

Hamilton's Debt Program

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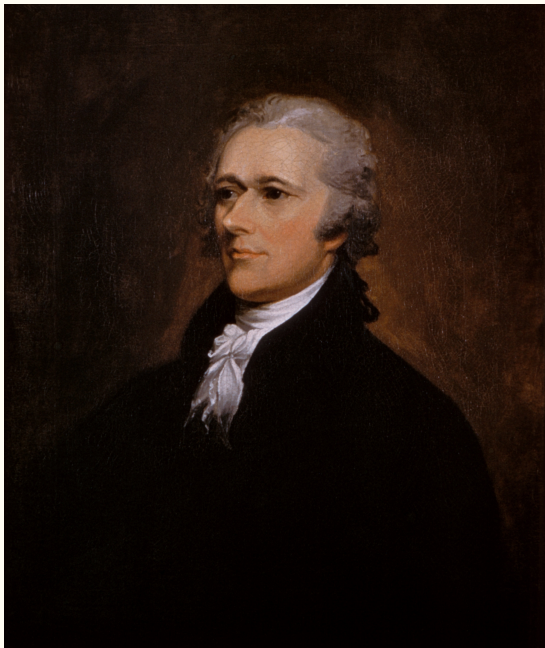
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An introduction to Alexander Hamilton

Charles Beard, *An Economic Interpretation of the Constitution of the United States*

Hamilton was “the colossal genius of the new system,” the one who “displayed that penetrating wisdom which placed him among the great statesmen of all time.”



Who was Alexander Hamilton?, I

- Alexander Hamilton (1755 or 1757-1804) was the architect of the U.S. financial structure.
- Born out of wedlock in the West Indies, he lives his childhood in difficult economic conditions.
- Comes to New York to study after locals create a fund for his education.
- Key role in the Revolution as a key person in George Washington's staff.
- He ends the war fighting in Yorktown, a bit reckless on the battlefield.
- Huge impact on maintaining the common law in the new republic.
- He was one of the main forces behind the Constitutional Convention (with Madison and Washington).
- He spearheaded the editorial project behind the *Federalists Papers*. He wrote (estimated) 51 of the 85 essays (vs. 29 for Madison and 5 for Jay), including those related to the executive, judiciary, senate, military powers, and taxation.
- Key for ratification in Virginia and New York.

Who was Alexander Hamilton?, II

- First Secretary of the Treasury.
- Main force behind ratification of Jay Treaty.
- Co-drafts Washington's Farewell Address.
- Decisive role in the 1800 presidential election.
- Dies in a duel with Aaron Burr in 1804.
- Yet, Hamilton never reached the Presidency (as George Washington, John Adams, Thomas Jefferson, and James Madison) or be a Chief Justice (as John Marshall):
 1. Perhaps because he was an "outsider"?
 2. Or because of his untimely death?
 3. Or because the Jefferson-Madison's view is more popular?

Hamilton's view

- His view of a powerful, dynamic, and diversified U.S. economy was years ahead from the views of most of his contemporaries.
- In some sense, he was the only “modern” founding father (including in his scandals!).
- He articulated this view during the Revolution, while in his early twenties:
 1. Twelve-point program submitted to Congress in 1779-1780.
<https://founders.archives.gov/documents/Hamilton/01-02-02-0559-0002>
 2. A letter to James Duane on September 3, 1780.
<https://founders.archives.gov/documents/Hamilton/01-02-02-0838>
 3. A 31-pages letter to Robert Morris on April 30, 1781.
<https://founders.archives.gov/documents/Hamilton/01-02-02-1167>
- Also, he was a staunch abolitionist and tried to end slavery in New York.

What drove Hamilton's view?

- Hamilton envisions that the U.S. will need to live in a world of competing empires, where war is a constant feature that requires professional armies, not militias.
- Thus, the U.S. needs to build a powerful fiscal-military state and have a prosperous economy to ensure the survival of freedom and the republic.
- Economic and military strength go hand in hand.
- Foreign affairs are driven by interest, not altruism. Highly suspicious of the French Revolution.
- Ancestor of the modern “realist” school of international relations (recognized as such by Hans Morgenthau, 1904-1980).

Overall plan

- The U.S. should lay groundwork of a modern nation state patterned after the institutions in Great Britain.
- The U.S. must have a strong, central government based on meritocratic principles (mixed-government inspired on Aristotle's views).
- The U.S. must develop economic and financial foundations.
- The U.S. requires a solid a financial reputation and access to international financial markets, implying that much of the Revolutionary War debts must be paid.
- The U.S. should build a navy; oceans are not a protection.
- The U.S. must avoid confrontation with Britain who is the predominant power. Instead, it should maintain good trade relations with it: 3/4 of tariff revenue come from trade with Great Britain.

Four reports

- Hamilton, as the first Secretary of the Treasury (September 11, 1789 - January 31, 1795) personally writes four key reports to implement his view:

1. The First Report on the Public Credit, presented to the U.S. Congress on January 9, 1790.

<https://founders.archives.gov/documents/Hamilton/01-06-02-0076-0002-0001>

2. The Second Report on the Public Credit (aka the Report on a National Bank), presented to the U.S. Congress on December 14, 1790.

<https://founders.archives.gov/documents/Hamilton/01-07-02-0229-0003>

3. Report on the Subject of A Mint, presented to the U.S. Congress on January 28, 1790.

<https://founders.archives.gov/documents/Hamilton/01-07-02-0334-0004>

4. Report on the Subject of Manufactures, presented to the U.S. Congress on December 5, 1791.

<https://founders.archives.gov/documents/Hamilton/01-10-02-0001-0007>

Debunking a few myths

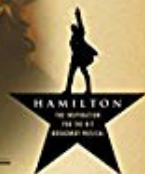
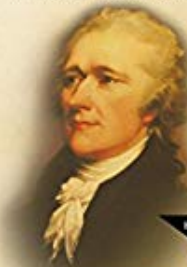
- Jefferson resigned fairly early in Washington's first term, Hamilton followed soon after.
- Hamilton does not ask Burr to help with *The Federalist*.
- The duel with Burr was in 1804, not right after the election.
- Hamilton admitted his affair with Maria Reynolds to James Monroe, Fredrick Muhlenberg, and Abraham Venenabe, but not to Madison, Jefferson, and Burr.

#1 NEW YORK TIMES BESTSELLER

CHOSEN BY THE NEW YORK TIMES AS ONE OF THE 10 BEST BOOKS OF THE YEAR

RON CHERNOW

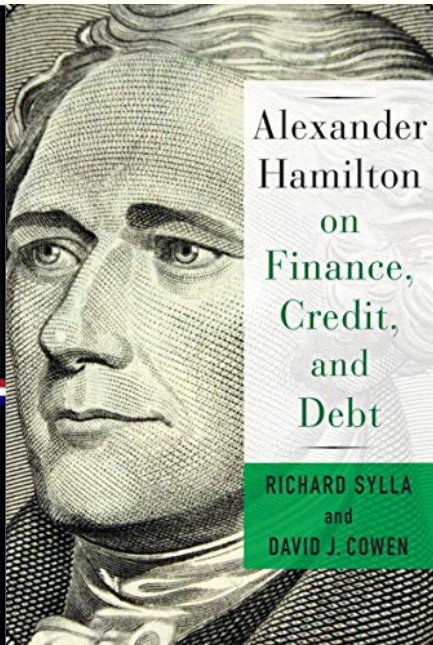
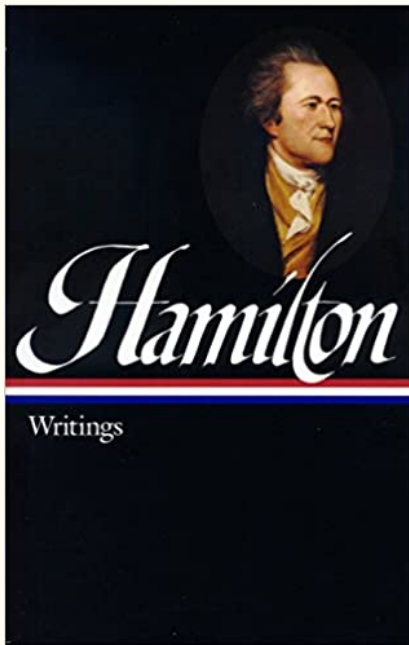
Author of
TITAN and WASHINGTON

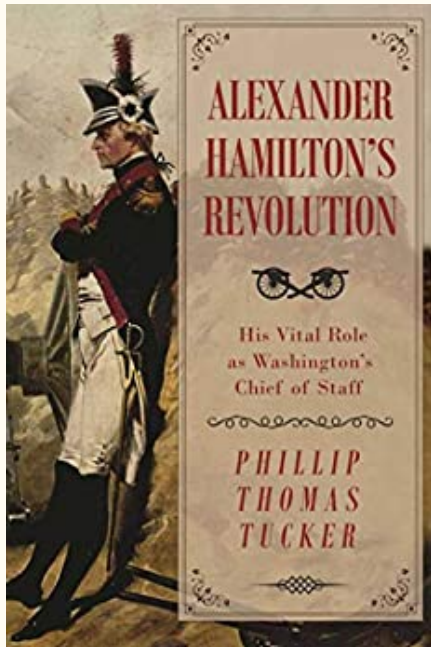


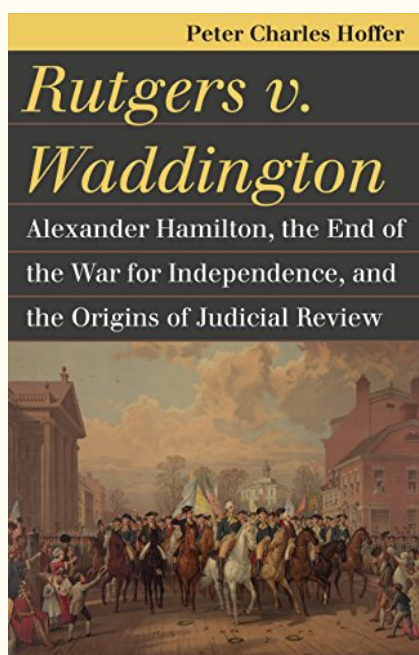
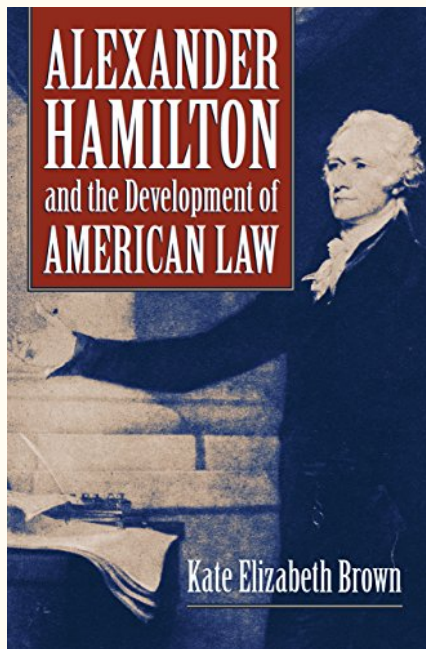
ALEXANDER
HAMILTON

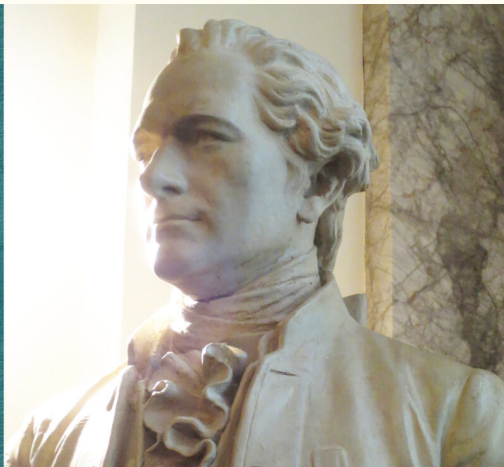
"MOVING AND MASTERLY ... BY FAR THE BEST BIOGRAPHY
EVER WRITTEN ABOUT THE MAN."
—THE NEW YORK TIMES BOOK REVIEW



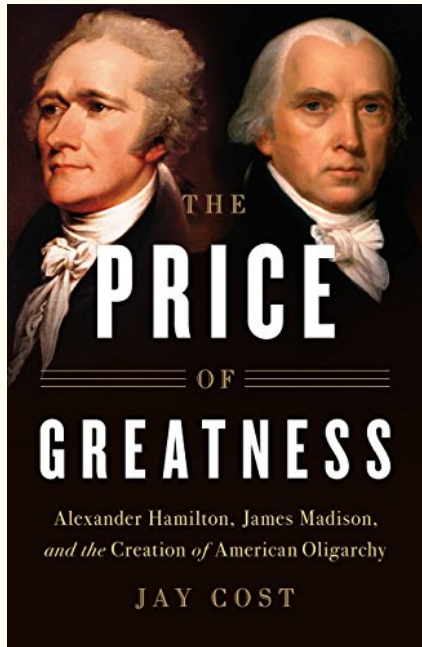








*The Financial Programs
of Alexander*
HAMILTON
by a Farmer's Daughter



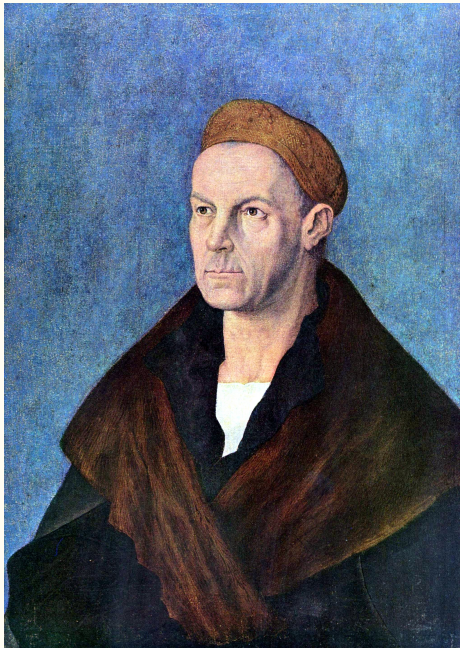
Some additional references

- **The Cash Nexus** by Niall Ferguson.
- **Fiscal Discrimination in Three Wars** by Hall and Sargent, Journal of Monetary Economics 2014 148-166.
- **Alexander Hamilton, Conversion, and Debt Reduction** by Swanson and Trout, Explorations in Economic History 1992, 417-429.
- **Alexander Hamilton's Market-Based Debt Reduction Plan** by Garber in Carnegie Rochester Conference Series on Public Policy (1991) 79-104.

Why public debt?

Public debt across history

- Public debt is a relatively new invention.
- Private debts date back to 3000 BCE.
- First public debts appear to be in Venice in the 12th century, where the debt was secured by the revenues from their salt monopoly.
- Later, Genoa and Florence.
 1. Initially just bills of exchange: paid off in specie at a pre-specified date.
 2. Later negotiable bills that can be exchanged with a third party.
- Medieval and Renaissance monarchs rely on wealthy banking families (Fugger).
 - But these are more like personal loans.
- Not until 15th century in Catalonia, do we see something that looks modern public debt.
- Northern Europe evolves annuities (consols).



Bank of England

- Big innovation is the Bank of England.
- A group of wealthy individuals fully subscribe to an 8% annuity in 1694.
- In return they are given a monopoly on note issuance and establish extensive commercial interests.
- These interests give the Bank an incentive to keep the exchange rate between notes and specie fairly stable.
- It also manages the debt issuance of the government.
- Start of a new framework for managing debt, one that supports the economy and ultimately the empire.
- The primary form of debt is the perpetual bond, which in 1752 are consolidated (consols) into a number of distinct issues with fixed coupon payments.
- The first finite maturing bond is not issued until 1914.

The financial needs of war

- Historically, the need for public debt is intimately linked to the necessities of war:
 1. “The sinews of war are unlimited money.” (Cicero)
 2. “...success in war depends on having enough money to provide whatever the enterprise needs.” (de Balzac)
- Cost of war and its frequency has varied over the centuries:
 - At least one war is going on in 78 years of the 18th century Europe.
 - Between 1816-1992, the Correlates of War project estimates 210 interstate wars and 151 civil wars.
 - Military spending is estimated to account for 54% of government spending in Great Britain during the 18th century. As high as 18% of GDP in each year from 1778-82.
 - For the U.S., in 1812, it accounted for 50% of government spending.

- Wars require large amounts of funds need to be raised rapidly.
- In principle, this could be done by raising taxes.
- However, two problems:
 1. Revenue from import duties proved insufficient. Great Britain uses land sales, but again insufficient. Must rely on more general taxes, such as sales taxes, poll taxes, and taxes on land. Occasionally, an income tax (Napoleonic wars).
 2. More importantly, economic theory tells us it is helpful to smooth taxes: requires issuing public debt.

Why tax smoothing?

Some basic intertemporal accounting, I

- The burden of fiscal policy is represented by the present discounted value of tax payments.
- One period government budget constraint:

$$b_{t+1} = g_t - \tau_t - (1 + r)b_t$$

- Rearranging:

$$b_t = \frac{1}{1 + r}[b_{t+1} - g_t + \tau_t]$$

and forwarding:

$$b_{t+1} = \frac{1}{1 + r}[b_{t+2} - g_{t+1} + \tau_{t+1}]$$

- Then, by recursive substitution:

$$b_t = \frac{1}{1 + r}[\tau_t - g_t] + \frac{1}{(1 + r)^2}[b_{t+2} + \tau_{t+1} - g_{t+1}]$$

Some basic intertemporal accounting, II

- Continue the process indefinitely:

$$b_t = \sum_{j=0}^{\infty} \frac{1}{(1+r)^{j+1}} [\tau_{t+j} - g_{t+j}]$$

i.e., the tax burden is the burden placed on financing all future government spending.

- Notice: we have not used any economic theory. Just budget constraints.

Ricardian equivalence

- If taxes are lump sum (a head tax), then lowering taxes today and raising them by enough to cover the additional debt in the future should have no economic effect (Ricardian equivalence)
- Notice what Ricardian equivalence says and does not say.
- Think of your own optimal spending plan given a fixed sequence for government spending and personal income:
 1. The government cuts today's taxes, but will raise future taxes to pay for the tax cut and the interest on the debt.
 2. If you buy the debt you can use it to pay off the future taxes and maintain your spending plan. It is optimal since your income stream has not changed and the present discounted value of taxes has not changed either.

- If taxes are distortionary, the government should smooth the dead weight losses of taxes by smoothing tax rates over time.
- Recall that deadweight loss is approximately quadratic on the tax rate.
- You can do that by keeping debt/GDP ratios fairly constant, issuing debt in bad times, such as war, time, and paying down the interest on the additional debt plus future spending in the good times.

Great Britain as a tax smoother

- Great Britain appears to follow tax smoothing much to its benefit.
- Significant jumps and gradual repayment, allows the government to borrow at rates lower than those of private borrowers.
- The correlation between debt sales and military expenditure is 0.83 between 1727 and 1839.
- Even if the frequency and expense of conflict has the debt on an upward trajectory until Britain becomes the undisputed world power.
- After the Napoleonic Wars, Britain in contrast has an enormous debt of 250% of GDP.
- Raising that amount of resources is a fundamental reason why Great Britain was able to prevail despite France being bigger.
- Yet the debt did not cripple the British economy. It avoided political crises often linked with large fiscal imbalances and was able to find the funds to initiate the industrial revolution.
- Hamilton is a good student of British history.

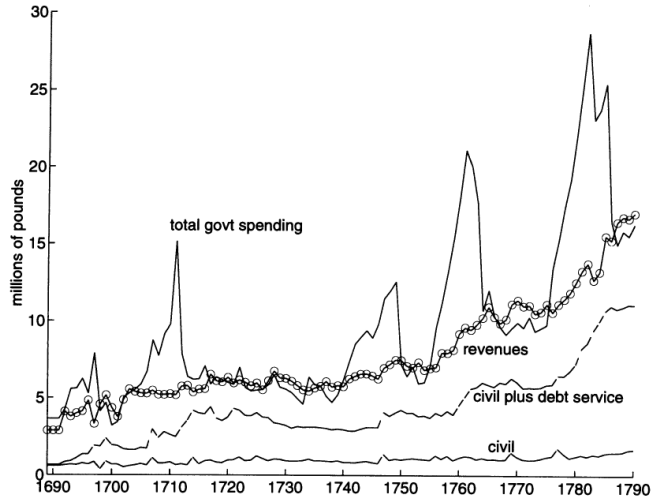
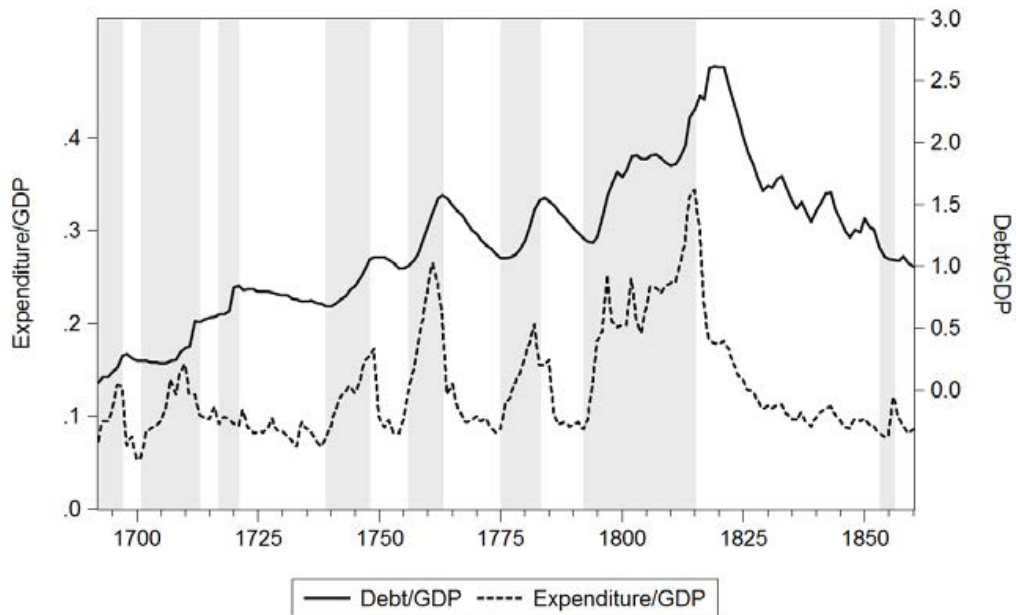


FIG. 2.—Revenues and spending in Britain, 1689–1790. Total spending is decomposed into three components: civil, debt service, and military expenditures. The three lines recorded for expenditures pertain to civil expenditures, civil plus debt service, and then total expenditures, so that the vertical distances between these lines represent, respectively, civil expenses, debt service, and military expenditures. Total revenues are depicted with small circles. Source: Mitchell (1988).



Public debt and the Revolutionary War

Issuing debt, I

- Recall that, during the Revolution, the Continental Congress issued bills of credit, the Continental, dollar, to finance much of the war.
- First issued June 22, 1775.
- By December 1776, nearly \$25 million is in circulation. Trade at a discount of around 1/3 (due to timing of redemption).
- By November of 1779, their face value was \$199,900,000, but they now exchanged at a rate of 50 Continentals for 1 Spanish dollar.
- Continental continued to be traded during the 1780s, with buyers hoping that revenue raised from the eventual sale of western lands would allow them to be redeemed near par.
- The separate states also issued their own bills of credit.

Issuing debt, II

- By 1782, the U.S. government's ability to print money is exhausted, and taxing is limited by the Articles of Confederation.
- Revenues plummeted and the Congress is unable to pay off its debts or meet the interest payments on the debt.
- Philadelphia mutiny of 1783.
- In 1784, promised interest payments were \$2 million, but revenue was a scant \$723,000.
- Government is hand-to-mouth, just spend whatever it raises and defers all payments on debt.
- Debt traded at 20% of face value.
- Explicit loans from the government known as loan office certificates and final settlement certificates issued to civilians and soldiers. They were promises to redeem unpaid bills and wages.

Hamilton's plans

The creation of a cabinet

- Treasury Department created by Congress in September of 1789 to manage fiscal affairs:
- Idea of a cabinet is somewhat new.
- To compensate, Washington tries to create a cabinet that includes individuals from all the sections of the country.
- Minimal staff: Washington has more staff at Mount Vernon than as President.
- Boundaries across departments are often fuzzy.
- Furthermore, a Treasury department is suspected.
- For example, Elbridge Gerry proposes a board, instead of an individual.

Hamilton arrives

- Position of Secretary of the Treasury first offered to Robert Morris.
- He passes and the offer goes to Hamilton on Morris' recommendation.
- As the first Secretary of the Treasury, Hamilton inherits the public debt mess (plus the need to create a department from scratch).
- But he is well prepared:
 1. Read economic books: Hume, Smith, Montesquieu, Hobbes, Price, Postlethwayt.
 2. Read memoirs of Jacques Necker (1732-1804) and experience of John Law (1671-1729).
- In fact, Hamilton will behave, in practice, as a “prime minister.” Influence, for example, foreign affairs.

THE CABINET

LINDSAY M. CHERVINSKY

GEORGE WASHINGTON AND THE
CREATION OF AN AMERICAN
INSTITUTION



A report on public credit

- First Congress sees tackling the national debt problem as its top priority.
- 10 days after becoming Secretary of Treasury in 1789, Hamilton is directed by the House to prepare, in just 110 days, a plan “for the support of public credit, as a matter of importance to national honor and prosperity.”
- 40,000 words document (a small book), written entirely by him.
- Hamilton fairly accurately estimates that the national debt is around \$54.1 million, of which \$11.7 million is owed abroad (French and Spanish governments and Dutch bankers).
- State debts are more crudely estimated at \$25 million for a total of \$79.1 million or 40% of GDP.
- If pays interest on the 6% original terms, need revenue of \$4.6 million plus the \$0.6 million to run the U.S. government.
- Politically infeasible to raise taxes that much.

Hamilton's report

- Hamilton submits an overly complex series of plans (including transfer of land, conversions, etc.).
- The plans involve a partial repudiation of the domestic debt as there is no way to pay it all (foreign debt will be paid in full by rolling over debts to France with Dutch financing).
- Madison calls for a plainer system and it draws from Hamilton's third option.
- This is actually a bit more generous to debt holders paying on average 85 cents on the dollar against Hamilton's 81.7 cents on the dollar.
- Because of confusion, it allows for possible repayment in 22 years rather than Hamilton's proposal which would have taken at least 34 years.
- Congress debates for 10 days Hamilton's report and approves a final plan very much along the lines of the initial proposal.

Funding Act of 1790

- Issuance of three new loans: a consol paying 6%, a consol paying 3%, and a consol paying 6% but with interest deferred until 1801.
- For every \$100 of Continental loan office certificates or final settlement certificates, the holder received \$66.67 in 6% stock and \$33.33 in deferred 6% stock. Interest in arrears was paid with the 3% stock (a compromise with the Congress).
- Further, the federal government assumed States' debt as well as unpaid interest with $\frac{4}{9}$ paid in 6% stock, $\frac{2}{9}$ in deferred 6% stock, and $\frac{3}{9}$ in 3% stock.
- Basically, if the federal government takes on the tariff revenue (main source of income), the federal government should also take on the debt.
- Also, avoiding tax competition coming from states with low debts.

- Plan benefits northern and eastern speculators who purchased the debt at deep discounts.
- Hamilton thinks this is a feature, not a bug, of his plan:
 1. Beyond administrative nightmare of paying original holders, he thinks that they abandoned the revolution when they sold their debt.
 2. Principle of “security of transfer”: governments should never intervene retroactively in financial transactions.
- Nonetheless, the plan is perceived by many in the South as biased against their section.

The political economy of the plan: two additional purposes

1. To align economic interests of the elite with those of the Federal Government.

“If all the public creditors receive their dues from one source, their interests will be the same. And having the same interests, they will unite in support of the fiscal arrangements of government.”

2. Hamilton views a modest amount of debt as beneficial to the economy.

“A national debt, if it is not excessive, will be for us a national blessing.”

- Encourages growth of financial institutions.
- Can help complete markets by allowing households a form of safe asset for saving against future contingencies and to use as collateral.
- Plan is part of overall strategy that includes a National Bank partly funded by government debt. Monetizes the debt and creates liquidity.

A Madisonian alternative? I

- Madison argues for a total repayment, “No logic, no magic can diminish the force of the obligation.”
- But Madison considers that making the revolutionary soldiers the victims of the government’s default and to pay taxes to fund the claims is an injustice.
- Madison wants to compensate the initial holders at the highest price that had previously prevailed on secondary markets with any remaining capital gains going to the current owners.
- This discrimination scheme is uncharacteristic of his earlier writings – he had been a critic of discrimination. It is a government interference in private contracts.
- Madison also wants states to be credited for the debt they have repaid. Hamilton’s plan in a sense penalizes responsible states and Virginia in particular.

A Madisonian alternative? II

- More generally, Madison and Jefferson do not share Hamilton's world view regarding the United States to become an integral part of the world economy and to command the respect of other countries.
- Thus, accessing to international financial markets and gaining credibility is less important for them.
- They suspect long-term debt.
- We start to see the seeds of a political division that will lead to the First Party System: the Federalist Party (Alexander Hamilton) vs. the Democratic-Republican Party (Thomas Jefferson and James Madison).
- Rupture will be close to final after the First Bank's proposal.

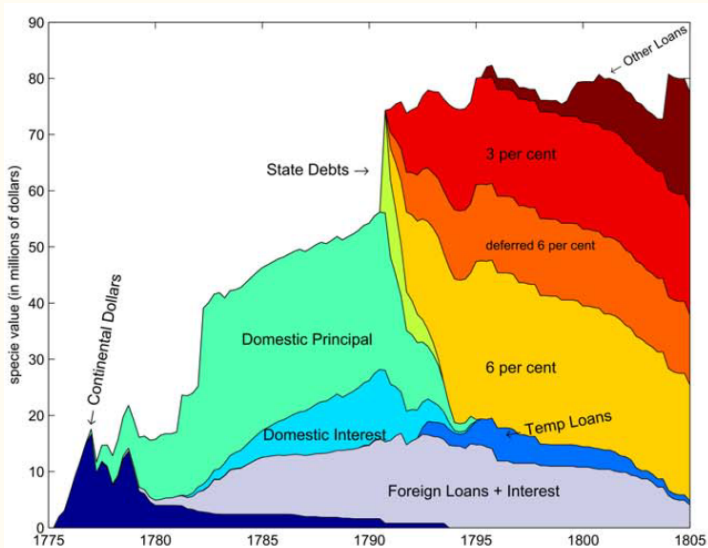
The outcome, I

- Restructuring goes smoothly.
 - By 1791 \$31.8 million has been converted.
 - In 1792, another \$26.7 million and, by 1794, all but 2% converted.
- Money is raised from an increase in import duties and some excise taxes.
 - Tariffs kept fairly low: they are for revenue not protection.
 - Creation of the Revenue-Marine (current-day Coast Guard).
 - Hamilton is also relying on improved prospect for growth and the ability to raise additional debt to smooth future taxes as needed.
 - Treasury department grows to more than 500 employees (vs. 12 in the War Department and 6 at State).

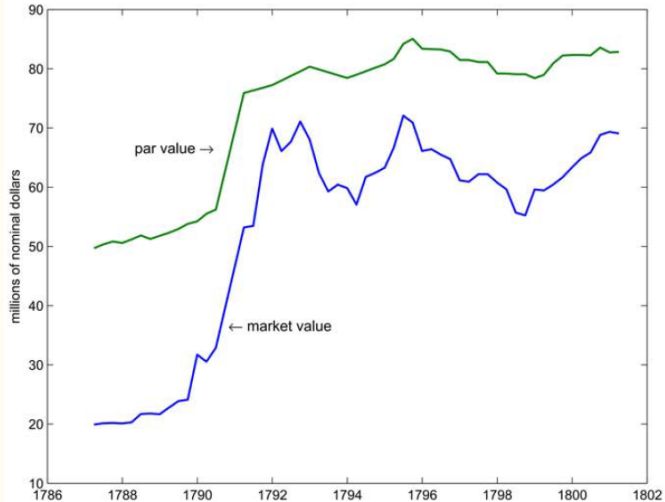
The outcome, II

- Relative to par values, Hamilton administered substantial haircuts to domestic creditors, paying foreign creditors somewhat more generously. Dutch in full and the French with a 20% haircut.
- In Philadelphia, financial markets the 6% stock traded at around 90% of par, while the 6% deferred and 3% traded at 45% of par. So, much of the debt is basically, written off.
- Owners of Continental dollars fared much worse: \$1 in specie for every \$100 Continental dollars (Hamilton's initial proposal was for 40 to 1). Simply infeasible to pay off Continentals as well.
- With the assumption of state debts, the Federal government owed \$74.3 million in specie, which was about 35% of GDP.

Federal debt by type of loan



Principle and market value



Repayment

- 3 ways to view the repayment:
 1. Market value of the new securities relative to the par value of the old securities. This measure indicates how close the debtor is to fulfilling the original promise. (49%).
 2. Present discount value both before and after the settlement, which measures how much of the promised payments were honored (71%).
 3. Market value to claims after settlement to the market value of the original claims, which measures how much creditors benefited from the new arrangement (138%).
- Regarding Continental Dollars, around \$74 million were never redeemed.

Constitutional arrangements

- To limit the chances that U.S. currency and debt would be repudiated in the future, the Constitution prohibits the States from issuing currency or bills of credit, nor make anything but gold or silver coin “a Tender in Payment of Debts.”
- It also gives Congress the power “To coin Money, regulate the Value thereof ...”
- At the time, generally viewed that the Congress prohibited from issuing paper currency.

- What role does credible debt play for a government?
 1. It allows it to smooth taxes in the face of surges in expenditure, perhaps due to war or large land purchases.
 2. In many economic models, it is optimal at time 0 to repudiate existing debt and promise never to default on any newly issued debt. But, how do we make this commitment credibly?
- To some extent, Hamilton followed that prescription by repudiating some of the debt.
- Also, the prohibition on paper money meant that the government would not be able to debase the debt through inflation.

Why did Hamilton want to pay the debt?

- The most compelling reason is that he believed it would give the U.S. access to debt markets in the case of another war.
- Dutch debt was paid immediately, while French debt payments were delayed and also received a small haircut.
 - At the time, the French were viewed as an unlikely source of future funding.
 - The Dutch on the other hand were viewed as an entity by which large amounts of debt could be sold fairly quickly.

- The success of the program was remarkable.

Prices on U.S. government debt recovered almost immediately even though there was a partial repudiation of the debt.

- The new Constitution was probably a factor in changing expectations.
- That need not have been the case. When Pennsylvania defaulted for 2 and 1/2 years in the 1840s, it took over 5 years for state bonds to return to par even though all debts were repaid in full.
- What was Hamilton's reasoning behind assuming state debts?
 - Those debts were largely accumulated to fund the Revolutionary War and should be financed nationally.
 - The Federal government now had the advantage in raising revenue as states could no longer levy tariffs.

Economic effects, II

- Initially the assumption of state debts did not pass the House.
- It was necessary to compromise with the Virginia delegation over the eventual location of the nation's capital (extremely important for then: geography and agrarian vs. trade political economy).
- It was also not clear if the Federal government could pay both its own borrowings and those of the states.
- For this to happen would require a vibrant U.S. economy, and this is what happened. Economic growth picked up to 1.03%-1.51% over the period 1793-1800 (Goldin and Lewis).
- Increased international trade caused revenues to rise by 26% per year over 1790-95.

Federal tax revenues by year, 1789-1800

Year	Revenue (thousands)
1789	162
1790	1,640
1791	2,648
1792	3,675
1793	4,653
1794	5,432
1795	6,115
1796	8,378
1797	8,689
1798	7,900
1799	7,547
1800	10,849

Competing viewpoints

- Much of the debt was not held by the original lender, but repurchased by financial speculators (contrary to Hamilton's claim that only $1/3$ was not in original hands).
- Madison proposes allocating payoffs to current and former bond holders so that current holders would not reap capital gains and former holders would be compensated for capital losses.
- Hamilton opposes this idea because of reputational affects on prospective bond holders and the impairment of the market for government bonds becoming liquid.
 1. What price will someone buy an existing bond if there is uncertainty that they will not be fully paid in the future, but may have to split some of the proceeds with original holders?
 2. What if the bond goes through many hands?

The political economy of debt repayments

The political economy of debt repayments

- Look more generally at the political and economic interests that define fiscal policy.
 - Repayment of debt depends on future revenues from taxes and sales of publicly owned property and government spending.
 - Prices of debt reflect whether fiscal policy is viewed as sustainable.
 - We need a constitutional framework so that political processes are likely to produce reasonably good outcomes.
- Should a government pay its debts?
 - Not all citizens hold the debt and taxes are distortionary.
 - But, the government may want to borrow again. Contingencies could arise and it is better to smooth taxes.

- When debt is denominated in domestic currency a way of defaulting on a part of the debt is through unanticipated inflation.
- The inflation during the revolution made the framers wary of inflation and the Constitution places restraints on the issuance of fiat money.
- Helped make future payoffs more credible.

Public debt in federal countries, I

- Should the central government pay debts of subordinate entities like the states?
 - If part of a deal that awards tax authority previously held by the states is transferred to the national government, then it is part of the deal.
 - But, does it then raise expectations that future state debt will be paid nationally?
- Prior to 1789 creditors answered yes to the Continental Congress paying debts why many tax payers answered no.
- The Articles of Confederation gave the central government no power to independently raise revenue resulting in Continental debt valued between 10% and 20% of par.
- That it sold for that much was an indication that purchasers were betting on a political reorganization.

Public debt in federal countries, II

- Some states like Pennsylvania and Rhode Island actually serviced some of the U.S. debt held by their own residents by swapping state bonds for Continental ones.
- Interested in binding monied interests to continue the support of the Articles of Confederation.
- State repayments of their own debts varied widely.
- Hamilton and Robert Morris were in favor of the federal government assuming state debts because they wanted to cement revenue raising authority with the federal government.
- Also, easier administratively.

Why is this credibility so important?

- Case study: Britain v. France
- From 1688-1788, Great Britain defeated France in 4 out of 5 wars: The War of the Gran Alliance (1688-97), the War of Spanish Succession (1701-14), the War of Austrian Succession (1741-48), and the Seven Years' War(1756-63), but not on the American Revolution (1776-83).
- Later, Great Britain will win the Revolutionary and Napoleonic Wars (1792-1815).
- Great Britain reformed institutions to allow it to raise enough revenue in peace time to finance debt sustained during wars.
- French institutions were designed to limit the revenue raising ability of the king (and less credibility in repayment).
- The British could issue more debt in case of war.

British institutions

- Britain raises revenues more effectively than France.
 - Increases taxes during war to pay increased debt services.
 - Consolidates debt into annuities and raises taxes to service the debt.
 - Smooths taxes and generates small but sufficient surpluses in peacetime.
 - Debt services rise during war then slowly decline in peace.
 - No defaults. Parliament passes specific taxes directed at funding new debt.
- Bank of England eventually acquires a monopoly on servicing the debt and issuing notes. Prevents government from playing one debtor off against another.
 - Bank's owners were prominent members of society.
- Alternatively, France partially defaults 3 times: 1713, 1759, and 1770. Uses suspension of interest payments and reconversions.

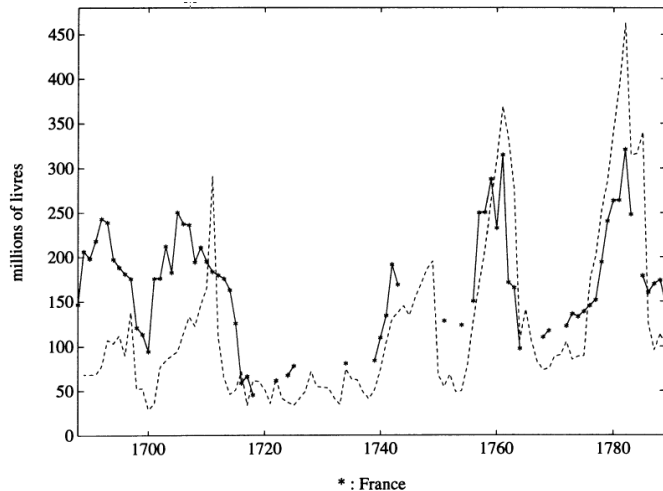


FIG. 4.—Military spending in Britain and France, 1688–1789. Sources: for Britain: Mitchell (1988); for France: Mallet (1789), Forbonnais (1758), and the references listed in n. 8.

- Wars cost Britain on average 1-1.5 years of revenues. For France only 0.5-0.8 years of revenues.
- Britain outspent France by 40% in the 7 Years' War even though only 1/3 the population.
- The British experience certainly influences Hamilton:
 - Converts debt into annuities.
 - Pays off foreign creditors with only a few instances of small haircuts.
 - Differs in that domestic holders face haircuts.
 - Wants to establish a National Bank to be the government's agent.
- Hamilton's view is "too" English for Jefferson.

Appendix: commitment and reputation

The value of commitment and reputation

- Government policies are plagued by a “time consistency” problem: the government has an incentive to renege on its promises.
- Examples:
 1. Having borrowed a good deal of money to finance various activities it may have the incentive to default on the debt.
 2. Or having passed some law that induces people to behave in a certain way, it may wish to extract resources based on that behavior or reward certain political classes by abridging the rights of others.
- Thus, we cannot implement Ramsey allocation.
- What mechanisms can be put in place to achieve outcomes that are consistent with competitive equilibria in the private sector and either do not allow or induce the government not to renege?

Two (not mutually exclusive) institutions

1. Commitment devices such as constitutions are often helpful, but not perfect.

- Constitutions are difficult to amend and if institutions are sufficiently strong to guarantee constitutional safeguards, then the government will be somewhat constrained to act in a certain way – such as not tyrannizing a minority.

2. Reputation.

- If a government adheres to its promises, private agents may be able to reward it. No default and you get to borrow at low rates next period.
- If the government reneges, it can perhaps be cut off from credit markets for long periods of time. These may be difficult to enforce with many lenders and different priorities of securities and they are often not sufficient to prevent all defaults.
- That is why we see arrangements such as debt limits.

- Under certain circumstances, the benefits of fulfilling promises outweighs the cost of reneging and governments fulfill their promises.
- British institutions induced repayment, French ones did not.
- Hamilton, to the extent possible, and subsequently Madison and Grant to a greater extent, realized the benefit of reputation in international credit markets.

An example of how reputation works, I

- We can formally illustrate how reputational concerns may limit a government's desire to inflate away the debt.
- Any equilibrium must be rational in that the public's expectation of what the government will do turns out to be correct. If not, then expectations are not rational.
- The benefit of unexpected inflation is that it proportionately lowers the real value of the debt that must be paid off: $b(\pi_t - \pi_t^e)$.
- Notice, you can only get a benefit if the inflation is unexpected because if it were expected a higher interest rate on the bonds would serve as compensation to holders of the debt.
- Inflation is also economically costly: $(a/2)\pi_t^2$.

An example of how reputation works, II

- Together the benefit derived from any inflation rate is:

$$z_t = b(\pi_t - \pi_t^e) - (a/2)\pi_t^2$$

- The government maximizes the discounted stream of benefits, by either setting inflation once and for all, or setting inflation period by period taking expectations as given:

$$\max \mathbb{E}[z_t + qz_{t+1} + q^2z_{t+2} + \dots]$$

where q is the discount rate at which future benefits are discounted.

- Under commitment to a rule the government is effectively choosing both inflation and inflation expectations because those expectations are governed by the rule. Because inflation expectations will equal actual inflation
- The first term in z drops out and it is optimal to set

An example of how reputation works, III

- Under discretion, expected inflation is taken as given at some value and the policy maker then chooses inflation.
- Maximizing net benefits now involves the benefit as well as the cost term and the first order condition implies

$$\pi_t = b/a$$

- Bond holders anticipate this and their expectation of inflation will also be b/a and the net benefit is $-(1/2)(b^2/a)$, an inferior outcome.
- If inflation expectations equaled zero, a discretionary policy maker has an incentive to cheat and the benefit to setting inflation at the discretionary rate is $(1/2)(b^2/a)$.

An example of how reputation works, IV

- Now bond markets meet repeatedly.
- What if bond holders expectations evolve according to

$$\pi_t^e = \begin{cases} \pi, & \pi_{t-1} = \pi_{t-1}^e \\ b/a, & \pi_{t-1} \neq \pi_{t-1}^e \end{cases}$$

- What value of inflation expectations will make it undesirable for the discretionary government to not cheat?
- If cheat, set inflation to b/a each period and benefit in odd periods: $z^c = (b^2/2a) - b\pi - q(b^2/2a)$
- If do not cheat and set inflation at π :

$$z^{dc} = -(a/2)\pi^2 - q(a/2)\pi^2$$

- And $\pi \geq \frac{b(1-q)}{a(1+q)}$ can support the reputational equilibrium.

An example of how reputation works, V

- The more patient the government, the lower the inflation rate that can be supported.
- Also, the more periods you punish, the lower the inflation rate that can be supported.
- One could extend to punishments for actual defaults, but that is a lot harder.
- Or one can constitutionally restrict the government to use gold and silver coins, but the Congress could change the amount of gold or silver in a dollar.
- But that maybe more of an undertaking as previous coins would have to be weighed and converted.