt policy because U.S. sanctions were no longer effective due to its trade policy (see Ritschl 2002). Germany meanwhile prioritised reducing its debt to England because London banking houses continued to offer certain short term credit arrangements. The Brüning cabinet's policies were to reduce the credit constraint but once the Nazi's took power, a policy of default was explicit (Clement 2004, p. 49). Already by then the debate on whether to service commercial debts was, according to my analysis, redundant. By 1931, autarky was preferable to repayment of debt, as output losses were severe and the benefits from some access to borrowing was outweighed by the cost of servicing debt.

The stylised facts accompanying sovereign defaults were by 1932 all present in Germany, as shown in Figure 4.11. The policy of default was optimal, if even late. The figure shows model output and historical German data from the end of 1929 to 1933, with t_0 being 1932 in this figure (see below for a discussion of the default dates). German detrended real output per capita y_t collapsed 18 percent between 1930 and 1932, while net output $y_0 - d_0$ was 35 percent lower. The level of sovereign debt after the Lausanne Conference was 49 percent of GDP. The credit premium on German bonds over U.S. treasuries more than doubled in the year before the sovereign default. In the model it occurred as the probability of default rose. The middle-left figure in Figure 4.11 shows that the German debt stock after the default fell to 45 percent in 1932 and then to 40 percent in 1933. By 1938, its debt stock was down to 14 percent of GDP. Even though the government was unable to pursue an outright devaluation of its currency, it nonetheless did so by stealth method. Klug (1930, p. 18) estimates that exports subsidies meant German exports could be purchased abroad at a 30 to 60 percent discount. De facto German currency policy is therefore in line with equation (4.27). In the figure, the real wage, the nominal exchange rate, and the real exchange rate are plotted with their actual values and with the stealth devaluation. Nominal wages did fall but inflation fell more, and real wages rose despite mass unemployment. By 1932, real wages were more than 40 percent above their 1925 index while productivity had risen by less than half (Ritschl 2012b, p. 40).



Sources: Bolt et al. (2018) for output; Ljungberg (2019) for exchange rates; Ritschl (2012b, p. 40) for wages; Papadia and Schioppa (2015, p. 15) for debt and German bond yields; the Federal Reserve for U.S. yields; and Klug (1993, p. 18) for the estimate of the stealth devaluation, where the lower part of the range (30 percent) is used. Replication file, *plot_germany.m.*



The German sovereign debt default can be dated in different ways because of the different types of external debt. The political debts of reparations and war debts were suspended for a year by the Hoover moratorium in June 1931, which was followed by the standstill agreement on short-term debt (Ritschl 2012a, p. 956). Reparations were de facto cancelled in 1932 at the Lausanne conference but it did not include the sovereign loans issued (Dawes and Young bonds). The standstill agreements led to a rally in the bond prices in early 1932 as cash was perceived available to repay those bonds, as can be seen in see Figure 4.12. The Nazis came to power in early 1933 and had an explicit policy of not paying long-term external debts. The 9 June law of 1933 (see Schacht, 1967, p. 137-41) created the "foreign exchange clearing office" through which all external interest and amortisations payments were to flow, which in effect meant money would be intercepted by the office. Additional defaults occurred in 1933 as Germany revoked the Gold Clause and announced it would only honour the nominal value of its debt (Clement 2004, p. 37-38). In 1934, a full moratorium on debt payments was announced alongside capital controls (Schuker 1988, p. 47-82). In 1934, another spike in interest rates occurred in the lead up to the full default in 1934 (Ritschl 2001, p. 329-30).





Source: Papadia and Schioppa (2015, p. 15). Note: Bonds converted to yields, using stated coupon, maturities in 1949 for the Dawes and 1965 for the Young bonds (Clement 2004, p. 47). Replication file, *plot_gdr.m.*

Figure 4.12: Yields on German external bonds (1931-35).

Albrecht Ritschl (2002) has argued that because sovereign debt policies and trade policies were interlinked, it was not possible to default while maintaining open trade with all its creditors. Where this research diverges from Ritschl, and others, is in estimating the policy of repayment before 1932. As is shown in Figure 4.10, German austerity policies proved to be more costly than continued debt service already in 1931, because of its effect on real growth. A sovereign default would have meant a return to financial autarky and likely trade sanctions, but it would have allowed domestic credit to expand and Germany to leave the stated policy of long-term debt sustainability. The argument here is therefore that the cost of austerity policies was larger than the gain from continued market access, limited as it was to short-term loans. In the model presented here, sovereign debtors will only pay their debts if the cost is not higher than financial autarky. Unlike much of the literature, I find that the point of optimal default came already in 1931, even assuming the Great Depression does not reduce the costs of autarky policies.

4.4.4.Enforcement of war reparations

The three reparations studied here were paid under very different circumstances. France, Germany, and Finland all found themselves, at one point or another, in a situation where a strict interpretation of the model would suggest that a sovereign default was the right policy. Defaults did not happen on reparations, and only Germany defaulted on its sovereign debt. The French and German cases are opposites, even if there are historical similarities and German reparations were, to some extent, designed with French indemnities in mind.

The model suggests that France should have defaulted in 1871, but they were right to pay given the macroeconomic and political situation. The quick rebound in output means that already by 1872, France is outside the default set. It had easy access to loans at reasonable interest rates, with high investor participation from both foreign and domestic sources. The most important factor was that France had accumulated a high stock of foreign assets, meaning its net debt was essentially zero, which incentivised a settlement that did not include sanctions or confiscations. It is a case in which enforcement of sovereign debt played a positive role, in that a default would have been more costly than repayment. It is also likely that military enforcement was not needed, because France was incentivised to repay because of its easy access to debt and stock of foreign assets. The macroeconomic situation was, crucially, one in which the current account was positive, meaning that while France repaid the indemnity it did not do so by indebting itself.

The situation is Germany was different. The model suggests that Germany was in the default set in 1920, in 1924 (using the present value of the Dawes annuity), in 1931 (even excluding the Young annuity), in 1932, and in 1933. It was forced to repay reparations in the 1920s with disastrous long-term consequences. Germany had limited access to borrowing until 1925, from which point it managed to escape output losses by borrowing abroad. Economic growth from 1925 to 1929 was built on a debt-spiral and real wages that were too high, given Germany's external position. A continuously negative current account helped keep real wages and the real exchange rate high, but it could only last if debt could be rolled over into new loans. The model suggests Germany should repay in 1929, but we know that it was folly – the debt stock could not be rolled over. Austerity by the Brüning cabinet was implemented to maintain market access, but it relied on two crucial facts. First, that the market would acknowledge debt sustainability and keep lending, and second, that domestically the policies could be implemented without political chaos. Both proved unsustainable. Based on the net foreign asset position, the current account, the high level of real wages and the real exchange rate, only a small shock to output would put Germany into the default set. Two years of costly austerity only yielded further ground for the Nazi takeover, rather than regaining market access as was the goal. Had Germany defaulted already in 1929, it would have saved two years' worth of interest payments and entered autarky at the same time, as market access was by then de facto gone.

Like the German case, Finland did not have the option of defaulting because of political pressure in the new geopolitical landscape that emerged from World War II. Unlike Germany, it managed to eventually grow its way out of debt trouble, and not by taking on more debt. The trajectory was suboptimal, however. It involved three devaluations, a fall in real wages of more than 50 percent, and large inflationary problems. A default would have allowed foreign exchange to be used for domestic purposes, but because it was not possible the macroeconomic adjustment had to come from elsewhere.

In France in the 1870s, the investors were largely domestic which would have made a default costly to the households who financed the indemnity. The same households and government who had stocks of foreign assets that were at risk. In Germany and Finland, creditors were almost all foreign and both countries had no foreign assets after the wars. The incentives and costs would have been in favour of a default. But investors knew that repayment would be enforced. It therefore makes sense that credit spreads did not increase following the announcements of reparations, as the probability of default did not increase as debt contracts were enforceable by military force. The fact that reparations in general are

enforced likely lowers borrowing costs.⁹⁸ Sovereign debt crises generally entail rollover risk of loans, but if investors know that their claims will be repaid, then they should be willing to lend at lower interest rates, if they are seen to be linked to reparations. Repayment can happen even if it does not make sense economically, and investors can lend more money to cover old debt, even if the debt is unsustainable.

Models of sovereign defaults, like the one presented in this paper, concerns itself with willingness to pay. It offers a way to judge if it is in the country's interest to pay its debt. Willingness to pay has been the norm since 1907 when the Drago Doctrine agreed that countries would not enforce sovereign debts by military force.⁹⁹ The invasion of the Ruhr in 1923 was a reversal to the time before the Drago Doctrine. Without discussing the legality of the invasion (see e.g., Allemés and Schuster 1924 for the case for and against), it was a break with the idea that creditors should not enforce debt contracts militarily. The idea of reparations is that they are involuntary, but they stand out as uniquely enforceable within sovereign liabilities. The reason is that they are political by nature. Both German and Finnish reparations were, to varying extend, a break with the Drago Doctrine.¹⁰⁰ The argument in this paper is that both cases show that the enforcement of reparations and reparations-related debt created a sub-optimal economic outcome. In Germany's case, it prolonged repayment and ensured default came only after the Nazi takeover and years of austerity. In Finland's case, it forced three devaluations and years of economically costly repayment, before it managed to grow its way out of debt.

4.5. Conclusion

The literature on sovereign debt mostly focuses on recent examples of defaults. This paper situates the repayments of war reparations within the quantitative literature, to understand if the repayment was optimal. The economies of France in 1871, Germany in the 1930s, and Finland in 1945 are all shown to exhibit some macroeconomic characteristics that are typically seen during sovereign default, but they have very different outcomes. The enforcement of reparations by military force broke with the Drago Doctrine and created a suboptimal economic outcome. I argue that Germany would have benefitted from an earlier

⁹⁸ A related effect is shown by Accominotti et al. (2011) in their study of how the British empire helped remove the default risk of its colonies.

⁹⁹ Convention II, which was signed and ratified by all countries in this study (Germany, Finland, France, Russia, the U.K., and the U.S.) by 1910. There are certain exceptions in Article I, which states that the convention does not apply if states refuse or neglect to accept an offer of arbitration.

¹⁰⁰ Germany more so than Finland, as there was arguably no military intervention to enforce Finnish debt, but it was there implicitly in the political intimidation.

default and Finland was constrained in its economic policies. The Franco-Prussian War indemnity was enforced but would have likely been paid regardless, because of France's stock of foreign assets. Military intervention to force the payment of debt therefore only hurt economic policymaking.

4.6. Appendix 4a: Different detrending methods for real GDP

The results of the paper do not depend on the choice of detrending method. Figure 4.13a shows the cyclical components of output using log-linear detrending method to the left (King et al. 1988), and HP(100) filtering to the right. There are substantial differences in the length of the suggested business cycles, but the contraction in cyclical output in the years after reparations transfers is similar. As an example, for France from 1870-73 the deviation from the secular trend changes by less than one percent across all methods. The other episodes are similar. Quadratic detrending is therefore used throughout chapter 4 and the dissertation.



Source: Bolt et al. (2018). Replication file, *alt_trends.m*.

Figure 4.13a: Log-linear detrending and HP-filter of real GDP (1860-1960).

4.7. Appendix 4b: Distribution of external debt

Figure 4.14a shows the density distribution of external debt for the calibrations. Germany's debt level is assumed to fall between zero and 200 percent of tradable output, while France and Finland have an upper limit of 150 percent.



Note: Depending on the country being in good financial standing. Replication file, debt_dist.m.

Figure 4.14a: Distribution of external debt.

4.8. Appendix 4c: Varying the discount factor β

Figure 4.15a shows the model estimates for different values the subjective discount factor β for the German calibration. As the discount rate is lowered (higher β) the present cost of default goes up. For $\beta = 0.95$, the median output loss before default increases to over 20 percent. A higher value of β worsens the fit of the structural credit spread across episodes.



Source: Bolt et al. (2018). Replication file, *plot_b.m.*



4.9. Appendix 4d: Model sensitivities

The table below show the model's sensitivities to changing various parameters. The baseline model is the German calibration, which is denoted by star in Table 4.4a. The table shows model statistics for the frequency of default, d/y denotes the average debt-to-GDP ratio in percent, $r - r^*$ is the credit spread in annual percent, y is detrended output, and tb is the trade balance. Sigma denotes the standard deviation and corr the correlation.

	Default					
	frequency	d/y	r - r*	σ(r - r *)	$\operatorname{corr}(r \cdot r^*, y)$	$\operatorname{corr}(r \cdot r^*, tb/y)$
$\beta = 0.85$	1.90	86	2.33	2.18	-0.48	0.81
$\beta = 0.90^{*}$	0.96	112	1.05	1.31	-0.47	0.82
β = 0.95	0.29	150	0.31	0.61	-0.49	0.81
$\rho = 0.91$	0.08	200	0.09	0.26	-0.56	0.51
$\rho = 0.932*$	0.96	112	1.05	1.31	-0.47	0.82
$\rho = 0.95$	1.98	52	2.40	2.77	-0.45	0.79
ρ = 0.97	3.94	17	6.19	7.26	-0.30	0.42
$\eta = 0.035$	0.53	177	0.55	0.79	-0.56	0.86
$\eta = 0.039^{*}$	0.96	112	1.05	1.31	-0.47	0.82
η = 0.045	1.62	56	1.84	2.09	-0.43	0.82
a = 0.10	0.95	112	1.05	1.31	-0.47	0.82
a = 0.26*	0.96	112	1.05	1.31	-0.47	0.82
a = 0.50	0.98	112	1.05	1.31	-0.47	0.82
$\alpha = 0.30$	0.94	112	1.05	1.31	-0.47	0.82
$\alpha = 0.60^*$	0.96	112	1.05	1.31	-0.47	0.82
α = 0.75	0.94	112	1.05	1.31	-0.47	0.82

Table 4.4a: Model statistics.

Source: Tables can be replicated by running *statistics_model_germany.m* with the varying calibrations from the German model, which is used as baseline and denoted by star.

Chapter 5

A study in odious debt: the rise and fall of Iraqi indebtedness

5.1. Introduction

In 1979 Iraq was a net creditor to the world, due to its large oil reserves and lack of external debt. Fifteen years later, its government debt-to-GDP was over 1,000 percent, with few assets to speak of. At the time of the U.S. invasion in 2003, Iraq was saddled with around 130 billion U.S. dollars in external debt, making it the most indebted nation in the world. Can a country incur so much debt, so fast, without some of it being considered odious? I argue that in the case of Iraq, it cannot. The rise of Iraqi indebtedness, its subsequent defaults, and the restructuring has been scantily covered in the sovereign debt and economic history literatures. Earlier studies were all undertaken before the sovereign debt restructuring in 2003-06, which decided what claims were considered legitimate. The Iraq history is therefore ripe for a re-examination.

I show the rise of Iraqi indebtedness was a consequence of geopolitical trends, especially American political and commercial interests in the region. Political lending trumped solvency concerns and loans were given on below-market terms. I argue that much of the debt can be considered odious because it did not benefit the citizens of Iraq but was used for geopolitical purposes. I show this by reconstructing the build-up of Iraqi debts through the 1980s and 1990s. I identify debt levels at four key points in time: in 1979 as Saddam Hussein took power; in 1988 at the end of the Iran-Iraq War; in 1991 at the end of the Gulf War; and on the eve of the U.S. invasion in 2003. I work backwards from claims submitted in the 2003-06 restructuring and trace the loans to the time of their origin, creating a time series of the Iraqi debt stock going back to 1979. Then, the story of the subsequent restructuring from 2003 to 2006 is told through oral history and primary sources. I interviewed U.S. and U.K. officials in charge of the restructuring, as well as the lawyers and bankers involved. The restructuring was one of the largest in history, but no detailed historical account exists. The restructuring was a political process, setting it apart from most restructurings in the 1990s and 2000s, which were creditor-friendly affairs. The Iraqi restructuring, on the contrary, required large write-downs from creditors.

Saddam Hussein took power in 1979 after a decade of strong economic growth; but prosperity in the 1970s was followed by economic collapse in the 1980s. The Iran-Iraq War started in 1980 and continued throughout the decade to 1988, with Iraq enjoying broad international political support. Almost all Iraqi debt was incurred during the war, helped along by both the West and the East. The U.S. and Europe did not want a post-revolution Iran to win the war, and happily provided money and weapons to Iraq. Half-way through the war, it became clear the country was insolvent as contractual payments were deferred and rescheduled. But new external money kept coming in, as credit was politically motivated and not given on market terms. A full default on external debt followed in the late 1980s.

In 1990, after the end of the Iran-Iraq War, Iraq invaded Kuwait in what became known as the Gulf War. But the political winds had shifted: this time the U.S. led a coalition to defeat Iraq. After the war, the U.N. forced Iraq to pay war reparations and placed it under international sanctions in 1991. It left Iraq isolated from the global economy for much of the 1990s. The outcome was a phenomenal rise and fall in Iraqi debt-to-GDP from 1979, which can be seen in Figure 5.1 for the first time.



Sources: See section 5.3. Replication file, plot_iraqdgdp.m

Figure 5.1: Iraq government debt-to-GDP (1979-2020).

The increase in the debt-to-GDP ratio between 1979 and 1995 comes from both the numerator and the denominator: the absolute level of debt soared as output collapsed. When the U.S. and its coalition invaded in 2003, the Iraqi economy was in tatters. Dealing with the debt issue became a priority in the U.S. government's reconstruction plans. There was a problem, though; the trend in the early aughts for sovereign debt restructurings was to offer creditor-friendly terms. Enforcement of sovereign debt repayments had become easier with globalisation and the rise of interconnected capital markets and, unlike private debt, sovereign debt is hard to enforce. During the 1990s, holdout creditors increasingly sued wayward debtors, and won by cutting off countries from the global financial system. Iraq had received all its foreign currency from the sale of oil, making it vulnerable; and it had no cash (IMF 2004, p. 29). If creditors could attach judgments to oil-related assets, the restructuring could prove tricky - to say the least.

The Iraqi debt restructuring was nonetheless able to circumvent aggressive creditors. Political pressure and worldwide immunization of foreign assets forced through one of the most complex debt restructurings to date.¹⁰¹ The U.S. spent significant political capital and used close-to unprecedented tools to force creditors to exchange debt claims. However, it stopped short of enshrining a doctrine of odious debt in international law, despite initial overtures in that direction. Political expediency was preferred to a new sovereign debt restructuring regime. This paper puts the restructuring in the context of otherwise creditor-friendly resolutions prevalent in the early 2000s.

5.2. Related literature

My research contributes to the literature on sovereign debt restructurings. Shea and Poast (2018) show war seldom led to default, but the Iraqi experience is the exception: the Iraqi debt build-up was caused by war, from which default followed. It is not the only area where Iraqi history goes against the norm.

There exists no bankruptcy regime to resolve defaulted sovereign debt (Gelpern 2016, p. 47). U.S. courts can order, say, Argentina to pay its debts, but have no way of forcing a sovereign nation to comply outside of military force. Before the twentieth century military force was common and enforcement was often a matter of raw power, not legal framework (Mitchener and Weidenmier 2010). In the post-World War I world order, though, 'gunboat' diplomacy to resolve debt disputes were largely abandoned. Several attempts were made to

¹⁰¹ The Iraqi debt stock included all types of debt (external bonds, commercial loans, bank deposits, trade credits, export grants, etc.) owed to all kinds of creditors (from governments to all types of commercial creditors).

formalise model arbitration clauses in sovereign bonds through the efforts of the League of Nations (Weidemaier 2014) but until the 1950s defaulting countries were effectively immune from legal action. Creditors were only able to seize non-diplomatic assets abroad, of which there were few (Gelpern 2005, p. 396-97). Even in the latter half of the century, restructurings were still largely voluntary ad-hoc affairs (Sgard 2016).

Legal enforcement of sovereign debt only really changed in the last forty years, with the rise of a few global financial centres. In 2009, 95 percent of all international bonds issued by emerging market countries were governed by New York or English law, which offered certain tools for aggressive creditors (Das et al. 2012, p. 41). The best example is the Argentinian restructuring after its default in 2001. Several holdout creditors declined to participate in the 2005 restructuring and sued for equitable payment ('pari passu') on their defaulted bonds, alongside the restructured bonds.¹⁰² The holdouts claimed that Argentina could not pay any money to the restructured bondholders, unless they were first paid in full on the defaulted bonds. The holdouts won and effectively cut Argentina off from making any international payments unless the holdouts were paid too (Buchheit and Gulati 2017).

Argentina was far from the only case, and Schumacher et al. (2018) show how aggressive creditors have increased the cost of default through a combination of lost market access and asset seizures in the (largely Anglo-Saxon) court system. The reliance on global financial centres and their court systems means countries lose access to international capital markets and the Eurobond market in particular—as almost all financial transactions flow through either London or New York. Sovereign debt is increasingly enforceable because of the concentration in international capital flows.

Two can play this game of course, and countries in turn have included Collective Action Clauses ("CACs") in debt contracts. CACs mean a creditor majority can force minority groups to accept restructurings. Had CACs been included in Argentine bonds before the 2001 default, it would not have been possible for investors to hold out if a majority had accepted the restructuring, as they would have been automatically restructured. The marketfriendly CAC-approach has been favoured over more drastic measures, such as the doctrine of odious debts. CACs were initially included in single bond issues, meaning holdouts could buy a majority stake in one bond to block a restructuring. Second-generation CACs that force an entire debt stock to restructure if the majority accepts it have only become prevalent since the early 2010s.

¹⁰² A holdout creditor does not participate in a restructuring, hoping to get better terms later (e.g., Gulati et al. 2013 or Fang et al. 2020).

The doctrine of odious debt states that if debt was issued with no benefit and no consent of the people, a new government should not be responsible for the old regime's debt, which is considered illegitimate (Jayachandran and Kremer 2006).¹⁰³ Buchheit et al. (2007) show the definition has been broadened and now captures debt of odious regimes, rather than just specific debt. I argue Iraqi debt incurred under Saddam fits the definitions of odious debt, but that the debt did not otherwise have much debtor protection.¹⁰⁴ It therefore fell to political players to find out how to resolve the debt, which they did at the Paris Club (an informal group of mostly developed countries that organise debt restructurings, see section 2.3.2 and 5.4.2 for details). Iraq had oil assets abroad that could be attached by creditors, and it was a clash of creditors with remedies to seize assets, and a debtor with political backing from the U.S. In the end, political pressure forced a deal on the creditors—which they all took.¹⁰⁵ Iraq thus goes against the grain of increased creditor power in defaults.

5.3. Tracing Iraqi debts (1979-2003)

The Iraqi debt restructuring occurred from 2003 to 2006 and included around 130 billion U.S. dollars of debt, excluding reparations payments from the Gulf War. Most of the debt can be traced back to the early 1980s, despite the country having had no external debt in 1979. Table 5.1 shows who Iraq owed money to in 1979, with foreign exchange reserves at 65 percent of GDP and little external debt.

	Outstanding debt	Percent of
	(dollar billion)	GDP
Paris Club	2	3
Gulf States	-	-
Soviet and allies	-	-
Reparations (non-debt)	-	-
Commercial debt	1	2
Foreign exchange reserves	-35	-65
Total	-33	-60

Sources: Caron (2004, p. 131); Jiyad (2001, p. 19); Alnasrawi (1994, p. 152). Note: The negative number denotes creditor status for Iraq.

Table 5.1: Iraqi debt by creditor, 1979.

¹⁰³ There is an argument that the doctrine of odious debt already exists in international law, but it has never been used in practice (e.g., Howse 2007 or King 2016). For the doctrine of odious debt to apply, it would have to be recognised in customary international law. It occasionally happens but needs support from powerful nations (Choi and Gulati 2016).

¹⁰⁴ Invocations of odious debt in sovereign debt management are scarce. One exception is the Ecuadorian default of 2008 (Gelpern 2010). The IACPC (2008) was appointed by the president and found Ecuadorian debt to be illegitimate, leading to a strategic default. It is a contested case, though, and Porzecanski (2010) and Feibelman (2010) argue Ecuador were far from proving their case.

¹⁰⁵ Almost. See section 5.4.4.

The following sections trace the build-up of debt in Iraq over the decades after 1979, culminating with the sovereign debt restructuring in 2003-06. The method, where possible, is to take the restructured debt amounts and work backwards, identifying where the loans originated and reconstructing a loan chronology. It is an attempt to give a best guess of debt levels in 1988, 1991, and 2003. It enables, for the first time, the creation of a continuous time series of Iraq debt-to-GDP going back to 1979. The data in this section is drawn from primary sources (government reports, investigations, declassified intelligence reports, historical data) and secondary sources.

5.3.1. Origins of Iraqi debt: the Iran-Iraq War (1980-88)

The year 1979 brought momentous change to the Middle East. Saddam took power in Iraq and the Iranian Revolution overthrew the U.S.-backed Shah in favour of Ayatollah Khomeini.¹⁰⁶ Change in Iraq came on the back of the 1970s' roaring economy, where output growth had averaged 12 percent a year after the nationalization of the Iraq Petroleum Company and the rise in oil prices. Oil production had increased fortyfold (Alnasrawi 1994, p. 79-80). Iraqi petroleum fields were among the largest in the world, producing 3.5 million barrels a day in 1979, with revenues from oil totalling 26 billion dollars in 1980 (Mehdi 2018, p. 3; Alnasrawi 1994, p. 93). Two-thirds of output came from oil-related activity and the country relied on fuel exports. The economy was controlled by the state and almost all activity ran through the state bureaucracy, from oil policy to control over imports and the allocation of capital (Foote et al. 2004, p. 51; Alnasrawi 1994, p. 79-103). In 1979, Saddam took over a virtually debt-free economy and 35 billion dollars in foreign exchange reserves. However, the roaring 1970s were replaced by the miserable 1980s, and the Iraq economy plunged into war and disaster: Table 5.2 shows the average yearly growth rates for the periods. From over ten percent growth on average in the 1970s, the Iraqi economy contracted on average about five percent a year in the 1980s.

¹⁰⁶ The two countries did not get along. Iranian-backed militias attempted to assassinate several Iraqi ministers and Iraq deported thousands of Iranians (Kennington et al. 2004, p. 1)

	1970-79	1980-89
Government consumption	13.6	-2.9
Private consumption	13.2	-6.1
Investments	27.6	-0.9
Exports	4.4	-5.0
Imports	22.5	-5.6
Domestic trade	16.8	-4.8
GDP	11.7	-4.9

Source: Alnasrawi (1994, p. 101).

Table 5.2: Iraq growth rates, yearly average in percentage (1970-89).

This was because of the Iran-Iraq War. After months of political attacks and skirmishes, Saddam invaded Iran on September 22, 1980. Almost all countries supported Iraq. During the Iranian hostage crisis at the U.S. embassy in Tehran in 1979, the U.S. had frozen all Iranian assets and in turn, the new Iranian government had repudiated all foreign debts (Christopher and Mosk 2007, p. 167). The U.S. went to the International Court of Justice in The Hague which ruled in its favour shortly after, ordering Iran to return the embassy and release the hostages. Iran was massively out of international favour.

Consequently, after the Iraqi invasion of Iran, the U.S. designated Italy as a go-between during initial discussions with Baghdad, to avoid being seen as favouring Iraq (Kennington et al. 2004, p. 3). Neutrality was just for show, though. Iranian objections to the invasion fell flat—due to its low standing following the hostage crisis—and its petition to the U.N. went nowhere (Caron 2004, p. 128).¹⁰⁷ The international community was on the Iraqi side—explicitly or implicitly—with few even daring to sell arms to Iran. From early in the war, Iraq had access to politically motivated borrowing from both its Gulf State neighbours, the U.S., and the Soviet Union, with everyone under the under-standing that further arm purchases would require a debt restructuring or payment in oil (CIA 1984, p. 9-16). Especially the Soviet Union was willing to restructure Iraq's debt early in the war (ibid, p. 10).

In 1981, Italy started selling vessels to Iraq worth 1.8 billion dollars; the Soviet Union supplied arms (initially through its Eastern European satellites); Britain signed a trade pact; and French nuclear physicists arrived on the ground to help build a nuclear reactor near Baghdad (Kennington et al. 2004, p. 7). The Iraqi government might have thought a quick victory was possible but as Iran started to fight back, the economy began to hurt. Oil exports collapsed by 75 percent, as export facilities and terminals were destroyed by bombs (Mehdi

¹⁰⁷ For a full timeline of the Iran-Iraq War, see Kennington et al. (2004, p. 3-44); for the economic impact of the war on Iraq, see Alnasrawi (1994, p. 79-126) and Caron (2004, p. 128-33); and for a discussion of the geopolitical origins of the war, see Swearingen (1988).

2018, p. 3). Iraq had relied on two oil pipelines—one through Syria, one through Turkey that quickly dwindled to one: Syria declared support for Iran and cut off access. Iraq quickly depleted its foreign reserves and was forced to borrow; loans from the Gulf States totalled 16 billion dollars through 1981. The Gulf States backed Iraq throughout the war, lending a total of 40 billion dollars (Alnasrawi 1994, p. 109). The Gulf States considered the money a loan; for Iraq, on the other hand, they had been grants (Jiyad 2001, p. 42-43).¹⁰⁸ Iraq also began to request deferral on contractual dues early on, mainly to European suppliers (ibid, p. 17-18). Creditors agreed to reschedule 85 to 90 percent of the debt that was to be repaid in 1983 and 1984. The rescheduled debt was to be repaid in equal instalments over four years, starting in 1985. The remaining debt (the ten to fifteen percent) was repaid either in cash or financed by commercial credits.¹⁰⁹

The U.S. removed Iraq from its list of countries sponsoring terrorism in 1982, making it easier to undertake commerce (Kennington et al. 2004, p. 11). Arms sales to Iraq increased, both directly from the U.S. and through proxies. In June 1982, President Reagan issued a secret directive to make sure Iraq would not lose the war, putting the CIA in charge of supplying Iraq with weapons (Hersh 1992). The decision came after the CIA (1982) warned that from a military perspective, Iraq had essentially lost the war.¹¹⁰ Fighting escalated throughout 1983 and the U.N. was unable to negotiate a ceasefire. Iraq continued to have easy access to weapons and credit. Jordan joined in, extending loans worth 125 million dollars to Saddam (Kennington et al. 2004, p. 19). The total eventually reached 1.3 billion dollars. In 1982, the Central Bank of Iraq issued about 50 million Iraqi dinars worth of bonds, which was mostly bought by domestic commercial banks (IMF 1983a, p. 5). In 1983, the Eurobond market was still open to its state-owned enterprises. Rafidain Bank issued 500 million dollars loans and the Iraq National Oil Company issued 120 million. Debt service at the end of 1983 was around one percent of exports (ibid, p. 7). The IMF (1983b, p. 28-33) was unable to satisfactorily assess the balance of payments because the quality of data provided was poor, but stated that interest rates on external debt to a sub-set of creditors (excluding the Gulf States) amounted to about a third of the principal (ibid, p. 53).

U.S. support for Baghdad became explicit in 1984—even after Iraq started using chemical weapons—and the CIA stepped up its war effort (Woodward 1986). France provided 500 million dollars in new loans and refinanced 1.4 billion dollars of maturing debt

¹⁰⁸ The disagreement is still outstanding (as are most of the loans) but the U.S. Treasury pushed (unsuccessfully) to include them in the 2003-06 restructuring.

¹⁰⁹ Commercial credit is a short-term credit facility at a bank, usually paid back quickly.

¹¹⁰ In a Special National Intelligence Estimate written by the CIA (1982), declassified in 2007.

(Kennington et al. 2004, p. 21). The international community pushed to end the conflict in 1985 via bilateral negotiations at the U.N., with no luck. Instead, Iraq went on the offensive in early 1986 via air raids, secretly urged on by the Reagan administration, to little effect.¹¹¹ Despite Iraq's best efforts, the war was being fought on Iraqi soil now, and the military situation was deteriorating. Oil prices halved in 1986 and the oil-reliant Iraqi economy continued its downward spiral. The fall in oil removed the last ability of Iraq to self-finance the war (Al-Marashi 2018, p. 140-58).

The Iraq economy of the 1980s was a war economy. Military expenditures and imports related to the war effort took up a large part of the national economy. This coincided with declining oil revenues. To sustain the war, Iraq went into debt. Figure 5.2 shows military expenditures, oil revenues, and imports as a percentage of output. It shows how revenues declined at the same time as all spending was directed to the war effort.



Source: Based on data from Alnasrawi (1994, p. 93-96). Replication file, plot_iraqgt.m.

Figure 5.2: Iraq expenditures and revenues (1980-89).

During 1987, the U.N. passed several resolutions calling for an end to the conflict. As no agreement was reached, the West ramped up pressure to force a negotiated peace, and arms sales to Iraq continued unabashedly in parallel to efforts to contain Iran via sanctions and embargoes. In early 1988, the Soviet Union and China agreed to U.N. sanctions, forcing Iran to the negotiating table (Kennington et al. 2004, p. 40-43). The cease-fire was signed on

¹¹¹ The apparent contradiction between official negotiation position of the U.S. and its covert operations, later acknowledged, was likely a consequence of the desire to see Iraq victorious (Frantz and Waas 1992).

August 20, 1988. Iran had had little international support and initially could only buy weapons from Libya. In 1982, the Soviets, Syria, North Korea, and Israel had started to supply Iran, mostly in return for oil (Kennington et al. 2004, p. 11). Iraq, on the other hand, had, as we have seen, had plenty of help from across the globe. Loans came in the form of grants, transfers, commercial lending, or covert arms deals. From 1983-93, for instance, Iraq received 2 billion dollars in loans from the U.S. Department of Agriculture (Weiss 2011, p. 2).¹¹² Underpinning this was a strong geopolitical desire for Iraq not to lose the war to Iran.

The largest commercial claim in the restructuring in 2003-06 exemplifies the interconnectedness and shows how Iraq was able to maintain market access until the end of the 1980s. Between 1985 and 1990, a small Atlanta branch of the state-owned Italian bank, Banca Nazionale del Lavoro (BNL), extended loans worth 4 billion dollars to Iraqi individuals and entities. This included 1.6 billion dollars of loans backed by the U.S. Department of Agriculture's Commodity Credit Corporation (SSCI 1993, p. 8-9). Officially, the loans were designated for agricultural imports, but the money was used for weapons (illegally). The Department of Justice prosecuted the Atlanta branch manager, arguing he had acted without approval from BNL headquarters in Rome. However, the District Court judge, Marvin H. Shoob, wrote in an opinion that the CIA had likely known about the illegal financing of arms. He also noted that BNL Rome was not a victim, indicating that they had been aware of the loans (Stich 2005, p. 94-95). The CIA intervened and withheld certain information, triggering a Senate investigation. Recall that President Reagan had secretly put the CIA in charge of arming Iraq.¹¹³ Thus the BNL was owned by the Italian state; received loan guarantees from the U.S. Department of Agriculture; and extended loans worth 4 billion dollars from a small branch in Atlanta, with U.S. intelligence services involved in the court case.¹¹⁴ Regardless of whether it was officially sanctioned, two governments were implicitly involved.¹¹⁵ Eventually, the loans were defaulted on and restructured as a commercial claim (see section 5.4.4) but the episode underscores how Iraq obtained financing in the 1980s. The loans were made to pay for a war that was supported by most of the Western states, at

¹¹² The CIA (1984) suggested Iraq had spent 22 billion dollars on weapons halfway through the war, while Iran had spent 5 billion dollars. Schmidt (1991, p. 12) suggest total Iraqi weapons imports during the war was 63 billion (in 1990 dollars).

¹¹³ The U.S. Senate (SSCI 1993) cleared the CIA of any direct knowledge of illegality.

¹¹⁴ Another bank, the BCCI, was investigated simultaneously by the U.S. Senate Committee on Foreign Relations. Senators Kerry and Brown (1992) showed how BCCI was a criminal empire that facilitated money laundering and weapons smuggling in Iraq. BCCI provided loans to Iraq, as well as holding deposits and providing funding for BNL (ibid, p. 69, 579). The CIA was involved and knew about the criminality at BCCI. ¹¹⁵ The Department of Agriculture guaranteed loans were used for weapons.

a point in time when Iraq had lost the ability to borrow on commercial terms without subsidies.¹¹⁶

Iraq emerged from the Iran-Iraq War a country in crisis. After ten years of conflict, Iraqi external debt was a staggering 86 billion dollars. In less than ten years, the country had gone from being a net creditor to a net debtor, with a debt-to-GDP ratio of 278 percent. Debt service in 1989 was more than half Iraqi oil revenues (Alnasrawi 1994, p. 93-109). Table 5.3 shows the breakdown of Iraqi debt at the end of 1988.

	Outstanding debt	Percent of
	(dollar billion)	GDP
Paris Club	29	95
Gulf States	40	129
Soviet and allies	11	36
Reparations (non-debt)	-	-
Commercial debt	6	19
Foreign exchange reserves	-	-
Total	86	278

Sources: Alnasrawi (1994, p. 109, 159); Metz (1990, p. 126).

Table 5.3: Iraqi debt by creditor, 1988.

There is to this day disagreement over whether the Gulf State loans in fact constituted a grant. Iraq considered them grants, but Saddam also tried to get the loans cancelled, which is inconsistent (Jiyad 2001, p. 42-43). Since all debts were attempted restructured, however, I treat it as debt throughout. The overall level of debt is murky, and timelines do not match up; Gulf States debt levels range from 30 to 60 billion dollars in the literature (ibid, p. 42-43). Considering known debt levels three years later in 1991, approximate lending in the ensuing years, and the quality of sources, the best estimate is 40 billion dollars. Neither contemporary nor historical sources have been able to pin down the dates and conditions of the loans, as contracts were not kept (Momani and Garrib 2010, p. 168).¹¹⁷ Financing from the Gulf States mainly took place at the beginning of the war, but the exact years of the loans are an estimate and interest rates for the loans are unavailable. Debt to commercial creditors is estimated at 6 billion dollars, but this obscures the role of the U.S. government. The overall level of indebtedness is clear, though. Iraq spent more money on weapons and imports, while exports collapsed. As Figure 5.3 makes clear, the trade deficit was almost 50 percent of GDP, while total trade (exports plus imports) collapsed.

¹¹⁶ See section 5.3.4 for a discussion of the generous terms of Iraqi sovereign borrowing.

¹¹⁷ Handshake deals and covert operations did not have documents that could be traced, while some records were likely lost between the origin of the loans in the 1980s and the restructuring after a decade of sanctions in the 1990s.



Source: World Bank Development Indicators. Replication file, plot_iraqtrade.m.

Figure 5.3: Iraq trade balance and total trade (1980-95).

In the mid-1980s, the first 'soft' default happened (Caron 2004, p. 131-32; Chung and Fidler 2006). The initial default can be traced to non-payments on contractual goods and services during the war, extending payments for as long as 40 months. Iraq also rescheduled various loans but remained current on others (ibid). A small amount of hard currency bonds and bank loans went into default, but most of the credit extended during the Iran-Iraq War kept being serviced for the rest of the decade.¹¹⁸ Interest rate and amortization payments made by Iraq during the war totalled over 24 billion dollars, mainly to Paris Club creditors, suggesting prioritisation of payments to friendly creditors (Jiyad 2001, p. 20).¹¹⁹ Official creditors in the U.K. and the U.S. were paid ahead of other creditors, with the previous loan from the U.S. Department of Agriculture being repaid until 1990 (Rangwala 2013, p. 101-02). It allowed Iraq to maintain access to new credit, with willing political lenders standing by. Everyone could see that Iraq was insolvent, with debt payments more than half of oil revenues, but if everyone pretended the debt would either be forgiven or rolled over, Iraq could keep borrowing to repay maturing debt. Problems began when the political and financial winds shifted.

¹¹⁸ According to Bank of Canada's Credit Rating Assessment Group database on sovereign defaults, as outlined in Beers and Mavalwalla (2018).

¹¹⁹ It is also possible payments were made but not noted down in any documents or by paying in oil.

5.3.2. The Gulf War and reparations (1988-91)

The cost of war can be high, and for Iraq it was. Reconstruction costs have been estimated as high as 230 billion dollars (Alazemi 2013, p. 98), yet the oil sector produced revenues of only 15 billion in 1989, 55 percent lower than in 1980. Iraq's net external debt increased by some 120 billion dollars over the course of the war (Alnasrawi 1994, p. 106). In 1990, inflation reached 40 percent and cash reserves was just enough to cover three months' imports (Alexander and Rowat 2003, p. 33). Despite the economic issues, Saddam was popular-both at home and in the region-and Iraq did not reduce its military expenditures (Alazemi 2013, p. 97-98). Saddam saw himself as a strongman who had defeated Iran on behalf of all the Gulf States. He wanted to use the Iraqi military to bully neighbouring states, foremost Kuwait and to a lesser extent Saudi Arabia and consolidate his power (Parasiliti 2003). Kuwait was owed 14 billion dollars for loans during the war and refused to cancel the debt, leading to strained relations between the two countries in 1989. The price of oil fell in early 1990 and the Iraqi economy worsened. Saddam blamed Kuwait for low oil prices and accused the neighbour of attempting to drill in Iraqi oil fields. This was the pretext used for war: on August 2, 1990 Iraqi forces invaded Kuwait. Iraq quickly gained control of the territory and annexed Kuwait on August 28.120

Unlike the war with Iran, this time Iraq did not have the backing of the international community. The U.S. swiftly sent military support to avoid an invasion of Saudi Arabia by Iraq, and the U.N. passed Resolution 661 on August 6 (1990a) imposing economic and financial sanctions on Iraq (Warbrick 1991a, p. 482-84). The sanctions contained very few exceptions (humanitarian aid) and forbade any financial transaction with Iraq, including payments under existing contracts (Deeb 2007, p. 3). Iraq was isolated from the global economy; any new external debt would be illegal. As the sanctions did not deter Saddam, a U.S.-led military coalition authorised by the U.N. began *Operation Desert Storm* in January 1991. The coalition swiftly won, and Iraq signed a permanent cease-fire in April. Kuwait, however, was left with extensive damage (Warbrick 1991b, p. 970). The U.N. Security Council therefore established the United Nations Compensation Commission (UNCC) to oversee reparations payments. Reparations could be awarded to individuals, businesses, or governments for damages stemming from the illegal invasion of Kuwait. Annual claims could

¹²⁰ For a full timeline of the invasion of Kuwait, see Warbrick (1991a, 1991b). For the geopolitical and local reasons for war, see Gause (2002) and Parasiliti (2003).

not exceed 30 percent of oil exports (Resolution 705, 1991) although this was reduced to five percent after the American-led invasion in 2003 (Resolution 1483, 2003b).

War reparations are compensation for breaches of international law and are a mainly monetary restitution; they should, however, also represent broader justice for the victims (Sandoval and Puttick 2017, p. 7-16). Reparations constitute liabilities but are not technically debt according to the Paris Club definition (see section 5.4.2 for details).¹²¹ For Iraq, the U.N. Compensation Fund automatically receive revenue from Iraqi oil exports to fund the payments. In total, 2.7 million claims totalling 353 billion U.S. dollars had been made as of July 2019. 52 billion have been authorised and 48 billion have been paid out to 1.5 million claimants, with the remaining expected to be paid in the future.¹²² Estimates for Iraqi liabilities in the early 1990s were higher, at around 100 billion dollars at 1990s prices (Morrison 1992, p. 393). Enforcement of reparations payments are overseen by the U.N., which has a legal framework for ensuring payments are made, unlike unsecured government debt.¹²³ Reparations add substantially to the Iraqi debt burden and must be included in a fair summary of external liabilities, but given they are left out of the Paris Club definition of debt are sometimes excluded. The amounts included in are actual payments awarded by the UNCC on behalf of Iraq as of 2019, despite initial estimates being higher. Table 5.4 shows Iraqi debt by creditor in 1991, compared to output that had collapsed to 12.3 billion dollars from over 50 billion before the war (Alnasrawi 1994, p. 159).¹²⁴

	Outstanding debt (dollar billion)	Percent of GDP
Paris Club	18	143
Gulf States	53	431
Soviet and allies	11	89
Reparations (non-debt)	52	423
Commercial debt	9	71
Foreign exchange reserves	-	-
Total debt (ex-reparations)	90	733
Total liabilities	142	1156

Sources: Paris Club; Chung and Fidler (2006); UNCC; Alnasrawi (1994, p. 109). Note: All debts (except Gulf States) are nominal amounts restructured in 2003, i.e., minus accrued interest. Reparations are total awarded as of July 2019. Table 5.3 and Table 5.4 do not reconcile because both are best estimates at each time, based on available sources.

Table 5.4: Iraqi debt by creditor, 1991.

 ¹²¹ Paris Club is a group of (mostly) developed countries that negotiate restructurings collectively (section 2.3.2).
¹²² See the U.N. Compensation Commission website: https://uncc.ch/home (accessed 16 July 2019).

¹²³ One issue not addressed by the UNCC was, if a claim was submitted and partially awarded, would the claimant forgo the rest? Were the UNCC to use an election of remedies; one would be debarred from suing in court. This would later cause headaches for the lawyers (Buchheit 2019).

¹²⁴ Alnasrawi cites some sources that estimate output declined by as much as 50 percent after the invasion.

A quick methodological note is required before continuing. After August 6, 1990, when Resolution 661 (1990a) was passed, it became impossible for Iraq to get external loans. Working backwards from the restructuring, I use nominal amounts from the Paris Club, the IMF and the UNCC (details in Section 5.4.2). This means there is a potential incoherence between Table 5.4 and Table 5.5, though both are the best estimates available for each year. For instance, the Gulf States debt of 53 billion dollars is drawn from Chung and Fidler (2006) and are amounts that the restructuring team mentioned in 2006. Other bilateral loans (i.e., Paris Club countries and Soviet Union in 1991) include only amounts that were restructured; if a loan was secretly written off between 1991 and 2003 it is not included. Commercial loans outstanding in 1991 are similarly the principal amount claimed in the restructuring. Therefore, the changes in debt levels from 1988 to 1991 are difficult to trace, as there are few historical sources. Jivad (2001, p. 19-22) suggests Iraqi debt decreased after the war, but the amounts are minor compared to overall debt levels.¹²⁵ The politically motivated lending and the blurred lines between bilateral and commercial lending makes a perfect reconciliation difficult. Nonetheless, Table 5.4 presents a reasonably accurate snapshot of Iraqi debt as sanctions were imposed and the country withdrew from the global economy.

5.3.3. Sanctions (1991-2003)

Following the Gulf War, Resolution 678 (1990b) placed Iraq under sanctions from 1991. It was a terrible time for Iraqi living standards: output collapsed, society was uprooted, child mortality increased three-fold (Ascherio et al. 1992), and personal freedoms were reduced (Sluglett 2010, p. 13-15). Oil production had already been decimated during the war, and what limited sales there were hit by the low price of oil in the 1990s.¹²⁶ No bank, investor, or government would touch anything flowing through Iraq, as failure to comply with sanctions would lead to exclusion from international financial markets. Iraq went into arrears to the IMF in 1990 and one U.S. dollar bought 1000 Iraqi dinars in 1995 compared to the official exchange rates of 0.311 (IMF 1995, p. 3). The sanctions were meant to be short-lived and force out the government, yet Saddam's grip on power only increased, at least in Southern Iraq (Dodge 2010; Brown 1999, p. 56-104; Tripp 2002, p. 259-75). Northern Iraq became a separate de-facto Kurdish state. Sanctions that had been intended to destabilize the government instead enhanced state power, which increased in every facet of daily life,

¹²⁵ Identified debt decreased by 300 million dollars, however the overall stated debt is far lower from the actual and some scepticism is required for the numbers given.

¹²⁶ No Iraqi oil sales were allowed but small exports were approved subsequently (Brown 1999, p. 56-104).

especially the rationing of goods (Mazaheri 2010). Saddam wanted sanctions lifted but had to settle for the Oil-for-Food program, enacted in 1996, which allowed some oil sales and food imports (Sluglett 2010, p. 20-22). Consequently, Iraqi GDP—which had been falling for fifteen years—tripled from 1996 to 2003, though this barely enabled it to surpass 1988 levels.



Sources: Data for 1979-93 GDP is from Alnasrawi (1994, p. 152); for 1993-2003 from the CIA (2004, p. 208). Debt stock data is cited in previous tables and text. Note: Iraq was isolated; little information flowed in or out. A healthy dose of scepticism around the numbers is therefore required, especially after the sanctions period. Replication file, *plot_iraqdy.m*

Figure 5.4: Iraq debt stock and GDP (1979-2003).

Various domestic debts and credits existed but no new external debt was taken on. The sanctions period devastated Iraq. Crime increased—perhaps surprisingly given Saddam's tight grip on the country—and the economy was in ruins (Sluglett 2010, p. 13-15). This meant the nominal value of Iraq's external debt—most of which was in hard currency, and mostly in dollars (see section 5.4)—had neither been eroded by inflation nor outgrown by a larger economy. Iraqi debt in 2003 can be seen in Table 5.5. It includes all debts that were restructured by the Paris Club; old debt from the Gulf States in their nominal amounts; non-Paris Club bilateral loans that were (to some extent) restructured, commercial debt—and reparations. All amounts are before any restructuring.

	Outstanding debt	Percent of
	(dollar billion)	GDP
Paris Club	39	139
Gulf States	53	189
Non-Paris Club bilateral	17	60
Reparations (non-debt)	32	114
Commercial debt	20	70
Foreign exchange reserves	-	-
Total debt (ex-reparations)	128	458
Total liabilities	160	573

Sources: Paris Club, IMF, UNCC. Note: Paris Club, bilateral, and commercial debts are restructured amounts. Non-Paris Club bilateral outstanding debt represents IMF debt minus Gulf State debt (the IMF does not break out by country). Reparations are what remained to be paid in 2003. By 2003, the Soviet debt had been absorbed into the Paris Club debt, while a separate non-Gulf, non-Paris line of debt appeared.

Table 5.5: Iraqi debt by creditor, 2003.

The U.S. and its Coalition partners invaded Iraq on March 19, 2003.¹²⁷ From the Iraqi perspective, the sanctions period can be thought of as one long war, beginning with the Gulf War in 1990 and ending with the invasion in 2003 (McCutcheon 2006). From the U.S. side, the attack on September 11, 2001, was a precursor for the invasions of Afghanistan and Iraq, where the Bush administration saw an opportunity for regime change, something the Republicans had wanted since the Gulf War ended with Saddam still in power (Gompert et al. 2014).¹²⁸ Militarily, the war/invasion was quickly won and the discussion turned to reconstruction. There was a desperate need to reconstruct Iraq post-Saddam, with several moving pieces. The IMF would require a debt solution to get involved, but the Paris Club—i.e., Iraqi's creditors from the developed world—required a debt sustainability analysis from the IMF to do a restructuring deal. For the U.S. government, debt relief was seen as critical. President Bush personally advocated for a quick debt write-down and appointed a Special Envoy to deal with the matter in December 2003, having already called for a write-down within a year at the G7-meeting that September (Weiss 2011, p. 5). This started the process of restructuring Iraqi debts which were enormous and varied.

In 2003 it was not known what the total debt level was, because: (i) the sanctions period had made it illegal to lend to Iraq; (ii) most loans were from before 1990; (iii) records were often non-existing; and (iv) Iraq had been heavily bombed, destroying many records. The

¹²⁷ The Multi-National Force was led by the U.S., the U.K., Australia, Spain, and Poland.

¹²⁸ The Iraqi debt restructuring was arguably one of only two successfully executed post-invasion policies (the other being the currency exchange). It should not be forgotten that almost everything that happened in Iraq from 2003 onwards was a disaster (e.g. Kramer et al. 2005 on how the war threatens the international rule of law, or Brands and Feaver 2017 for how the mismanaged invasion lead to the rise of ISIS, but the list of failures is long).

debt level includes all claims made during the restructuring. Table 5.5 is therefore the debt level of Iraq, the most indebted nation in the world in 2003, on the eve of the invasion.¹²⁹

5.3.4. Terms of Iraqi borrowing

Geopolitics allowed Iraq to obtain financing on terms more favourable than market terms. Iraq paid a total of 24.3 billion dollar in debt service from 1980 to 1990, of which 6.7 billion were interest and the rest amortizations (Jiyad 2001, p. 20-21). The majority (96 percent) of known payments went to pay off Paris Club and commercial creditors, and the loans from the Gulf States appear to have had no identifiable interest rate. It suggests a prioritisation of debt service to Iraq's political backers in the war. The backers in turn offered generous terms of financing, even as negotiated reprofiling of debt occurred early, and defaults later, in the war.

To understand just how generous Iraqi debt financing was, let us first compare it to U.S. Treasuries, the safest asset in dollars. Between 1985 and 1990, yields on Treasury bonds with a five-year maturity averaged 8.5 percent. Because of inconsistent and missing data, it is impossible to construct a time series of Iraqi interest rates, so let us start by making a few conservative assumptions to calculate a risk premium on Iraqi loans. First, interest paid was 6.7 billion dollars. Second, assume that Iraqi debt service started in 1985, which is when most of the debt was reprofiled to. It is likely overly cautious because interest-bearing loans were given before 1985. Third, assume only Paris Club and commercial debt carries interest, which is 35 billion dollars, ignoring debt from the Soviet Union and the Gulf States. Solving for the interest rate under a five-year repayment (1985-90) equates to an interest rate of 3.8 percent on average for Iraqi debt. A comparison to U.S. Treasuries and risky corporate debt for the period is found in Table 5.6, with all interest rates in U.S. dollars.

¹²⁹ According to the IMF, the most indebted nation in 2003 was Liberia, with a debt-to-GDP of 515 percent. IMF does not include Iraq for 2003. Per Table 5.5, Iraq total liabilities were 573 percent, making it the most indebted nation in the world.
	Average	Risk
	interest rate	premium
U.S. Treasuries	8.5	-
U.S. Investment grade	9.4	0.9
U.S. High yield	13.4	4.9
Iraqi borrowing costs	3.8	-4.6

Sources: Jiyad (2001, p. 20-21); Wilson and Fabozzi (1995, p. 184); the Federal Reserve. Note: Average rates for the period are used. The U.S. Treasury rate is the five-year constant maturity.

Table 5.6: Iraqi borrowing costs in U.S. dollars and risk premium (1985-90).

It is a crude comparison to make, but it suggests a negative risk premium for a country with a ballooning debt stock that negotiated moratoriums and extensions as early as 1982. There are unknowns of course, as there might have been non-public transfers of oil or direct payments. But debt service payments as a share of the total debt stock seem low regardless. High yield bonds, or junk bonds, had an average interest rate of 13.4 percent during the same period, where the default rate was six percent (Altman 1992, p. 83).

If Iraq is compared to countries requiring large-scale external debt financing throughout history, a similar picture emerge. The risk of having the debt be declared odious should carry a risk premium. The covert loans given to Iraq as outlined earlier could easily fall under the definition of illegitimate debt that does not benefit the people. Investors demanded a 'odiousness' risk premium of over 200 basis points on Cuban bonds issued by the occupying Spanish force in the 1890s (Collet 2013). Mexico kept borrowing as the state collapsed in 1912-13 but did so at a material risk premium of over four percent (Weller 2019, p. 1034). France issued large amounts of debt to pay reparations and indemnities in the nineteenth century but did so consistently at a risk premium of around two percent to British consols, while the German risk premium in the interwar years was even higher (chapter 4). Historical episodes of countries with a poor capital market reputation, such as the Confederate states during the U.S. civil war, required even higher risk premia (Weidenmier 2005). The lowest risk premium for emerging market external debt (the EMBI index) was 1.8 percent during 2006, at the height of inflows into emerging market debt securities. Even the two world wars, where the U.S. provided financing to its allies, never saw similar negative risk premium on its loans.130

¹³⁰ During World War I, U.K interest rates were high and volatile to avoid capital flight (Hughes 1958, p. 195-96). The U.S. offered interest-rate free loans via the Lend-Lease Act during World War II, but it was to be repaid with an effective interest of 1.6 percent after the war (Polk and Patterson 1946). The U.S. issued debt at a nominal interest rate between 0.4 and 2.5 percent during World War II (Ohanian 1997, p. 25), so the loans were given with no distinct risk premium attached.

Financial repression often happens to finance wars, but it is only possible for debt in your own currency. Iraqi borrowing costs on its external debt, meanwhile, were lower than those of the U.S. government. What made Iraqi war financing special was, I would argue, the desire to avoid a regional hegemony in the Middle East. The geopolitical importance of Iraq as a proxy in its war against Iran meant it had many deep-pocketed international friends. Many countries were happy to provide loans early in the war, with few strings—or in some cases, no interest rates—attached. The military motivations for extending credit were clear: to avoid an Iranian regional hegemony. The hard-line approach that was imposed on many other sovereign debtors during the 1980s was noticeably absent from Iraq. But on the other hand, so was debt relief in the late 1980s. The military dominance of Iraq was not followed up by economic dominance. The geopolitical importance of avoiding an Iranian victory meant creditors were willing to extend loans to Iraq extremely cheaply. But it also meant that, to avoid Iraq emerging from the war as a new regional hegemon, its creditors were unwilling to restructure its debt burden in the aftermath of the war.

5.4. The Iraq debt restructuring

The restructuring is articulated in detail here for the first time.¹³¹ I have conducted interviews with people involved in the restructuring, to help tell the story. The interviews are cited throughout section 5.4. When information from an interview is used, I use standard citation to show where it has been sourced. The interviews include the lawyers for the Iraqi government, Lee Buchheit (2019) and Jeremiah Pam (2019); advisors for the commercial restructuring and banker at Citigroup, Nazareth Festekjian (2019), and JP Morgen, Daniel Zelikow (2020); officials for the U.S. government: Anthony Marcus (2019); Clay Lowery (2019); and Olin Wethington (2019); and the U.K. negotiator for the Paris Club, Andrew Kilpatrick (2019).¹³² I also rely on several other primary sources—documents from the restructuring, press releases, annual reports—as well as some secondary literature.

Sovereign restructurings generally follow a similar process, outlined by Buchheit et al. (2019). Debtors have three main tools to reduce indebtedness:¹³³

- extension of debt maturity to provide time and reduce the net present value;
- principal reduction, i.e., a haircut of the nominal amount of debt; and

¹³¹ As far as the author is aware, at the time of writing (September 2020), there have been no other comprehensive accounts of the Iraqi restructuring featuring all aspects of the restructuring. ¹³² Interviews were recorded and are on file with the author.

¹³³ Other minor efforts can be undertaken (e.g., buying back debt that trades below par in the secondary market) but they are marginal.

coupon adjustments, to reduce the interest rate paid.

Countries usually know how much money they owe. They do not necessarily know to whom they owe money, as this depends on the type of debt. External bonds are publicly traded and can be held by anyone, while bilateral loans from other sovereign states are easier to identify.¹³⁴ Restructurings generally include one type of creditor, e.g., Paris Club members, non-Paris Club countries, or commercial creditors. Iraq, however, owed money to everyone. Even within a single group, commercial creditors for instance, the group was diverse: from government contractors and suppliers, to hedge funds, asset managers, banks, trade creditors, and state-owned entities. After sanctions started in 1990, Iraq stopped keeping track of who was owed what and records were scattered as the loans were defaulted upon. The IMF had not conducted an Article IV consultation since the early 1980s (Takagi et al. 2018, p. 56). The restructuring was thus an extremely complex endeavour. The Iraqi obligors (the debtor entities) were similarly a diverse bunch, as the line between the Iraqi government and Iraqi commercial enterprises had been blurred. The obligor included not only the government itself, but ministries, state-owned enterprises, and quasi-governmental institutions such as banks-especially Rafidain and Rasheed.¹³⁵ Coordinating between the different debtors was more complicated than in normal restructurings, as the entire public sector of Iraq was included as a debtor (Deeb 2007, p. 5).¹³⁶

Reparations were quickly left out of the restructuring, mainly for international political reasons. The U.S. Treasury put together some initial numbers but looked for reasons not to include reparations (Lowery 2019). Reparations had been structured by various U.N. resolutions to be paid directly out of oil revenues and a new resolution would be required to change the legal setup. Unlike sovereign debt, reparations were easy to enforce as the UNCC had been set up to take money directly from Iraqi oil revenues. The original Resolution 705 (1991) stipulated 30 percent of Iraqi oil revenues should go towards paying reparations. It was lowered to 25 percent with Resolution 1330 (2000) and to five percent with Resolution 1483 (2003b). Just changing the legal status of reparations would require a political battle at the U.N., which could be vetoed by any one of the five permanent Security Council members. Even if it changed, the money would still be awarded as compensation damages to be collected by the UNCC. The Paris Club does not classify reparations as debt and there

¹³⁴ In between external bonds (unknown) and bilateral sovereign loans (known) are commercial loans, syndicated loans, trade credits, supplier credits, etc., which has known creditors to various degrees. ¹³⁵ Definitions of obligors available: http://www.eyidro.com (accessed 22 July 2019). Usually, the Ministry of

Finance act on behalf of the government. ¹³⁶ Most institutions were located outside the relative safety of the Green Zone in Baghdad, an added security risk.

was no other forum apart from the U.N. Security Council that could intervene.¹³⁷ Reparations were therefore quickly dropped from the restructuring.

5.4.1. Immunizing Iraqi assets and reconciling debts

U.N. Resolution 1483 (2003b) lifted sanctions, terminated the Oil-for-Food Program, structured the post-invasion government, called for a debt restructuring, set up the Development Fund for Iraq (DFI), and called on all members to immunize Iraqi oil sales from creditor attachment.

The Central Bank of Iraq formally held Iraqi assets—both domestically and in foreign accounts—that could be attached by creditors, as Iraq was in default and could be sued. The DFI was therefore set up by the Coalition Provisional Authority (CPA), the interim government, to receive assets from the Central Bank of Iraq, including future petroleum revenues, and was considered immune under U.N. privileges.¹³⁸ Other Iraqi assets were to be immunized by countries individually, which in the U.S. was implemented through Executive Order 13303. The DFI paid wages, pensions, and was used for cash disbursements (U.N. 2003b, art. 12; Wethington 2019).¹³⁹ Cash to run the government was withdrawn from the DFI and flown to Iraq, hundreds of millions of dollars at a time (ibid). Immunizing Iraqi foreign assets from, "*any form of attachment, garnishment, or execution*," (U.N. 2003b, art. 22) and the creation of the DFI were the most important for the restructuring, as creditors could not take possession of Iraqi assets.¹⁴⁰

Resolution 1483 was hotly debated, with the international community divided between the U.S. and its allies, and countries that opposed the Iraq war. The U.S. and the U.K. had circulated drafts of the resolution, which essentially legitimised the invasion. Even in the early drafts, immunizing Iraqi oil was included, although there is little evidence that it was a major point of contention.¹⁴¹ It would of course protect Iraqi assets, but also enabled global oil companies, mostly American and British, to get involved without the risk of creditor

¹³⁷ http://www.clubdeparis.org/en/communications/page/definition-of-debt-treated (accessed on 30 November 2019).

¹³⁸ Iraqi savings were initially parked at the DFI, which at its peak held around 12 billion dollars (Zelikow 2020). The Central Bank of Iraq (CBI) slowly replaced the DFI as the main holder of Iraqi public savings. The DFI was administered by the New York Federal Reserve.

¹³⁹ It was implemented in the U.S. by Executive Order 13303, on May 22, 2003, and renewed again by both Bush and Obama. It expired in 2014 (Buchheit and Gulati 2019, p. 4-5). The executive order was marred by controversy, as some argued it immunized U.S. oil companies (e.g., Kelly 2004).

¹⁴⁰ As shown by Buchheit and Gulati (2019), creditors maintained their rights to not tender into a restructuring but lost any enforcement power to seize assets. All U.N. members had to enshrine the protection into domestic law, as it was passed under Chapter VII of the U.N. Charter which is legally binding on members states.

¹⁴¹ Paragraphs 12-21 in the draft resolution (U.N. 2003a) governing the Development Fund of Iraq. In early drafts, it was called the Iraqi Assistance Fund.

judgments. From the U.S. government's point of view, reconstruction depended on getting rid of the debt overhang (Lowery 2019) and on October 16, 2003 Congress urged Paris Club creditors to get together to provide debt relief (U.S. House Resolution 198, 2003).¹⁴² There was a political argument for debt relief, too. The White House and the Treasury could not go to Congress and ask for appropriations, only to turn around and see the money flow to other creditors, such as Saudi Arabia or China, on already delinquent loans (Lowery 2019). The Treasury appointed Olin Wethington to oversee the economy directorate at the Coalition Provisional Authority (CPA), the transitional government of Iraq, in October 2003.¹⁴³

The CPA started to explore a debt restructuring but decided not to start the formal restructuring until sovereignty formally passed back to Iraq (Pam 2019). The Trade Bank of Iraq (TBI) was instead established to facilitate imports and exports. Because of Iraq's weak economic situation, it was key to establish an institution that could facilitate trade finance. The two main banks, Rafidain and Rasheed, were in no position to offer letters of credit (normal in trade finance) and judgment creditors would have attached collateral if they could. The TBI therefore had to be immune from attachment as well (Zelikow 2020). The legal structure allowed some relief on Iraqi supply-chains but its scope was limited and seen by the CPA as a stopgap until debt could be restructured (Wethington 2019).¹⁴⁴ The CPA believed it was untenable to only have limited immunity and the debt issue needed a quick resolution to facilitate international trade participation.

As section 5.3 showed, Iraq had three groups of creditors: Paris Club, non-Paris Club countries (including Gulf States), and commercial creditors, each having significant claims (see Table 5.5). Jim Baker was appointed Special Envoy in December 2003 to lobby Iraqi creditors for debt relief in a political capacity and to lay the groundwork for the restructuring. He targeted key creditors that would have to be engaged later. Three U.S. government players convened late in 2003 to deal with the issue: The Treasury (for financial matters), the State Department (diplomacy), and the National Security Council (to represent the executive).¹⁴⁵ Baker led a group, including the Iraqi Finance Minister and Central Bank Governor,

¹⁴² See also Paris Club (2003a, 2003b).

¹⁴³ His role was, effectively, to be the interim central bank governor, with the title of Director of Economic Policy, reporting to Bremmer (Wethington 2019).

¹⁴⁴ The TBI allowed for imports until a debt restructuring, even if creditors were to put up a fight. It was incorporated as a bank and capitalised with 100 million dollars. A decade later, the financial sector was underdeveloped compared to the rest of the region. Credit from banks to the private sector account for less than ten percent of GDP compared to over 55 percent on average for the region (WB 2017, p. 76).

¹⁴⁵ Additionally, U.S. Paris Club negotiators are jointly from the Treasury and State Department (Pam 2019; Lowery 2019).

travelling the world to obtain buy-ins for a rescheduling (Lowery 2019; Wethington 2019). Meanwhile the Treasury oversaw an initial inventory of debt, as nobody knew how much debt Iraq had (ibid).¹⁴⁶

The procurement process to hire separate legal advisors for Iraq started in early 2004, with Cleary Gottlieb appointed in June 2004 (Deeb 2007, p. 4). The role of Lee Buchheit, who led the Cleary team, was to run the restructuring for Iraq and manage other financial advisors (Buchheit 2019). At the first meeting between the White House, Treasury, IMF, and Cleary, the main subject of discussion was whether Iraqi debt could be declared odious. Declaring the debt odious implied that the debt was illegitimate and would have led to a cancellation of all debt. There was talk at the highest level in the U.S. administration about declaring Iraqi debt odious, even going so far as to have Secretary of the Treasury Snow suggest it publicly (Momani and Garrib 2010, p. 158-59). It generated lots of support and debate in the think tank world (e.g. Adams 2004) and academia, as a series of articles in the following years show (e.g. Jayachandran and Kremer 2006; Damle 2007; Gelpern 2007; Buchheit et al. 2007).¹⁴⁷

While the U.S. government position in public seemed to support the idea of declaring Iraqi debt odious, however, in private among the institutions directly involved—the U.S. Treasury and the IMF—the concept was not much discussed, and the IMF publicly rejected the idea (Rajan 2004). They judged a standard write-down to be more efficient (Wethington 2019). Support for the idea seemed to mostly originate outside of the institutions normally engaged in debt restructurings, particularly at the Pentagon.

The legal advisors advocated against the doctrine of odious debts, with the IMF and the Treasury strongly supporting a standard restructuring instead (Marcus 2019). Not so much because the debt was not odious, but because it would unnecessarily complicate the restructuring (Buchheit 2019). Many countries around the world sell goods and arms to despots on credit, and Buchheit suggested most Paris Club members would walk away from negotiations. There is no legal doctrine for odious debt (Buchheit et al. 2007), and it would have been a, "*minefield of definitions*" (Buchheit 2019) as there would have been a need to set a precedent for what parts of the Iraqi debt stock was illegitimate. It was therefore decided to

¹⁴⁶ A difficult process, as explained earlier. It started by looking at records in ministries and the central bank and asking other sovereigns how much they thought they were owed. The IMF played a coordinating role but had no data from the 1980s when it left Iraq (Takagi et al. 2018, p. 60).

¹⁴⁷ References are to published articles. For the current debate see e.g. the June 2005 edition of *Finance and Development* 42 (2), where the Letters to the Editor include discussions between several of the cited authors.

go for a standard restructuring, and the discussion never went to the National Security Council at the White House (Wethington 2019).¹⁴⁸

Another reason against the doctrine of odious debt was that it was not in fact needed to obtain substantial debt write-offs, given the political buy-in (at least amongst the Coalition). In October 2003, the U.S. organised a conference to raise financial support for Iraqi reconstruction. Pledges as a share of outstanding debt are summarised in Table 5.7.

	Total pledges	Outstanding debt	Pledged assistance
	(dollar billion)	(dollar billion)	(percent of debt)
Paris Club	25	39	65
Gulf States	1	53	3
Other (non-Paris Club countries)	0	17	1
IMF	3	-	
World Bank	4	-	
Commercial debt	-	20	
Total	34	128	27

Sources: Momani and Garrib (2010, p. 160) and the U.N. Note: the IMF and the World Bank provided a range of assistance, 1 billion dollar each. The mid-point is shown here.

Table 5.7: Debt relief pledges (October 2003).

Sovereignty officially passed back to Iraq on 28 June 2004. It was decided that the Paris Club would be the best place to start restructuring negotiations.¹⁴⁹ Restructurings have a process but no manual: you start wherever a deal might be reached. The tactical reason for this was that every Paris Club deal comes with a comparability of treatment clause.¹⁵⁰ A deal would be a 'floor' beyond which no other creditors could get a better deal, meaning others would likely follow (Wethington 2019; Buchheit 2019). Paris Club members all had substantial claims on Iraq and the geopolitical alliances of the Coalition were wellrepresented, following Jim Baker's initial diplomatic rounds (Pam 2019). Normally, countries undergoing restructurings do not have a lot of friends-they owe them all money. Iraq was different. Paris Club negotiations opened with the U.S. willing to stand up for Iraq, with some in the National Security Council (which represented the White House) aiming for

¹⁴⁸ There are somewhat differing accounts of how much support the idea had. It is possible that creditors wanted to avoid enshrining a doctrine of odious debt into international law, and as a result were ready to take a larger write-down to pre-empt the discussion. Iraq did maintain the right to declare specific debt odious, which it did for several commercial claims (see section 5.4.4).

¹⁴⁹ Eighteen members participated in the Paris Club restructurings: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Italy, Japan, Korea, Netherlands, Russia, Spain, Sweden, Switzerland, U.K., and the U.S., Norway, the World Bank, UNCTAD, the European Commission, the IMF, and the OECD were observers.

¹⁵⁰ http://www.clubdeparis.org/en/communications/page/the-six-principles (accessed on 26 July 2019).

substantial, possibly even total, debt relief (Buchheit 2019). The U.S. was keen on achieving a consensus outcome; the Paris Club was the best place to achieve it (Wethington 2019).

5.4.2. Paris Club negotiations

The Paris Club is a well-oiled machine for sovereign debt restructurings, having executed 463 deals with 96 countries since it was first established in 1956.¹⁵¹ Iraq required two types of debt relief: flow treatment and reduction of the debt stock. The first was relatively easy, as Iraq was not paying its current debt. However, at the Paris Club, flow treatment usually comes before debt stock reduction. For Iraq stock reduction came up front, which is unusual (Lowery 2019; Marcus 2019). Iraq was treated under the Evian Approach, offering *"comprehensive debt treatment,"* with no standard terms (ibid).¹⁵² The approach was only approved in October 2003 and did away with economic indicators in favour of a non-standard debt sustainability analysis (DSA) from the IMF (Weiss 2011, p. 5-6). The IMF had been brought in early 2003 to put together a DSA for the rescheduling, and to prepare Iraq to be party to a stand-by agreement (Wethington 2019; IMF 2004).¹⁵³

The Iraqi solvency and capacity to pay its debts would be based on the DSA, which largely depended on assumptions about oil prices and production. The Iraqi government generated all its revenue from oil sales: between 2005 and 2007, 94 percent of revenues, 96 billion dollars in total, came from the sale of crude oil (GAO 2008, p. 2). The accuracy of the assumptions was therefore essential for debt sustainability. Because of the U.S. desire for substantial debt relief, there was political pressure from the negotiations team to reduce Iraq's capacity to service debt. The IMF has said so itself, in a report from the Independent Evaluation Office issued in 2018 (Takagi et al. 2018, p. 57). The IMF (2004) assumed the price of oil would be 26 dollar per barrel, forever. Figure 5.5 shows the futures market for Brent oil, as well as the oil price during negotiations. At the time of the DSA's publication, the oil price was 46 dollar and rose throughout 2005 and 2006. The assumption did not change during the negotiations, even as the price of oil rose to over 60 dollars.

¹⁵¹ http://www.clubdeparis.org/en (accessed 5 September 2020).

¹⁵² http://www.clubdeparis.org/en/communications/page/evian-approach (accessed on 23 July 2019).

¹⁵³ Meetings between the IMF and the CPA occurred throughout the spring of 2004 (Wethington 2019).



Sources: Bloomberg and the IMF (2004). Note: the Brent spot price is used. The IMF assumption is from the IMF DSA, dated 29 September 2004. Replication file, *oil.xlsx*

Figure 5.5: IMF oil price assumption vs. actual term structure.

Initial staff meetings at the Paris Club started in July 2004, with bilateral meetings in the fall. The deal was ultimately agreed in November 2004. Paris Club negotiations are generally completed within one day, and usually no more than forty-eight hours (Buchheit 2019; Marcus 2019). The Iraqi negotiations went on for over a week, following months of preparation.

At issue was a fundamental difference between the Coalition—led by the U.S. and the U.K.—and non-Coalition countries, mainly European countries, and Russia. The Europeans considered the IMF's DSA a work of fiction because of how vastly its oil price assumptions differed from reality (Buchheit 2019). Iraq did not have enough cash on hand to do a cash-for-debt deal, so it would have to be debt-for-debt. The 'bid-offer' on haircuts going into the negotiations was 95 percent (U.S./U.K.) and 50 percent (Europe/Russia).¹⁵⁴ However, an 80 percent write-down was the likely outcome from the beginning. The U.S. delegation and the head of the Paris Club had agreed on the number beforehand as a realistic compromise (Wethington 2019). The U.S. delegation would negotiate with everyone who wanted a complete write-off, mainly the Iraqis and parts of the U.S. government. The Paris Club secretariat would try to get the Europeans and Russians up from their 50 percent haircut,

¹⁵⁴ Paul Wolfowitz pushed for 100 percent initially, then lowered the opening offer to 95 percent alongside the U.K. (Buchheit 2019; Momani and Garrib 2010, p. 162). The White House deferred the final decision to the Treasury.

while the U.S. would negotiate everyone else down to 80 percent (Wethington 2019; Weiss 2011, p. 6).¹⁵⁵

The last creditor holding out was Russia. The general sense was always that a reasonable compromise could be reached through diplomacy (Buchheit 2019). At the Asia-Pacific Co-operation summit in Chile (November 2004) Bush personally got involved to close the deal with Putin. Three bilateral meetings at the summit's margins were required before Putin agreed to the 80 percent nominal haircut (Pam 2019; Khalaf 2004).¹⁵⁶ In fact, the actual last party to agree was Iraq, which attempted to get 100 percent debt relief (Wethington 2019). All creditors met on November 21, 2004, a Sunday in Paris, expecting an agreement, but Iraq continued to hold out and only agreed a few hours after the deadline had passed (ibid).¹⁵⁷ The deal was struck, with the following terms outlined in the Agreed Minutes (Paris Club 2004):

- Debt reduction of 80 percent in three tranches
 - o 30 percent immediate debt cancellation, as of January 1, 2005.
 - 30 percent additional debt rescheduling for 23 years, with a six-year grace period, conditional on approval of a standard IMF program.
 - 20 percent of initial debt stock debt rescheduled after three years on similar terms, conditional on review of the IMF program (but no means testing).
- A six-year grace period for principal repayments, and a three-year grace period for (full and partial) interest rate payments.
- An interest rate of 6 percent.
- Voluntary debt-for-debt swaps.
- Comparable treatment of other external creditors.
- Net present value debt reduction of 89.75 percent.

The deal was harsher on creditors than other restructurings during the same period. Sturzenegger and Zettelmeyer (2008) show haircuts on debt restructured between 1998 and 2005 ranged from 13 percent (Uruguay 2003) to 73 percent (Argentina 2005). Haircuts were spread out, rather than taken up-front, mostly for accounting and budgetary reasons. All countries have different accounting rules, and the haircut would influence each country differently (Lowery 2019). If haircuts are spread out, losses can be booked over many years (Festekjian 2019). Several countries—Germany prominent among them—had not marked

¹⁵⁵ The U.S. helped bring 'up' several of the holdouts, too (Wethington 2019).

¹⁵⁶ The Russian Finance Minister had been un-responsive until then, for reasons unknown.

¹⁵⁷ The Iraqi negotiators were the finance minister (Adel Mahdi), the Central Bank Governor (Sinan Al Shabibi), and Iraq's legal advisors, Cleary Gottlieb (Lee Buchheit and Jeremiah Pam).

down their loans. Any write-off would hit the budget in year one if it was front-loaded (Kelleners 2012; Lowery 2019).¹⁵⁸

Lazard Frères was brought on as financial advisors to execute the deal. In December 2004, the U.S. forgave 100 percent of its 4.1 billion dollar claim (Weiss 2011, p. 6) while all other Paris Club members restructured according to the initial terms.¹⁵⁹ Next, the focus turned to the remaining creditors. With an almost 90 percent net-present value reduction of debt, Iraq had the terms to offer its other creditors.

5.4.3. Non-Paris Club bilateral debt negotiations

Other bilateral creditors comprised two categories: Gulf States and countries not in the Paris Club, like China. The Gulf States were the largest creditor overall with 53 billion dollars of debt. Iraq hired Houlihan Lokey Howard & Zukin as financial advisors, and Houlihan oversaw explaining to these countries what the Paris Club deal entailed (Pam 2019). The IMF DSA had assumed comparable treatment on the rest of the creditor universe. All countries were IMF members, and this helped obtain agreements in principle from bilateral creditors, but only in principle. Even if they did not restructure, then they would not obstruct the restructuring moving forward (ibid). A key point was the 'evidence of indebtedness' clause. It meant each new loan superseded and replaced any old contracts (Deeb 2007, p. 7). Old debt would be foregone, and Iraq would have a new known stock of external debt.

The largest Gulf State creditors were Saudi Arabia (39 billion), Kuwait (8 billion), Qatar (1.5 billion), and Jordan (1.3 billion); to this date none have restructured. The Gulf States were opposed to debt relief in late 2003, having all been on the receiving end of Saddam's wars (Momani and Garrib 2010, p. 167). Several soft pledges to restructure on Paris Club terms were made at the height of the restructuring talks in late 2004, but nothing came of them. In fact, Iraq and Saudi Arabia could not even agree on how much debt was outstanding (ibid, p. 168).¹⁶⁰ As of 2020, Saudi Arabia still considers it is owed money, with the Foreign Minister, Adel Al-Jubeir, denying it has written off anything (Memo 2017). The second largest creditor, Kuwait, refused to budge as well, as did Qatar. Kuwait has tied repayment of debt to national recognition. There is no evidence that either Kuwait or Qatar has officially restructured any debt, despite significant international pressure early on. Jordan has a large claim—having been a long-term trading partner of Iraq (Marcus 2019)—but has not

¹⁵⁸ Even though the loans had been on the books for many years and were clearly worthless; a haircut would be treated as a revenue hit.

¹⁵⁹ In 2011, Iraq settled with some U.S. citizens for damages during the Gulf War (State Department 2011).

¹⁶⁰ The Gulf States had political incentives to not restructure, as they wanted leverage over Iraq.

provided any documentation. The claim is still outstanding. Presumably, there is a reason they have not tendered, most likely due to ineligibility.¹⁶¹

Most of the smaller creditors settled over the following few years. The Czech Republic, Hungary, Indonesia, Malaysia, Romania, and South Africa all settled on Paris Club terms, while Bulgaria, Bosnia, Serbia, and Slovenia settled on Paris Club-like terms for debt owed to former- Yugoslavia.¹⁶² Slovakia, Cyprus, and Malta wrote off all debt (SIGIR 2008, p. 138). Others took a bit longer: China restructured its bilateral loans in 2010 (amounts unknown), having originally pledged to do so as early as 2007. The claims were held by China's development banks and had to go through a budgetary process before a restructuring could be done (Acker et al. 2020, p. 10). The UAE indicated they would write off its 4.2 billion dollar debt in 2012 (Dajani 2012) although there is no evidence they did. Egypt was difficult and did not settle until 2015, and even then, it only did so in exchange for oil shares (Aman 2015). The outstanding issue for Egypt was a tie-up of worker remittances from Iraq. The remittances had been delivered to Iraqi banks but had been stolen before they were sent to Egypt (Marcus 2019). It was unclear if the remittances could be defined as debt, which stalled negotiations. The countries which took the longest time to settle all had similar outstanding issues.

By 2008, the last phase of the Paris Club write-down was complete. The Iraqi debt overhang was no longer a priority, with an implicit understanding that the Gulf States would not push for repayment (Lowery 2019; Marcus 2019). By 2019, 65 out of 73 sovereign creditors had restructured, with the remainder mostly consisting of Gulf State uncollected debt.¹⁶³ By 2019, the immunization of Iraqi oil has lapsed, but sovereigns rarely pursue other sovereigns. However, because the Gulf States were never brought onboard as part of the early restructuring, they never restructured their claims. In addition to having been on the receiving end of Iraqi aggression, another reason is possibly the geopolitical and religious context. It is likely that creditors with Sunni majorities (all of them) had concerns about increased Iranian influence in Iraq and therefore hesitated in settling the claims.

5.4.4. Commercial debt claims

Dealing with the Paris Club and other governments was high politics, while the commercial restructuring was more operational in nature. The commercial restructuring deal-offer was

¹⁶¹ It could be that loans violated U.N. sanctions.

¹⁶² They were essentially the same; some took a bit of a larger haircut to get some cash up front.

¹⁶³ Paris Club (2008) press release. I have been unable to find evidence that Brazil, Greece, Jordan, Kuwait, Pakistan, Poland, Qatar, Saudi Arabia, or Turkey have restructured.

made in 2005 and was fixed at Paris Club terms, with JP Morgan and Citi brought in as financial advisors to deal with the so-called London Club of large commercial creditors.¹⁶⁴ The U.S. government was barely involved in the commercial restructuring, having achieved the Paris Club deal (Zelikow 2020). The structure of the deal was decided by the Iraqi government, following advice from JP Morgan, Citi, and Cleary Gottlieb (Pam 2019). The key things to decide for the structure were (i) past due interest, i.e., how much each claim had in accrued interest; (ii) whether to offer a cash-for-debt or a debt-for-debt swap; and (iii) how to reconcile claims.

Each claim would receive 10.25 percent of its accrued value. All loans would accrue at a fixed interest rate from the date of default, Libor + 75bps, according to the Reconciliation Methodology which was developed by the financial advisors.¹⁶⁵ It did not matter if the debt had a contract that accounted for past due interest; all claims were treated equally. The French banks pushed hard for adhering to contracts when calculating the spread over Libor. This would have benefitted the banks and larger claimants at the expense of smaller ones and was dropped in favour of treating everyone equally (Buchheit 2019). Most small commercial claims were trade credits, with no interest rate specified in the contract (Festekjian 2019). The larger creditors, mostly European banks, held letters of credit or outright loans. The accrual rate was thus a good deal for all trade credit claims.¹⁶⁶

The deal was a debt-for-debt swap because Iraq did not have enough cash to pay all its creditors (ibid). There were hundreds of attachment orders outstanding against Iraq, which meant any deal had to resolve as many claims as possible (Zelikow 2020). Bonds were issued in return for restructured debt, but only for the largest creditors. Everyone owed more than 35 million dollars in principal was offered a debt-for-debt deal, while smaller creditors—legally unable to hold external bonds—received cash. Issuing bonds had been preferred by JP Morgan and Citi (who make a living trading bonds) but had some backing in Iraq, too—at least officially (Chung and Fidler 2006). The lawyers advised against a debt-for-debt swap, because all bond prospectuses included risk assessment disclosures, which would not align with the propaganda coming out of the White House in 2005. For political purposes, Cleary Gottlieb suggested an all-cash offer on comparable terms to the Paris Club (Buchheit 2019).

The lawyers also wanted aggregate Collective Action Clauses (CACs), even though only one bond was being swapped into a 5.8 percent coupon bond, maturing in 2028. The reason

¹⁶⁴ Iraq is unlike most Paris Club deals where the debtor leaves wanting to escape comparability of treatment terms; Iraq used it to argue for commercial creditors to accept a similar deal (Buchheit 2019).

¹⁶⁵ Reconciliation Methodology (ex. C): http://www.eyidro.com/recon-method.pdf (accessed on 23 July 2019). ¹⁶⁶ The claims came in different currencies—mainly U.S. dollars, Yen, and European currencies—but given claims pre-dated the Euro's existence, a formula for converting old currencies was worked out (Festekjian 2019).

behind this was to make it easier for Iraq to re-open this bond or issue more bonds should it need to in the future. It ended with a compromise, as JP Morgan and Citi would only agree to single-issue CACs, which was the market-standard at the time, rather than second-generation CACs.¹⁶⁷ The lawyers did not consider using first-generation CACs a deal breaker at the time and did not push (ibid).

The main issue for settling commercial claims was reconciling outstanding debt.¹⁶⁸ Ernst and Young (E&Y) was appointed as reconciliation manager, working out of Jordan. Debt had to meet the following definitions to be eligible:¹⁶⁹

- 1. Evidence of written agreement.
- 2. Entered before the sanctions (dated August 6, 1990).¹⁷⁰
- 3. Fit the definition of credit.
- 4. Be external debt (defined as debt in all currencies except Iraqi dinars).

If the claim had not been sold and E&Y could reconcile it to available documents, it would be settled. Because the debts were so varied, they were all treated equally in terms of eligibility, regardless of governing law and currency. From the moment a claim was submitted, the panel's decision became final, with about half of claims awarded to claimants (Buchheit 2019). In normal restructurings, creditors have Euroclear or DTCC numbers to certify their claim, which are mostly external bonds. Here, creditors turned up in Dubai and Jordan with boxes of paper (Festekjian 2019).

Iraq did not assert odious debt for all the claims, but it reserved the right to do so on specific claims (Zelikow 2020). One man from India even showed up to a creditor meeting in Dubai with an old fax, showing a claim and wanting to be paid. He was kindly asked to submit his claim to E&Y (Festekjian 2019). Another gentleman had delivered 10,000 dollars' worth of frozen chicken to the docks in Basra the morning the sanctions took effect (Buchheit 2019). He was not paid. An Irish meat exporter and a Swiss jeweller were told that documentation for the underlying goods would be required after they complained, and they

¹⁶⁷ Also called first-generation CACs, working within one bond issue rather than the whole range.

¹⁶⁸ Cleary Gottlieb knew of several precedents of how not to do it. In 1975, Nigeria ordered 16 million tons of cement to arrive within a year to plug a shortage, far exceeding port capacity (Marwah 2020). The result was a run-up in trade debt that needed to be settled. The government took out a newspaper ad, asking anyone it owed money, to contact them. Obviously, a lot of people did—Nigeria was inundated with claims, entangling it in a debt reconciliation nightmare. It settled only one-third of the claims (Buchheit 2019).

¹⁶⁹ Adopted from the Iraqi Ministry of Finance's (2008) Memorandum for potential holders of claims.

¹⁷⁰ Somewhat ironically, the statute of claims according to both New York and English law is six years, so claims had expired. As claims were made under a plethora of different legal standards, however, the offering document specified that by submitting a claim, claimants agreed to forgo the right to sue. It was important that no agencies or ministries inside Iraq talked to the external debt holders, as awknowledgement of debt would have reactivated the claim. All talks had to go through lawyers.

withdrew their complaint (Zelikow 2020). Sovereign debt restructurings do not normally include such unusual claims. 817 claims (out of a total of 11,776) could not be reconciled, and a special arbitration panel was convened (the rest were settled).

Once the parameters were set, Iraq published the commercial debt offer on July 25 (2005a). JP Morgan and Citi arranged meetings with individual creditors in Dubai to market the settlement. It was a take it or leave it offer, with no creditor committee negotiations. Five creditor committees were created, none representing all creditors. The largest, the London Club Coordinating Group, represented European and Middle East banks while the others were the Washington Club, the Iraq Creditors Club, the Korean Creditors Coordinating Committee, and the North African Trade Creditors Committee (Buchheit 2009, p. 211). Advisors took the view that negotiating individually would be fatal, as it would negate the Paris Club deal if terms were improved. The argument for equal treatment was made by the Iraqi Central Bank Governor in 2005, in a letter to one of the creditor committees. The problem raised by the Governor was not that the creditor committees made invalid points, rather that all had valid points. It was thus impossible to accommodate one group over another (the full letter can be found in Appendix 5a, section 5.7).

The offer was considered fair by everyone. A way to evaluate the offer is to compare it to what the larger creditors had marked loans at in their books. Remember from section 5.3.1, the largest commercial creditor was the Italian bank, BNL. BNL held 3.4 billion dollars' worth of loans (in notional and accrued interest) to Iraq and its state-owned banks, classified as non-performing loans. The loans figure in BNL annual reports from 2000, marked to their fair value.¹⁷¹ They are listed explicitly in terms of accrued value and can be compared directly to the settlement offer. From 2000 to 2004, BNL valued the loans at between 10 and 12 percent of accrued value. In 2005, when the exchange happened, they received 683 million dollars' worth of the 2028 bonds, valuing them at 239 million in their annual report, with the loans moving from "*non-performing*" to "*performing*" (BNL 2005, p. 64). Figure 5.6 shows the restructuring offer and the BNL marks in the years leading up to the restructuring. BNL's accounting valuation would suggest the offer of 10.25 percent of accrued value was fair.

¹⁷¹ Presumably.



Sources: BNL annual reports (2000, 2001, 2002, 2003, 2004, 2005). Note: The value is percent of nominal and accrued. Replication file, *plot_bnl.m*.

Figure 5.6: BNL mark-to-market value of Iraq loans (2000-05).

This is not to say that commercial creditors did not complain about being strong-armed; they did (Chung 2005). They also accepted the offer. The commercial debt settlement offer was made on July 26, 2005. By December, all large creditors had accepted (14 billion dollar), triggering the second phase of the Paris Club, the IMF stand-by agreement of January 2006, and a 30 percent further debt reduction (Chung and Balls 2005). The deadline for large commercial creditors to submit claims was fixed and creditors who had earlier proclaimed they would not participate showed up with boxes of claims in hand, on the day (Festekjian 2019). A year later, on July 18, 2006, the restructuring was essentially complete.¹⁷² In total, 11,776 individual Saddam-era claims were tendered (817 went through arbitration). Of 491 commercial claims, 96 percent of eligible claims (as considered by E&Y) accepted the deal, for a total of 19.7 billion dollar, according to the Ministry of Finance (2006).

Two facts made the commercial restructuring a lot easier than that of the Paris Club. First, the immunization of Iraqi oil assets was helpful in marketing the commercial offer (Festekjian 2019). It meant potential holdouts would have to wait a long time to collect, versus up-front payment on delinquent loans now. It took away the legal options for any vulture funds, who broadly speaking did not engage (Buchheit 2019). Second, commercial creditors—as opposed to governments in the Paris Club—must mark non-performing loans

¹⁷² Press releases announcing settlements and participation rates are available at the Debt Reconciliation Office, run by Ernst & Young: http://www.eyidro.com (accessed on 12 July 2019) and the Paris Club website: http://www.clubdeparis.org/en/traitements/iraq-21-11-2004/en (accessed on 15 July 2019).

down, and as shown above the offer was about fair value, or better. It did not hit anyone's profit-and-loss statement.

5.5. Haircuts and odious debts

The Iraqi debt explosion was awesome in size when compared to any country or period in history. Few historical precedents exist in the intersection of post-conflict reconstruction and debt relief, amid such international political scrutiny.¹⁷³ Figure 5.7 shows the size of haircuts for all sovereign debt restructurings from 1980 to 2020, measure by the size of the restructuring. Iraq stands out as being particularly severe for creditors in the upper right corner.



Sources: Cruces and Trebesch (2013) online appendix for every restructuring except for Iraq, where this paper's data is used. All restructurings with foreign banks and investors are included regardless of instrument. Replication file, *plot_sources.m.*

Figure 5.7: Comparison of haircuts in debt restructurings (1980-2009).

Sovereign restructurings had changed a lot in the 20 years before the Iraqi case, yet oddly it stands out as going somewhat against the grain of the time. The haircut was much larger

¹⁷³ A few were mentioned by participants in the restructuring. The closest was perhaps the German debt relief of 1953, when the London Debt Agreement cut external German debt in half, contributing to a successful reconstruction after World War II (Galofré-Vilà et al. 2019). Another is Polish debt relief in the early 1990s. Poland got a Paris Club deal that cut its debt stock in half, received IMF help from 1990-95, and turned things around in its re-entrance to the Western world (Boughton 2012, p. 438-42).

than other restructurings; there was political pressure; and laws were changed to accommodate political goals. Only Argentina's 2005 restructuring comes close, and it came with a low participation rate of 76 percent and years of litigation as shown earlier. The Evian approach—which split up heavily indebted poor countries (HIPC) and non-HIPC relief—showed how flexible the Paris Club could be, a key factor in reaching the final deal. Immunizing Iraqi foreign assets was and is largely unprecedented (Buchheit and Gulati 2019).

The restructuring was thus a success, insofar as it removed the debt overhang and allowed Iraqi output to outgrow the debt stock.¹⁷⁴ Government debt-to-GDP in 2019 was 50 percent, mostly thanks to output growth rather than an outright fall in debt. The composition of the debt stock has also changed. External debt has fallen to 34 percent of GDP, much of it loans to the Gulf States that have been de-facto cancelled.¹⁷⁵ Iraq has increased its stock of local debt (in dinars) since the restructuring, although it has also increased its foreign exchange reserves. Table 5.8 shows outstanding Iraqi debt; almost half of gross debt is legacy debt owed to the Gulf States.

	Outstanding debt	Percent of
	(dollar billion)	GDP
Paris Club	6	3
Gulf States	49	22
Non-Paris Club official	18	8
Reparations (non-debt)	4	2
Commercial debt	-	-
External \$ bonds	5	2
Local debt	36	16
Foreign exchange reserves	-65	-29
Total debt (ex-reparations)	113	50
Total net liabilities	53	23

Sources: IMF data for overall debt stock and GDP. Paris Club levels are based on term loans outstanding, sourced from Bloomberg; see text for Gulf States. Non-Paris Club debt is the residual and includes IMF and World Bank loans. Reparations outstanding as of December 2019 are for damages to oil-assets in Kuwait. Data on external and local debt, as well as (positive) foreign exchange reserves are from the Central Bank of Iraq.

Table 5.8: Iraqi debt by creditor, 2019.

In that sense, the Iraqi restructuring has important lessons for the future. If oil-rich countries with lots of foreign assets need to restructure debt, it would seem to require external political sponsorship (an obvious example is Venezuela, as noted by Buchheit and Gulati 2018). In a time when creditors can exclude countries from financial markets—because most transactions flow through London or New York—Iraq offers a template to

¹⁷⁴ The restructuring only. Iraq cannot be considered an economic or security success.

¹⁷⁵ But not cancelled. It has political ramifications as collection can be attempted in some future point.

force creditors to restructure. It requires political will though: any restructuring would run head-first into issues of pari passu and creditor lawsuits. The extent to which politics permeated every aspect of the Iraqi debt restructuring to circumvent legal issues cannot be stressed enough.

The Iraqi debt restructuring was therefore also a case of missed opportunities. The buildup of debt in the 1980s documented in section 5.3 shows that all Iraqi debt was political in nature. It originated from the U.S. and its allies to support the Iraqi war effort in the 1980s. The financing was not spent on the Iraqi people; it was provided in the name of geopolitics, leaving the Iraqi people saddled with debt whilst an oppressive regime was personally enriched.¹⁷⁶ If a doctrine of odious debt has any place in international law, a good place to start could have been BNL's loan to Iraq as described in sections 5.3.1 and 5.4.4. There is no doubt that going to the Paris Club instead of declaring Iraqi debt odious was politically expedient, but it left unanswered the question of who was at fault.¹⁷⁷ It allowed the creditors to settle debts owed without answering any uncomfortable questions about why loans were extended in the first place. Instead, the Paris Club deal, and the subsequent commercial restructuring, swept under the rug any debate about the morality of paying creditors at all.

5.6. Conclusion

In this paper, I show that the entire Iraqi debt stock was a consequence of the geopolitics of the Iran-Iraq War. The U.S., the Soviet Union and many European countries showed a willingness to disregard solvency concerns and gave loans to Iraq on non-market terms. In less than fifteen years, the war turned Iraq from a net creditor in 1979 to having a government debt-to-GDP of over 1000 percent. As the geopolitical tide turned against Iraq after its invasion of Kuwait in 1990, Iraq was defeated and isolated by sanctions. It owed money to everyone: from Gulf States to the developed world, from banks to individuals. The Iraqi debt overhang at the time of the U.S. invasion in 2003 was devastating and restructuring it was a priority.

A problem in sovereign debt restructurings is that they are increasingly creditor friendly. Creditors sue if they are treated harshly, cutting off countries in default from the global economy. It is possible because money flows through a few concentrated financial centres, and most external debt is governed by New York or English law. The Iraqi restructuring

¹⁷⁶ Blau (2003) estimates Saddam's personal net wealth ranged from 2 to 40 billion dollars.

¹⁷⁷ It is possible the debate over odious debt meant it was easier to get creditors to take a haircut, simply to avoid invoking the doctrine of odious debt. Another option, also not favoured by the U.S., would have been the Sovereign Debt Restructuring Mechanism (SDRM) proposed by the IMF (2003).

came amid these changes yet circumvented the obstacles they represented. I find the restructuring was unlike most other sovereign debt restructurings of that period. Sovereign creditors were placed under immense political pressure by the U.S. to forgive debt, with the Paris Club deal inflicting large write-offs on Iraqi creditors. However, the Iraqi debt restructuring could have to set an important precedent by declaring Iraqi debt odious. Iraq had vast political backing from a U.S. hegemon, and while the deal was ultimately successful in writing off Iraqi debts, it represents a missed opportunity in reforming how sovereign debt is restructured.

5.7. Appendix 5a: Letter to creditor committees

Letter from: Sinan Al Shabibi, Governor of the Central Bank of Iraq, in 2005.

To: The London Club Coordinating Group; The Washington Club; The Iraq Creditors Club; The Korean Creditors Coordinating Committee; and The North African Trade Creditors Committee.

"Over the past year, Iraq has consulted, individually and in groups, with many of [its] creditors. We have heard a common theme in these discussions. Claimants falling into each category (bilaterals, banks, contractors, suppliers, individuals, etc) have advanced plausible arguments for the proposition that—whatever Iraq's final settlement offer may be—their group should receive preferential treatment vis-a-vis other types of claimants. To give you just a flavour of these arguments:

- The bilaterals say they lent at below-market rates while commercial creditors advanced money at full market rates and took the corresponding full credit risk.
- The commercial claimants say that the bilaterals were lending to further their geopolitical or export development objectives and should therefore be subordinate to normal commercial counterparties.
- The commercial banks say that their support will be crucial in Iraq's reconstruction program and therefore they, above all others, must be treated gently in the restructuring.
- The trade suppliers say that the weight of sovereign debt restructuring precedents confirms that trade creditors should be exempted from, or treated more leniently in, any sovereign debt rearrangement program.
- The commercial companies say that they are not, like many other claimants, in the business of lending money or assessing (and bearing) sovereign credit risk.
- Construction companies ... note that they have worked on facilities that still provide critical services to the people of Iraq during this very difficult period.
- Individuals say they are individuals.
- The problem is not that these are illegitimate arguments; the problem is that they all have some element of legitimacy. But faced with this wide and contradictory array of positions, the Government of Iraq has concluded that the only fair and practicable course of action is to accord an even-handed treatment to all of the country's Saddam-era claimants."

Source: Buchheit (2009, p. 211).

Chapter 6

Summary

Contrary to popular belief, reparations are still occasionally demanded, even in the post-World War II era. Before that, they were common. This thesis has explored the economic effects of war reparations, with a focus on the role of sovereign debt in financing the transfers. Results have varied: from quick repayments of large reparations to catastrophic economic crises. The occurring theme across the three papers has been that enforcement of debt contracts has important consequences, and that access to global sovereign debt markets to facilitate the transfers.

Three key findings emerge from the thesis. The first paper shows how a positive terms of trade shock improved the trade balance and increased output in France, which helped pay for the Napoleonic Wars reparations. Because the improvement in the relative price level was persistent, the economy could grow its way out of the repayment. I show that in a small open economy model calibrated to the French economy, the gains from a positive terms of trade shock of the size France faced are close the cost of the reparation.

The second paper shows that the enforcement of debt contracts can create suboptimal economic policies. The periods around war reparations exhibit many of the same macroeconomic characteristics as sovereign defaults, yet reparations are usually repaid. Neither Germany nor Finland following the two world wars were able to default on reparations because of their creditors' strong political and military position. This was despite a willingness to pay analysis that suggests it would have been a better policy to default on its sovereign debt. Only the French repayment of its 1871 indemnity can be considered rational given its macroeconomic situation. The enforcement of reparations in Germany and Finland carried large economic and political costs.

The third paper shows how Iraq did not default on reparations but defaulted on all its other debts. Iraq went from being a net creditor in 1979 to insolvency less than ten years

later. The entire debt stock was political war debt, granted by geopolitical friends in support of the ultimately successful war against Iran. I show how much of the debt can be considered odious, although the doctrine of odious debt was never used to write off Iraqi debts. After more than a decade of economic isolation in the 1990s, Iraq emerged from the 2003 invasion the most indebted nation in the world. American political will imposed severe terms on creditors, unlike other restructurings at the time. In an unprecedented move, Iraqi assets abroad were immunized from creditor attachment by the U.N. and creditors were unable to negotiate better terms, leaving them with large write-offs.

6.1. Findings

Several findings emerge from my research. *First,* what matters in the analysis of sovereign debt and war reparations is the structure of the economy and trade, the enforcement of sovereign liabilities, a country's external financial position, and how transfers are financed.

Second, large reparations are common and are mostly paid back. Reparations have been a frequent feature of post-war settlements. Outside of the German negotiated write-off, countries have mostly grown their way out of the nominal repayment, albeit often with severe economic pain along the way. There is no definitive way of measuring a country s capacity to pay, but a large stock of foreign assets and a positive trade balance go a long way to increase it.

Third, the question of enforcement of sovereign debt is important. Most countries were under occupation until reparations were paid, so the incentives to repay were generally high. Standard models of sovereign debt might show that default would have been optimal but binding enforcement of debt contracts make defaults impossible. Several large reparations episodes exhibit macroeconomic characteristics commonly found in sovereign defaults, but without understanding the political situation it is not possible to understand the political economy implications of reparations.

Fourth, capital structures matter. Countries can service their debt for a long time if creditors are willing to roll over debt. Countries were able to renegotiate extensions or obtain new funding through a mix of economic adjustments and diplomacy. Creditors can be incentivised by gaining seniority or outright collateral or be motivated by political factors. Conversely, a sudden stop of capital inflows can cause a country to default on the entire debt stock. In terms of reparations, this did not really happen. Lenders were happy to extend credit and erred on the side of profligacy.

Fifth, sovereign debt issued to pay back reparations is economically identical to debt issued for general purposes of consumption smoothing, but the enforcement of debt contracts is very different. Reparations are generally enforced by military occupation.

6.2. Policy implications and future research

The study of reparations is the study of capital flows and the political economy. All countries that import or export goods and services are exposed to global fluctuations. Recent work by Ikeda and Phan (2019) show how capital inflows lead to asset bubbles, which facilitates further capital inflows. The reader will notice how this generalisation echoes the aftermath of some of the reparations episodes I examined, but also recent debt crises such as the Eurozone crisis. The effect of capital flows from the North to the South still wreak havoc and understanding the global imbalances is crucial. General conclusions from the study of reparations therefore have broad applicability.

Three issues follow for policymakers. First are cash transfers to developing countries. The microeconomics literature as it relates to development economics would gain from understanding if there are any drawbacks from capital inflows. Micro improvements might be trumped by macro instability and dislocations, rendering the effect of aid moot. The second issue is that of capital controls. If the conclusion is that capital inflows mean instability, completely open capital accounts as they were popular in the last forty years might need to be re-thought. Such an alignment is already under way, as outlined by the IMF's Chief Economist (Gopinath 2019) and Managing Director (Georgieva 2020), but reparations offer empirical examples that further our understanding. The third issue is when to repay debt. As the thesis shows, the capacity to pay sovereign debt is generally high but it does not imply that countries should prioritise debt payments to investors over investments in critical infrastructure or climate research. It is important to understand when the costs of borrowing outweigh the benefits, both directly and indirectly, especially if the debt can be considered odious. The question of when sovereign debt is legitimate and benefits the citizens of a country is important. The answers provided in the thesis is but a step towards a greater understanding and should be rigorously tested. I look forward to contributing further into the studies of reparations and sovereign debt in the future.

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