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# The economics of war, (and its aftermath)

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EXECUTIVE SUMMARY

- Wars disorganize and reorient production
- They reshuffle trade flows
- They provoke inflation
- They are mostly paid for by public debt monetization
- At the cost of an extreme curtailment of liberty, price controls and rationing may succeed in suppressing inflation until peace returns
- The aftermath of wars is replete with challenges, deflation being the first of them.
- Economically and financially, Ukraine is at risk of winning a Pyrrhic victory.
- Ultimately, its cost will have to be borne by NATO member countries.

## War revisited after the Seventy-seven Years' peace

Between the end of World War II in May 1945 and Russia's attack on Ukraine in February 2022, Europe has enjoyed an exceptionally long period of peace on its soil: 77 years. The decolonization wars of Indochina (1946-1954) and Algeria (1954-1962) took place far away in what were still French colonies. The Yugoslav wars (1991-2001) were ethnic wars within the borders of the former Socialist Federal Republic of Yugoslavia. The lightning annexation of Crimea in 2014 by Russia, followed by the low intensity but lasting conflict between Ukraine and Russia-supported separatists in South-Eastern Ukraine should have awakened Western public opinions to the risk of war more than they did. Three generations were born and have grown up during the Seventy-seven Years' peace, hearing about war from their parents, grand-parents or great-grandparents, and witnessing the peaceful end of the Cold War in 1989. Before February 2022, the experience of war, and more specifically of its economic and financial impact, was in the process of being erased from collective memory.

## War economics forgotten after the Seventy-seven Years' peace

Forgetting or ignoring what we can learn from past experience is always a risk, not so much because, as Mark Twain allegedly put it, "history does not repeat itself but it rhymes", but rather because, according to Santayana, "those who cannot remember the past are condemned to

repeat it". Hence our topic: what can we learn from history about economic and financial conditions during wars and their aftermaths? Subject to data availability and accuracy, to what extent do such lessons shed light on the current war in Ukraine?[i]

Owing to their duration, breadth and depth, some wars – like the Napoleonic Wars (1803-1815), World War I (1914-1918) and World War II (1939-1945) - have been more economically challenging than others for both the belligerents and the non-belligerents. Such major conflicts magnify the impact of the requirements of war on the volume and the structure of production, prices and wages, trade flows and balances, exchange rates, public finances, and the nature and quantity of money. They provide material to stylize the tail risks associated with wars. We will therefore focus on such major conflicts, and on World War I particularly. Like the Ukraine war today, World War I broke out in an era of intense globalization, conventional wisdom having it that economic and financial interconnectedness made war absurd and therefore unlikely.[ii] Moreover, while the debate about the causes of the Great Depression is still unsettled, no economic historian would claim that World War I did not play any role in its genesis. And the inter-war period did inform the economic and financial order set up after World War II.

### Disorganizing and reorienting production

Some people believe that wars stimulate the economy. But this is not the case for countries that have war taking place on their own soil. Between 1913 and 1919, industrial production declined by 43% in France, 62% in Germany, but only by 11.5% in the UK. In contrast, it increased by 18.5% in the US.[iii] One key reason is the labor shortage caused by the draft: during World War I, out of a total French population of 39 mn, 8 mn men (or 63% of active workers) were drafted.[iv]

At the end of October 2022, Russia's central bank warned the military draft would exacerbate labor shortages.[v] The destruction of Ukraine's power grid will amplify the contraction of economic activity there. For what these measurements are worth, real GDP is estimated to have shrunk by about a third in Q1 and Q2 2022 in Ukraine, and only 2.3% in Russia (but almost 8% annualized in Q2 alone).

The impact of war also varies significantly across sectors, illustrating the reallocation of resources to the war requirements. During World War I, the production of a few French industrial sectors (rubber, leather) increased. Renault's sales more than quadrupled. But, industrial production fell dramatically in most sectors, the result of the nature of production and the distance to the battlefields. Before the war, the Northern and Eastern parts of France, those where the battlefields were to be located, produced 90% of the country's linen and iron ore, 80% of steel, 70% of sugar, 60% of cotton fabric, 55% of coal, 43% of electric power.[vi]

Similarly, agricultural production was also hit hard. During World War I, the wheat crop fell by 47% in Germany and 43% in France (where 45% of the drafted men where farmers).[vii] Throughout Europe, wheat acreages declined during the war, particularly so in countries that used to be wheat exporters (France, and Tsarist Russia, to which the fertile black earths of Ukraine belonged).[viii] For Tsarist Russia, the ability to export grain was further curtailed by the German-inspired blockade of the Turkish straits by Turkey.

The fragile UN-brokered grain export deal between Ukraine and Russia through the Black Sea is reminiscent of this episode and illustrates the permanence of geography.

### Reshuffling trade flows

Wars reshape trade flows, creating winners and losers. As a matter of fact, it is often a war objective in itself to block trade flows so as to weaken the adversary. Napoleon's continental blockade of 1806 against England proved to be too ambitious to be successful. In 1914,

confident in the superiority of the Royal Navy in the North Sea, the British Admiralty contemplated imposing a blockade on Germany but the proposal was successfully opposed by the Foreign Office, which did not want to upset the neutral countries (Norway, Sweden, Denmark, the Netherlands).[ix]

So there was nothing new in Russia switching off or sabotaging Europe's main gas pipeline – Nord Stream 1 - in September 2022.[x] Nor is there anything new in Europe's blockade of Russian seaborne crude from the continent to third countries, unless those countries accept a price for oil dictated by western powers.[xi] In one form or another, economic and financial warfare has always been part of the weapons deployed during wars.

During World War I, the decrease in wheat acreages in Europe was offset by a sharp increase in the New World (Argentina, Australia, Canada, the US). Between 1913 and 1919, the US wheat crop increased by 27%. We now see the US, Qatar, Algeria, to name but a few, stepping in to provide Europe with the gas no longer supplied by Russia.

In fact, when World War I erupted, the US was what we would now call a very large emerging market. It was a net international debtor, potentially vulnerable - like during the 1907 financial crisis - to sudden stops in capital flows. Its trade balance was barely in surplus (about USD500 mn per year, year in, year out). Four years later, thanks to a threefold increase in the dollar value of its exports, the US was posting a surplus of about USD4 bn a year on its trade balance and it had become a net international creditor.[xii] In the meantime, and in contrast, the deficit on the French trade balance jumped from about 1.5bn gold-francs in 1913-14 to 7bn in 1915, 14bn in 1916 and 21bn in 1917. It was funded by the sale of gold and foreign assets, and credits granted by the US and Britain. By the end of the war, France, which used to be a large net international creditor (45bn francs in 1913) had become a net international debtor (excluding war reparations) as a result of gold and foreign asset sales (3.5bn francs), written down Russian, Austrian-Hungarian, German and Turkish assets (23bn francs) and debt owed to Britain and the US (31.4bn francs).[xiii]

Like France during World War I, Ukraine is paying the price: since February 2022, Ukraine's annual trade deficit has swelled from USD5.4 bn to USD 8.2bn (or 5.5% of its pre-war GDP), while its gross external debt is already 85% of pre-war GDP. In January, Russia had an annual trade surplus of UDS200bn (or 11.3% of GDP). Since then, it has stopped publishing its trade balance, but the high prices of oil and gas must have increased its surplus.

### Pushing up prices

Inflation is known by the layman to be a key economic attribute of war, and indeed historians would probably describe it as its most perennial one. It was present during the Peloponnesian War (431-404 BC) between Athens and Sparta, the Second Punic War (218-202 BC) between Roma and Carthage, the Napoleonic Wars (1803-15), the US Secession War (1861-65), and the 1870-71 war between France and Prussia. At the end of 1918, wholesale prices had more or less doubled relative to their 1913 level in the UK, Germany, US, Canada, Japan. In France, they had been multiplied by almost 3.5; in Italy, by 4. Even Sweden, a neutral country, had experienced a threefold increase.[xiv] Over this period, the average rate of wholesale prices inflation had been in a range of 15% to 30% a year. Closer to our times, as measured by the US consumer price index, inflation also accelerated during World War II and the Vietnam War.

Since February 2022, the annual rate of inflation in Russia's CPI has increased from 8.7% to 12.7% (with a peak at 17.9% in April), while in Ukraine it has accelerated from 10% to 26.6%. In the Eurozone, over the same period, inflation has accelerated from 5.1% to 10%.

During World War I, like today, the commodities markets were the key propagation channel of inflation. Measured in USD terms, the prices of both agricultural and industrial commodities doubled between August 1914 and November 1918.

In the context of labor shortages and rising prices, the pressure to raise wages was also very strong. Between August 1914 and November 1918, the US index of composite wages rose by almost 60%, though much less than prices.

### Paying for the war with debt monetization

Theoretically, there are several ways of paying for war requirements: taxation, voluntary savings, compulsory savings, levy on the vanquished, forced savings through money creation and inflation.[xv]

Leaving aside the always "popular" taxes on "excess" war profits (adopted in at least 22 countries in the first years of World War I), history reveals an aversion for taxation.[xvi] As a result, wars typically bring about public deficits and debt. In France, ordinary tax receipts covered only 16% of World War I expenditures. While the government budget was posting a small surplus in 1913, the deficit swelled to 5.5bn francs in 1914, 16.8bn in 1915, 22.9bn in 1916, 28.4 bn in 1917, and 34.3bn in 1918. Government debt increased by 135bn francs.[xvii] In the UK, the national debt was multiplied by 12; in Germany, the floating debt by 184. The US federal budget balance remained close to equilibrium until the US declared war on the German Empire on 06 April, 1917. By the end of the war, 20 months later, the deficit was USD12.5bn. World War II replicated the same pattern: in 1939, the US federal government ran a deficit of USD3.6bn; at the end of 1941, the deficit had swelled to USD10.2bn. When the war ended, it stood at USD52bn. During World War I, US federal debt jumped from USD1bn to USD19bn; during World War II, from USD36bn to almost USD200bn.[xviii]

Since February 2022, Ukraine's public deficit has been multiplied by 4, from Ukrainian hryvnia 153bn to 606bn (or 11% of the pre-war GDP), and its public debt had increased by 31%. The increase in public expenditures is fully attributable to the increase in defense expenditures, a third of which only is covered by increased revenues. Russia's budget has remained in surplus, supported by the high prices of oil and gas.

History reveals a preference for the printing press and inflation, the great tax-gatherer as Keynes said. Usually introduced as an emergency measure when war breaks out, currency debasement and debt monetization become the norm as wars tend to last longer than expected or planned. During the Peloponnesian War, Athens transformed its high quality silver coins into bronze coins covered by a silver layer. During the Second Punic War, the Roman bronze coin, the as (or assarius), lost 83% of its weight.[xix] Partially overlapping the Thirty Years's War (1618-48) that took place in the Holy Roman Empire, the Kipper-und Wipperzeit (1619-23) was a debasement race to the bottom between belligerents. From 1789 to 1796, the French revolutionaries printed assignats, a type of paper money initially, and then supposedly backed by the Church lands confiscated in the Revolution.[xx] From 1797 to 1821, the Bank of England suspended payments in gold; between 1797 and 1815, its notes in circulation were multiplied by 2.44.[xxi] From 1861 to 1878, the US Treasury (the Federal Reserve System did not exist yet) issued greenbacks, a paper money backed by neither gold nor silver and printed on one side only, the other one being uniformly green.

When World War I erupted, the world economy was on the Gold Standard. Bank notes and deposits were backed by gold and could be freely exchanged for it. The outbreak of the war triggered a little-known but acute financial crisis in the form of a bank run as it was suddenly expected that many debtors on the Continent would be unable to pay.[xxii] After trying to stem the run by hiking policy rates, the central banks of the belligerent countries quickly took the

decision to suspend the domestic convertibility of bank notes into gold. In Germany like in France, laws were quickly passed allowing the central bank to discount three-month Treasury bills.[xxiii] Many countries adopted moratoriums on commercial debt and bank deposits. In Britain, to safeguard the solvency of discount houses, the Bank of England took the bold decision to buy a third of the outstanding bills of exchange in the discount market, underwriting the related credit risk with taxpayers' money (the so-called "cold storage" scheme). To prevent the monetization of financial assets (shares as well as bonds), and thus alleviate the risk of capital outflows that would have depleted gold holdings, many countries closed their stock exchanges for several months.[xxiv]

The evolution of the French money supply and its counterparts during World War I provides stylized facts about money creation in times of wars. On the liability side, the M2 aggregate almost quadrupled, with bank notes increasing faster than bank deposits. On the asset side, claims on government were multiplied by almost 16 and claims on private agents by three "only".[xxv] Gross international reserves (FX and gold) doubled, but foreign indebtedness grew too.

Since January 2022, Ukraine's M1 has increased by 16.5%, and M3 by 13.6%; Russia's M2 has increased by 13.5%.

That the world economy was on the Gold Standard before 1914 meant that it also was in a fixed exchange rate regime. The suspension of the convertibility of the belligerents' currencies into gold put them in a floating exchange rate regime and depreciation against gold, and the US dollar as well since the US currency remained uniquely tied to gold. By the end of the war, the British Pound and the French Franc had depreciated by about 5%, but the Reichsmark had already lost about half of its pre-war value.

Since February 2022, the Ukrainian currency has lost a fifth of its value against the dollar; the euro almost a tenth. In contrast, following an initial sharp decline, the Russian ruble has managed to stabilize at a level some 20% higher than before the outbreak of the war, probably supported by the high prices of oil and gas.

### Addressing the symptoms of inflation, not its causes, through price controls and rationing

Throughout most of World War I, real short-term policy rates were largely negative. In the major belligerent economies, they hovered between 4% and 5%, while inflation was running at least three times faster. During World War II, in April 1942 (i.e. shortly after the December 1941 Japanese attack on Pearl Harbor), the US pushed financial repression further. Pursuant to an agreement between the US Treasury and the Federal Reserve System, the yield on three-month T-bills was fixed at 3/8% (until June 1947) and the yield on long-term Treasury bonds was capped at 2.5% (until March 1951). During the whole period of yield-curve control, CPI inflation averaged about 5% a year. Then again, real interest rates had been sharply negative.

Governments tend to pay for wars through debt, the printing press and inflation. But they try to contain the social and political costs of inflation by suppressing its symptoms through price controls and rationing. Germany under the Third Reich provides perhaps the most extreme example of such a strategy of inflation suppression. The Third Reich's war expenditures (700bn reichsmarks) equaled nine times the pre-war nominal GDP. They were financed by levies on the conquered (20%), taxes (28%) and debt (50%). The Reich's budget deficit rose from 5.1bn reichsmarks in 1938-1939 to 240bn at the end of the war; the Reich's debt from 31bn reichsmark to 380bn (an average annual growth rate of 52%), two-thirds of which were in the form of three-month Treasury bills. Three quarters of outstanding bills were held by banks, accounting for 70% of the assets of the nine largest banks. Between 1938 and May 1945, the money supply is estimated to have increased from 56.4bn reichsmarks to at least 300bn (an average annual

growth rate of 32%), with claims on the government accounting for 60% of its counterparts. Yet, the prices of finished products only increased by 10.8% between 1939 and 1944! Three drastic measures ensured this paradoxical outcome: the control of an increasingly large set of prices, the control of wages, and rationing (especially for food at 1900 calories per day). Taken together, these three measures prevented people from spending their incomes on goods and services. Furthermore, barter and black-market trading were severely punished. At the cost of curtailing liberty, forced (if not mandatory) savings successfully suppressed inflation.[xxvi]

Since October 2022, electric power has been rationed in Ukraine through rolling blackouts.[xxvii]

## The challenges of the aftermath

The economic and financial challenges posed by a war do not vanish overnight when it ends. The return to peace entails economic and financial risks, too. Like many of his contemporaries, Keynes was expecting deflation after WW II.[xxviii] Once bitten, twice shy, remembering more or less the deflationary episodes that followed the Seven Years' War (1756-1763), the Napoleonic Wars, the US Secession War, the Franco-Prussian War and World War I (in this latter case, if not in Germany until 1923, at least afterwards and globally), most policymakers were concerned with preventing another Great Depression.[xxix] Three problems typically plague the return to peace: the reconversion of productive capacities towards the satisfaction of civilian needs, the settlement of external debt and war reparations, and the liquidation of the monetary overhang.

Once a war is over, production rebounds surprisingly quickly. Between 1919 and 1923, industrial production rose by 87% in Germany and 37% in France. Had hyperinflation not derailed its recovery in 1923, German industrial production would have probably followed the same path as in France, where the pre-war level was reached in 1924. A long time ago, John Stuart Mill challenged the notion of post-war "wonders" in words that are still worth reading:

*"[The] perpetual consumption and reproduction of capital [explains] the great rapidity with which countries recover from … the ravages of war… What the enemy have destroyed, would have been destroyed in a little time by the inhabitants themselves: the wealth which they so rapidly reproduce, would have needed to be reproduced and would have been reproduced in any case… The possibility of a rapid repair … mainly depends on whether the country has been depopulated [and whether] its effective population [retains] the same skill and knowledge as before."* [xxx]

In contemporary words, physical capital is "destroyed" all the time by depreciation; but, if spared by the war, human capital is available to build it back, possibly better. However, the rebuilding of the productive capacities destroyed during the war means that, in at least some sectors, notably agriculture, oversupply substitutes for shortages and pushes prices down. In 1921, the French wheat crop was at its pre-war level, but the wheat acreages in the New World (Argentina, Australia, Canada, the US) were 30% higher. After the November 1918 Armistice and until April-May 1920, the USD prices of agricultural and industrial commodities kept on rising, albeit at a slower pace than during the war. But by the end of 1921, they had fallen by half. The agricultural depression was here to stay.

A complex web of external debt and claims, including war reparations, is another typical sequel of wars. At the end of World War I, France owed USD4bn to the US; Britain 4.7bn. France also owed USD3bn to Britain. A quarter of French foreign assets (mostly Russian bonds issued under the Tsarist regime) had become and would remain worthless. In this context, the war reparations to be paid by Germany could only be a very sensitive and controversial issue. It did indeed poison the aftermath of the war, all the more so as the US refused to link the settlement of interallied debt with that of German reparations.

As Kindleberger put it, "having paid twice [in 1815 and 1871], [the French] were ready to receive.[xxxi] Even before the Reparations Commission estimated reparations in 1921 at USD31.4bn, Keynes famously argued that their amount far exceeded Germany's ability to pay.[xxxii] As was to be expected, he did not convince the French. More than 20 years later, the French historian Mantoux challenged Keynes's analysis so effectively that Keynes's disciples have strived to silence him.[xxxiii] The reparations controversy extends to the amount ultimately paid by Germany. Between 1919 and the Hoover moratorium in June 1931, Germany paid, USD5bn (16% of the estimated total due) according to the Reparations Commission, or, according to the German government, USD16bn (51% of the estimated total).

A reparations issue is looming again nowadays. The EU's high representative for foreign policy has said that EU capitals should consider seizing frozen Russian foreign exchange reserves to cover the cost of rebuilding Ukraine after the war.[xxxiv] A recent, watered-down proposal suggests to only use the return on such frozen assets to rebuild Ukraine.[xxxv] However strongly Russia's aggression of Ukraine is to be condemned, such a condemnation should not prevent legitimate war reparations from being carefully designed and calibrated, bearing in mind that, so far, Russia has been spared economic pain by the elevated price of oil and gas.

Besides its fateful impact on European geopolitics and domestic politics, especially in Germany, the reparations issue had a significant impact on exchange rates. Adamant that Germany would pay, France did not undertake a clean-up of its finances. Its floating (or short-term) debt continued to rise. As a result, the French franc started to depreciate in early 1919. By the end of 1920, it had lost two thirds of its value against the dollar.[xxxvi] By mid-1926, it had lost more than another half. In Germany, conventional wisdom amongst the Reichsbank, the successive governments, businessmen and the press had it that the accelerating depreciation of the reichsmark was caused not by the accelerating inflation of the German money supply, but rather by the negative impact of reparations on the balance of payments.[xxxvii] At the Genoa Conference in 1922, to increase the supply of international liquidity after gold had been accumulated by the US, it was agreed that holdings of currencies backed by gold (i.e. mainly the USD, and to a smaller extent the British pound) would count as international reserves: the Gold Exchange Standard was born. It would last until another war, the Vietnam War, led President Nixon to suspend the external convertibility of the dollar into gold on 15 August, 1971. Seen by most people in London as "a question of prestige [to challenge New York as the new world financial center], a question of dogma ... almost a question of religion", the decision made in May 1925 by Churchill, then Chancellor of the Exchequer, to restore the convertibility of the pound into gold at its pre-war parity, even though British prices had risen in the meantime by two thirds, looks in this context like one of the worst policy mistakes ever made.[xxxviii] It pushed what was still an economic powerhouse into deflation.

The German hyperinflation of 1920-23 had shown how not to deal with a post-war monetary overhang. The monetary reform implemented on 20 June, 1948, under strong American leadership, by the western Allies in what was to become the Federal Republic of Germany showed the opposite. The German people knew that inflation had been suppressed during World War II and that their holdings of reichsmarks were worthless. As a result, nobody would accept to be paid in reichsmarks, and the economy was at a standstill. Since May 1945, barter and alternative currencies (for example, cigarettes) had become the norm. Kept secret until the very last minute, the substitution of one Deutsche mark for ten reichsmarks immediately restored confidence and released the productive potential of Germany.[xxxix]

The aftermath of World War II wrong-footed the deflationary expectations shared by Keynes and his contemporaries. The immediate start of the Cold War and its early flashpoints, like the Berlin blockade (June 1948-May 1949) and the Korean War (1950-1953), may have alleviated,

at least partially, the reconversion problems that typically plague the return to peace. More to the point, some lessons were learned from the policy mistakes made after World War I: the Marshall plan made discussions about reparations irrelevant; at least in the Western part of Europe, the curse of hyperinflation was tamed.

### The risk of a Pyrrhic victory

On the battlefields, supported by NATO, Ukraine's bravery and ingenuity have succeeded in containing and even partially repelling Russian aggression. However, from a military and political point of view, the duration and the outcome of the conflict remain uncertain. Ultimately, Ukraine may reap some precious benefits through EU and NATO membership. In contrast, it is certain that, besides the war's human toll, its cost to Ukraine is already prohibitively high. Ukraine's GDP is estimated to have shrunk by a third. Almost one fifth of its population has fled to Western Europe. Inflation is running at an annual rate of 26.6%. In addition, its power grid is largely destroyed; its trade deficit is at least 5.5% of GDP; its gross external debt at least 85%; its budget deficit at least 11% and its public debt at least 65%; its currency has also lost a fifth of its value. At the same time, Russia will not easily agree to any kind of war reparations. Failing economic and financial support from NATO members, in the form of a new Marshall Plan, Ukraine is at risk of winning a Pyrrhic victory. But the price to be paid by its Allies will be worth paying.

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[i] **A number of key Ukrainian and Russian economic and financial time series have not been updated since February 2022.**
[ii] Norman Angell, (1909), *The Great Illusion*, *A Study of the Relation of Military Power to National Advantage*, Bottom of the Hill Publishing.
[iii] NBER Macrohistory database
[iv] Fernand Braudel and Ernest Labrousse, (1979), *Histoire économique et sociale de la France*, Presses Universitaires de France.
[v] FT, 28/10/2022.
[vi] **Jean-Pierre Patat, Michel Lutfalla, (1986), *Histoire monétaire de la France au XXème siècle*, Economica.**
[vii] Fernand Braudel and Ernest Labrousse, (1979), *Histoire économique et sociale de la France*, Presses Universitaires de France.
[viii] Charles P. Kindleberger, (1986), *The World in Depression*, *1929-1939*, Basic Books.
[ix] Nicholas A. Lambert, (2012), *Planning Armageddon: British Economic Warfare and the First World War*, Harvard University Press.
[x] FT, 05/09/2022 and 28/09/2022.
[xi] FT, 28/11/2022.
[xii] **NBER Macrohistory Database.**
[xiii] Fernand Braudel and Ernest Labrousse, (1979), *Histoire économique et sociale de la France*, Presses Universitaires de France.
[xiv] John M. Keynes, (1924), *A Tract on Monetary Reform*.
[xv] John M. Keynes, (1939), *How to pay for the war* in *Essays in Persuasion*, Cambridge University Press.
[xvi] **IMF Working Paper/22/187, (2022), *Excess Profit Taxes : Historical Perspective and Contemporary Relevance*.**
[xvii] **Jean-Pierre Patat, Michel Lutfalla, (1986), *Histoire monétaire de la France au XXème siècle*, Economica.**
[xviii] **NBER Macrohistory Database.**

[xix] Bruno Théret, (2007), *La monnaie dévoilée par ses crises*, Editions de l'Ecole des Hautes Etudes en Sciences Sociales.
[xx] Charles P. Kindleberger, (1986), *A Financial History of Western Europe*, Oxford University Press.
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[xxiii] Costantino Bresciani-Turoni (1937), *The Economics of Inflation*, Augustus M. Kelley.
[xxiv] William L. Silber (2008), *When Washington Shut Down Wall Street: The Great Financial Crisis of 1914 and the Origins of America's Monetary Supremacy*, Princeton University Press.
[xxv] Jean-Pierre Patat, Michel Lutfalla, (1986), *Histoire monétaire de la France au XXème siècle*, Economica.
[xxvi] Bruno Théret, (2007), *La monnaie dévoilée par ses crises*, Editions de l'Ecole des Hautes Etudes en Sciences Sociales.
[xxvii] FT, 20/10/2022.
[xxviii] John M. Keynes, (1939), *How to pay for the war* in *Essays in Persuasion*, Cambridge University Press.
[xxix] Charles Gide, Charles Rist, (1944), *Histoire des idées économiques,* 6ème édition, Dalloz.
[xxx] John Stuart Mill, (1848), *Principles of Political economy*, Augustus M. Kelley.
[xxxi] Charles P. Kindleberger, (1986), *The World in Depression*, *1929-1939*, Basic Books.
[xxxii] John M. Keynes, (1919), *The Economic Consequences of the Peace.*
[xxxiii] Etienne Mantoux, (1946), *The Carthaginian Peace or the Economic Consequences of Mr Keynes*, Oxford University Press.
[xxxiv] FT, 8/5/2022.
[xxxv] FT, 30/11/2022.
[xxxvi] Jean-Pierre Patat, Michel Lutfalla, (1986), *Histoire monétaire de la France au XXème siècle*, Economica.
[xxxvii] Costantino Bresciani-Turoni (1937), *The Economics of Inflation*, Augustus M. Kelley.
[xxxviii] Alfred Sauvy (1965), *Histoire économique de la France entre les deux guerres,* Economica.
[xxxix] Jacques Rueff (1953), *La résurrection de l'Allemagne*, Revue des Deux Mondes.

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