WP/14/183

IMF Working Paper

The Making of a Continental Financial System: Lessons for Europe from Early American History

Vitor Gaspar

INTERNATIONAL MONETARY FUND

 WP/14/183

IMF Working Paper

Fiscal Affairs Department

The Making of a Continental Financial System: Lessons for Europe from Early American History[1]

Prepared by Vitor Gaspar

September 2014

Abstract

Alexander Hamilton was the first U.S. Treasury Secretary from 1789 to 1795. When he started, the Federal Government was in default. During his tenure, U.S. Treasuries became the ultimate safe asset. He successfully managed expectations, achieved debt service reduction, and stabilized financial panics. He delivered sound public finances and financial stability. In the end, the U.S. possessed a modern financial system able to finance innovation and growth. At a time when Europe is working its way out of the sovereign debt crisis and implementing Banking Union and Financial Union, it is worthwhile to search for lessons from early U.S. history.

JEL Classification Numbers: E10, H12, H63, N11, N21

Keywords: Crisis management, sovereign debt, financial markets, United States

Author’s E-Mail Address:vgaspar@imf.org

[1] The paper benefited from comments, corrections and suggestions from John Bluedorn, Helge Berger, Guillermo Calvo, Zsolt Darvas, Florian Gimbel, Roger Gordon, Sean Hagan, Stephanie Hare, Heinz Hermann, Russell Kincaid, Sixten Korkman, Harold James, Laura Jaramillo, Johannes Lindner, Silvia Luz, Hans-Helmut Kotz, Maria Eugénia Mata, Yves Mersch, Ricardo Reis, Christophe Rosenberg, André Sapir, Kazuko Shirono, Richard Sylla, Francisco Torres, Shahin Valée, Max Watson, Thomas Wieser, Guntram Wolff and Michael Woodford and participants in seminars at Bruegel, Brussels, at St. Anthony’s College, Oxford, at the ECB, Frankfurt, at CFS, Frankfurt, at Columbia University, New York, and at a Conference at Eltville organized by the Bundesbank, the Bank of Japan, the Institute for Monetary and Financial Stability and the University of Hamburg.

Contents **Page**

INTRODUCTION

In the autumn of 2009 the Global Financial Crisis mutated in Europe into sovereign debt crises in several countries of the euro area. There were two defining moments in the Crisis: September 2008 and April 2010. The world changed after Lehman's bankruptcy in September 2008. The event was followed by the threatened bankruptcy of organizations affected by exposures to Lehman or by the associated evaporation of market liquidity. These included AIG and, even more importantly, systemically-important money market mutual funds starting with Reserve Primary Fund*.* At this point, financial market participants were desperately seeking access to liquidity and safe assets. Financial panic threatened to spin out of control.

More generally, in the Global Crisis, policies followed the lessons learnt during the Great Depression of the 1930s. The underlying analytics were, subsequently and systematically, organized under the new discipline of Macroeconomics. Specifically, policies respected a number of principles: first, in a financial panic the central bank should lend freely in order to ease the panic and to preserve orderly financial market conditions; second, when a recession spiral threatens, expansionary monetary policy contributes to stabilize economic activity and employment; third, expansionary fiscal policy complements and supports monetary policy. This is particularly important when monetary policy hits operational constraints like the zero lower bound on nominal interest rates.

A further important aspect in the Global Crisis was international cooperation. On October 10, 2008, the G-7 agreed to work together to stabilize financial markets. In mid-November the first G-20 summit was held in Washington. And, finally, in Europe, the European Council, in December, approved the European Economic Recovery Plan. Eichengreen and O'Rourke (2009, 2010) argue that the initial disturbance and the initial stages of the propagation mechanism were as strong or stronger in the Global Crisis, in comparison with the Great Depression. The fundamental difference was in the policy responses: monetary policy, fiscal policy, policy actions to restore financial stability, and international cooperation to enhance effectiveness of policy action and to avoid protectionism and beggar-thy-neighbor policies.

Unfortunately, in the euro area the story was yet about to take a turn for the worse. In October 2009, a new government in Greece shocked markets by sharply revising up the expected deficit for the year. Greek debt well above 100 percent of GDP and markets' confidence affected by the recent turmoil combined to place sovereign credit risk as the main driver of financial market developments. The sovereign debt crisis in the euro area would spread to other countries. Macro-systemic feedback loops became pressing. Sovereign risk and banking risk became strongly linked, as in Ireland and Spain. A diabolical spiral of bank risk, sovereign risk and cross-country contagion threatened.[2]

[2] The expression "diabolical loop" originated with Brunnermeier et al. (2011).

From April 2010 and until July 2012, the euro area was at the center of the Global Crisis.

In the euro area, after 2009, financial fragmentation substituted for financial integration. Financial divergence was the driving force for divergent macroeconomic developments across countries. Credit risk became a relevant consideration for hitherto considered safe sovereign debt. In the process, Greece, Ireland, Portugal, Spain and Cyprus benefited from financial assistance. Italian debt markets were also rocked. The prospect breakdown of euro area was a present threat for investors and populations. The situation started stabilizing only after political commitment to deeper integration was achieved in the European Council of June 2012. That was followed by the announcement of the Outright Monetary Transactions Program by the ECB in September 2012. One year after, the prospect of euro area fragmentation was no longer driving international investors' decisions.

The history of financial politics in the early stages of U.S. history can provide insights into what can be done to build a robust and resilient European financial system and to establish the credibility of sovereign debt as safe assets. The U.S. Federal Government has never defaulted on its debt and the U.S. is a well-integrated monetary union of continental dimension. Alexander Hamilton was the first secretary of the U.S. Treasury from 1789 to 1795. He managed successfully the transition from a bankrupt Federal Government to a situation where the U.S. Treasury became the issuer of the ultimate safe asset. In the process Alexander Hamilton laid the foundations for a modern financial system able to finance innovation and growth.

The comparison of the challenges of Europe today and the early U.S. is the theme of Thomas Sargent Nobel Lecture (Sargent, 2013) that provided the inspiration for this paper. Sargent draws on the general lessons from U.S. financial history, focusing on two episodes: the origin of the U.S. fiscal constitution in the late 1780s, and the State debt crisis of the 1840s. James (2014) and Kincaid (2014) also interpret a much longer period of U.S. financial history. This paper instead concentrates on a very specific period from late 1789 to early 1795 and looks at broader dimensions of finance. By concentrating on a briefer period it is possible to examine in more detail how it was done. The paper closest to this one in scope is Sylla (2014).

Public finance and finance are fields that are fundamentally political. North and Weingast (1989) document how constitutional change, in the aftermath of the English Glorious Revolution, led to institutional transformation that sustained financial development, in general, and government bond markets, in particular. The creation of the Bank of England in 1694 was part of this institutional transformation. The priority given to government finance right at the origin of central banking may well be referred to as "the original sin of central banking." As was the case in England, solving the public finance crisis in the U.S. required constitutional change. Constitutional change took shape as the Constitution of 1788 replaced the Articles of the Confederation (ratified in 1781).

Hamilton is an easy object of analysis. He wrote abundantly. Famously he was the most prolific contributor to the *Federalist Papers.* Even before the *Papers* he set his vision for the U.S. financial system in three well-known letters, written in the beginning of the decade of 1780: two letters (1780 and April 1781) to William Morris and one (September 1780) to James Duane (see Sylla, 2011). As a politician and policymaker, he wrote numerous reports including *On Public Credit* (1790, 1795); *On the Establishment of a National Bank* (1790); *On the Establishment of a Mint* (1791); and *On the Establishment of Manufactures* (1791).

The Hamilton moment illustrates the very strong threefold cord constituted by politics, fiscal policy and financial activities. As emphasized by Sargent (2013) it took a political transformation to make it possible to ground public finances on solid fundamentals. More generally it is important to realize that changing policy outcomes systematically requires changing the rules and incentives of politics. For Europe a crucial question is: how can we (Europeans) design institutions in Europe so as to align political incentives with macroeconomic stability and financial integration? The experience of the first U.S. Secretary of the Treasury offers some inspiration.

Alexander Hamilton himself poses and answers some fundamental questions:

- Why is it important to honor public credit? Why not repudiate debt?
- By what means can public credit be maintained? How to ensure public credit? How to promote a smooth and quick transition?
- How to restore financial stability in the face of financial panic?

These answers are fundamentally relevant for Europe today. That much was clear from the summary presentation of the euro area crisis in this introduction. The euro area and its member states are struggling to find timely answers. Those answers matter. They influence growth and employment prospects and the lives of millions of people. But there is one aspect that is crucial to stress. The only answers that can be relevant in the real world are political answers. Public finance and the financial system are part of a system of institutions in the political realm. Those institutions shape the relevant incentives and determine a set of possible outcomes. To repeat: the fundamental question is political: how can the rules of the political game, in Europe, be shaped in order to improve outcomes?

The paper has a narrow focus. As already said, it looks at a well-determined episode: the experience of Alexander Hamilton as first Secretary of the Treasury, from late 1789 to early 1795. The episode does not exhaust lessons from the U.S. for European financial integration. For example, the importance of politics in shaping the financial system is clear from the coalition between rural debtors, incumbent bankers and state governments that led to a fragmentation of the U.S. national banking system through a myriad of local monopolies (see Calomiris and Haber, 2014).

The paper focuses on the answers to the three questions listed above. The history of the United States, in its early years, illustrates the importance of political institutional building. The replacement of the articles of the Confederation by the American Constitution of 1788 offers a perfect illustration. The history of subsequent decades also shows what institutional designs proved robust and which were not able to withstand political pressure. The remainder of the paper is organized as follows. The first section is on the fundamental question: why is it important to repay the public debt? The second section deals with the building up of trust and credibility while navigating financial constraints. The third section is on crisis management. The last section will conclude with some lessons for the euro area and its member states.

I. WHY PAY FOR PUBLIC DEBT?

In 1789 the Federal Government started bankrupt. Federal and States' debt traded at deep discounts. When Alexander Hamilton left the Treasury–in 1795–U.S. Bonds enjoyed safe asset status domestically and were well accepted by European investors. The U.S. Treasury has been able to maintain a solid domestic and international reputation. Eventually, after a very long process, U.S. bonds slowly achieved global prominence.

Before examining how it was possible to lay the fundamental grounds to start such a reputation, it is useful to understand the historical debate about whether to pay for the debt accumulated during the War of Independence. A related question is: why is it important to value a good reputation (public credit) with domestic and international creditors?

So: why pay for public debt? Why is it important to honor public credit? Why not repudiate debt?

These questions are answered in the *First Report on Public Credit* that Alexander Hamilton presented to Congress in January 1790. However, one of the main points of this paper is that the answer depends on arguments that go beyond the strictly economic and financial. The answer builds on political arguments. To cover those, it is best to use sources in addition to the *First Report*.

In 1795, just after his departure from the Treasury, Alexander Hamilton impressed the fundamental political importance of public credit. To do so, he used the example of France in his *Defense of the Funding System*:

> "The debt of France brought about her revolution. Financial embarrassments led to those steps which led to the overthrow of the government and to all the terrible scenes which have followed."
>
> Alexander Hamilton, July 1795.

For Hamilton, crisis in public finances laid at the roots of the French Revolution of 1789. Hamilton's assessment is confirmed by recent research. Sargent and Velde (1995) look at the French Revolution from the prism of the government's intertemporal budget constraint. The story can be summarized in a few words. Louis XVI acceded to the throne in 1774 and pledged to honor the Crown's debt. The debt had been mostly accumulated in unsuccessful warfare by France in the earlier decades. The political will to serve the debt was not backed by a commensurate ability to increase taxation (expenditures in peacetime were, in the 18th century France, dominated by interest payments). Debt continued to accumulate and interest payments continued to grow. In order to accelerate the process of transformation of public finances, Louis XVI called the Estates General. The rest is well known. The Estates General provided a focal point for political discontent. The French Revolution took place in 1789. It is worth noting that the new, revolutionary government continued to honor public debt in the middle of political turmoil. Eventually the French government defaulted on two-thirds of the government debt. However, that happened only almost ten years later in 1797. The process illustrates the political relevance of public debt, as disorderly public finances and public debt management provided fertile ground for disruptive political events. In other words, public credit is fundamental for political stability.

Hamilton had closer examples. Paying creditors, ensuring debt service implies raising tax revenue. Hamilton refers to Shays' rebellion in Massachusetts–named after one of its leaders: Daniel Shays. The rebellion took place in 1786 and 1787, in the context of the post-War of Independence contraction. Indebted farmers were hard pressed by the scarcity of currency and credit and by the harsh tax measures taken in order to ensure the solvency of state finances. In the *Federalist* 6, Hamilton writes: "if Shays had not been a desperate debtor, it is much to be doubted whether Massachusetts would have plunged into civil war." Later, in *Defense,* he was even more explicit:

> "In Massachusetts taxation was carried still further, even to a degree too burdensome for the comfortable condition of the citizens. This may have been partly owing to that unskillfulness which was the common attribute of the State administration of finance, but it was still more owing to the real weight of the taxes. The insurrection was in a great degree the offspring of this pressure."
>
> Alexander Hamilton, July 1795.

The examples of the French Revolution and of Shays' Rebellion illustrate that in the late 17th century public finance led, on occasion, the political system to a breaking point. Debt and taxation were at the center of politics. Afterwards they have never left center stage. Stability in public credit and sustainability in public finances were crucial to reconcile political stability with financial development.

A second–and very important–political argument was that of strategic advantage in international competition. In the 18th century, it was probably the most salient argument.

> "It is so immense a power in the affairs of war that a nation without credit would be in great danger of falling a victim in the first war with a power possessing a vigorous and flourishing credit."
>
> Alexander Hamilton, July 1795.

Again Alexander Hamilton's view is compatible with most recent findings. Schulz and Weingast (2003) stress the importance of financial power in the case of prolonged international competition. They illustrate their point with the case of competition between France and England, from 1689 to 1815. Public credit became a decisive aspect of the sinews of power in the modern age.[3] Therefore, a further argument for public credit was strategic advantage in international competition. Hamilton was very much aware of the history of war between France and England.

The argument of prudence and strategic advantage is repeated by Alexander Hamilton many times. An early example of the use of the strategic argument is in a letter written by Alexander Hamilton to Robert Morris in 1781. Since the War of Independence is being fought and Hamilton is involved in the fighting, the tone is most dramatic and urgent:

> "It is by introducing order in our finances–by restoring public credit–not by winning battles that we are finally to gain our object. It is by putting ourselves in a condition to continue the war—not by temporary, violent and unnatural efforts to bring it to a decisive issue, that we shall, in reality, bring it to a speedy and successful one."
>
> Alexander Hamilton, Letter to Robert Morris, April 1781.

Robert Morris was Congress' Superintendent of Finance from 1781 to 1784 (see Sylla, 2014). When Morris took on the job, the war had been going on for six years and Congress' finances were dismal. In short, Congress was in dire need for financial resources. The paper money that it issued to help finance the war had been so over-issued that it had become worthless. In 1780, Congress stopped issuing Continental dollars. Congress had no direct competence to tax under the Articles of Confederation. National taxation required the unanimous agreement of all States. Such unanimous agreement was next to impossible to obtain. During his tenure as Superintendent of Finance, Robert Morris's greatest failure was his inability to obtain a national tax. In 1782, he proposed a 5 percent federal tax on imports. At the end of the year, 12 of the 13 States approved the measure. However, one single State, Rhode Island, blocked it.

At the end of the 18th century, Morris was probably America's lead merchant and financier. When he came into office he made two demands on Congress: first, he would

---

[3] Hamilton (1947) documents that public debt is a phenomenon of the modern age. Bean (1973) traces the rise of the modern nation-state to changes in warfare technology. The two phenomena are plausibly closely related as argued in North (1990).

continue to run his private business while Superintendent of Finance; second, he would have full discretion over hiring and firing in the national government. It is a clear signal of the gravity of the situation that Morris's demands were accepted. The most decisive move from Morris was to use a very timely loan of specie from France (obtained in mid-1781) to finance the Yorktown campaign. In the end, the battle of Yorktown, fought in October 1781, marked the decisive turning point of the war. But nobody knew this at the time.

In May 1781, Robert Morris proposed to create the Bank of North America (BNA) in Philadelphia. BNA was the first modern bank in the U.S. It was also the only one during the war because Morris sought and obtained a national monopoly from Congress–that chartered the Bank at the end of 1781–and the States. In 1782 and 1783, the BNA was instrumental in obtaining public finance. It is noteworthy that Morris himself also financed government through the issuance of his own notes! The distinction between private and public interests is not easy to make in this episode. Nevertheless, it is clear that Morris's actions as Superintendent of Finance were fundamental for the viability of keeping the American army in fighting order. Finance was crucial. Orderly public finances and restoring public credit would have to wait for later.

But Alexander Hamilton uses a broader and deeper political argument. It is his third argument. He argues that public credit is a fundamental indicator of good governance and sound government. The argument appears in *The First Report on Public Credit*:

> "Deeply impressed, as the Secretary is, with a full and deliberate conviction that the establishment of the public credit, upon the basis of a satisfactory provision for the public debt, is, under the present circumstances of this country, the true desideratum toward relief from individual and national embarrassments; that without it these embarrassments are likely to press even more severely upon the Community."
>
> Alexander Hamilton, *The First Report on the Public Credit*, 1790.

In the *Wealth of Nations*, Adam Smith also makes a related general governance argument. Smith argues that the same conditions that favor prosperous trade and industry also make it possible for the Treasury to obtain credit from traders and entrepreneurs. The general idea is that economic agents who trust government to protect property rights in normal times will also trust government with their savings in extraordinary circumstances. I think it is reasonable to argue also in the reverse. That is, if wealthy individuals do not trust government to honor public debt in extraordinary circumstances it follows that they must also harbor doubts concerning the security of property rights in normal times. Smith's argument is worth quoting in full:

> Commerce and manufactures can seldom flourish long in any state which does not enjoy a regular administration of justice, in which the people do not feel themselves secure in the possession of their property, in which the faith of contracts is not supported by law, and in which the authority of the state is not

> supposed to be regularly employed in enforcing the payment of debts from all those who are able to pay. Commerce and manufactures, in short, can seldom flourish in any state in which there is not a certain degree of confidence in the justice of government. The same confidence which disposes great merchants and manufacturers, upon ordinary occasions, to trust their property to the protection of a particular government; disposes them, upon extraordinary occasions, to trust that government with the use of their property. By lending money to government, they do not even for a moment diminish their ability to carry on their trade and manufactures. On the contrary, they commonly augment it.
>
> Adam Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations,* 1776.

Adam Smith emphasizes the domestic relevance of the rule of law and good governance. The point also applies to international relations. Hamilton's concern is that when public credit is in doubt, the conditions at which foreign financing can be made available are very unfavorable. As we will see below, Hamilton was convinced that American development would greatly benefit from international financing. Therefore, this particular implication of good (or bad) government was of fundamental importance. Contrary to the excerpt quoted before, this argument appears right at the beginning of the *First Report*:

> "For, when the credit of a country is in any degree questionable, it never fails to give an extravagant premium, in one shape or another, upon all the loans it has occasion to make. Nor does the evil end here; the same disadvantage must be sustained on whatever is to be bought on terms of future payment.
>
> From this constant necessity of borrowing and buying dear, it is easy to conceive how immensely the expenses of a nation, in a course of time, will be augmented by an unsound state of the public credit.
>
> To attempt to enumerate the complicated variety of mischiefs, in the whole system of the social economy, which proceed from a neglect of the maxims that uphold public credit, and justify the solicitude manifested by the House on this point, would be an improper intrusion on their time and patience.
>
> In so strong a light, nevertheless, do they appear to the Secretary, that, on their due observance, at the present critical juncture, materially depends, in his judgment, the individual and aggregate prosperity of the citizens of the United States; their relief from the embarrassments they now experience; their character as a people; the cause of good government."
>
> Alexander Hamilton, *The First Report on the Public Credit*, 1790.

These paragraphs do indeed make the point about the external cost of funding "when the credit of a country is in any way questionable it never fails to give rise to an extravagant premium." Nevertheless, the argument is meant to be much more general. For Hamilton "[From due observance of the maxims that uphold public credit] materially depend[s] … the individual and aggregate prosperity of the citizens on the United States; their relief from the embarrassments they now experience; their character as a people; the cause of good government." This is a fundamental political point. Public credit is a very good synthetic indicator of the overall quality of governance and of government. The point is emphatically made by both Smith and Hamilton.

Apart from the broad political argument, outlined above, Alexander Hamilton uses narrower economic and financial arguments. These arguments are well known and can be presented in summary form. In outline, public credit:

1. Ensures enduring access of the federal government to internal and international debt markets;

2. Contributes to the international financing of the U.S. through the provision of a liquid (and safe) asset for international investors;

3. Contributes to the development of domestic financial organizations and markets by providing the ultimate safe asset;

4. Benefits agricultural, industrial and commercial development since it contributes through (3) to facilitate access to credit and to equity financing.

The view from Alexander Hamilton on the costs and benefits of debt repudiation are compatible with recent empirical research. Cruces and Trebesch (2013) use a database with 180 debt restructurings from 1970 to 2010. They classify the episodes of debt restructuring along three dimensions: first, the duration of negotiations with creditors; second, the attitude of the debtor nation towards creditors; third, the magnitude of the loss suffered by the creditors. The authors find that the duration of negotiations and the attitude towards creditors is strongly correlated to weakness of institutions and political instability. This empirical evidence backs the importance of politics and institutions for public credit. The authors also find that the cost for the debtor economy is considerable, that they are widespread and that they correlate with the size of the haircuts imposed on creditors. They measure the costs in terms of the length of the exclusion of the Treasury from international bond markets. They also calculate the costs incurred in the financing of domestic banks, domestic large nonfinancial corporations and, finally, on bank-dependent small and medium-sized enterprises and households. The long shadow of debt restructuring provides a strong incentive to repay public debt. In essence, this corresponds to the reputational mechanism supporting repayment of the public debt.

Interestingly, the scope of Christoph Trebesch's Ph.D. dissertation is broader (see Trebesch, 2011). In particular, chapter 3 of the dissertation focuses on the role of politics and institutions on how debt crises are resolved. Trebesch finds that delays in debt restructuring are linked to debtor country characteristics. Specifically the delay is greater the weaker political institutions and the greater political risk and instability.

The results also show correlation with economic and financial characteristics of the debtor country. Contrary to what could be expected from most of the literature that focuses on creditor coordination as a main obstacle to efficient and orderly debt workouts.

Trebesch and co-authors (e.g., Trebesch, 2011 and Cruces and Trebesch, 2013) have documented that costs from debt restructuring are much broader than earlier documented in the literature. The earlier literature finds little or no evidence for reputational costs (see Panizza et al., 2009 for a survey). According to Trebesch, this finding depends crucially on disregarding crucial characteristics of restructuring processes. Likewise, Trebesch's link between characteristics of the restructuring process, politics and political institutions opens the way for research on the broader issue of the politics of public credit in the spirit of Adam Smith and Alexander Hamilton. I find it remarkable that the grammar of arguments used by Hamilton in the debate (about: why pay for the public debt?) is still very much the proper structure to debate the issue more than 200 years later.

The conclusion is that there is a strong case for protecting public credit. The case hinges on broad political, economic and financial ramifications. In case of failure to protect public credit, the implications go much broader than narrowly understood: access of the national economy to international financing is undermined. More concretely, access to finance by resident households and private corporations—financial and nonfinancial—is hampered.

II. By what means can public credit be maintained?

The conditions for the maintenance of public credit follow from the arithmetic of the government budget constraint. The importance of the government's budget constraint is a central theme of Sargent and Wallace (1981), Sargent and Velde (1995) and Sargent (2013). From the governments' budget constraint the current value of the debt stock equals the compounded value of past primary *plus* the compounded value of the debt stock at some given past period. Moreover, in order to guarantee solvency, the current value of the stock of debt must equal the present discounted value of future primary surpluses. Sargent (2013) emphasizes the present discounted value of future primary surpluses valuation equation for public debt. In plain words, the ultimate fundamental value of public debt is determined by the revenue flows allocated to its service and repayment.

Nevertheless, Sargent (2013) emphasizes that the simplicity of the government's budget constraint is deceiving. Primary surpluses are determined by the difference between government's expenditures in current and capital goods and services—excluding interest payments—and government's revenues—from taxation and other sources. The determination of government's expenditures and revenues is the outcome of a political process. There are several attempts to make fiscal policy endogenous in the literature. Bi and Leeper (2013) have probably come closest. They have approached the determination of limits to sustainable debt as deriving from maximum tax capacity—as obtained from an empirical Laffer curve—constrained by additional frictions coming from the political process. The advantage of the approach is that it provides a natural framework to analyze institutional change.

Eaton and Gersovitz (1981) and Arellano (2008) model the decision to default as a strategic decision made by an optimizing government in the face of stochastic shocks to economic activity. The approach allows—in conjunction with real business cycle models of the economy—to mimic some stylized facts of business cycles in developing countries. Nevertheless, the approach does not explain why some countries are more susceptible to be vulnerable than others.

The literature provides for a very important insight: the intertemporal nature of the government's budget constraint opens the possibility for expectations to play a key role and opens the possibility of multiple self-fulfilling equilibria. There are many relevant contributions. They include Calvo (1988), Cole and Kehoe (2000), Basseto (2005), Roch and Uhlig (2012), and Uhlig (2013). The intuition for multiple equilibria is simple: in case creditors assume that public debt is safe, the Treasury is able to roll-over the debt at low interest rates and, under those conditions, the government is able to generate the required primary surpluses. Otherwise, in case investors come to believe that debt is not sustainable, they require a considerable credit risk premium. Under those elevated financing costs for the Treasury, the government is unable to generate the required surpluses and the investors' expectations are thereby validated. It is opportune to recall another classical example of multiple equilibria. The example is due to Diamond and Dibvig (1983). In a closed economy model of a banking system without a lender of last resort function there are, at least, two equilibria. In the first, *the bad equilibrium,* there is a bank run. In the second, *the good equilibrium,* the run does not occur. In the model, the lender of last resort is justified to avoid the possibility of bad equilibrium.

Finally, Goshi et al. (2011) follow the approach of Bohn (1998) and estimate fiscal policy reaction functions where the primary responds to the debt level. The response must be strong enough to generate debt sustainability. Clearly such approach would be inappropriate to predict outcomes in the face of political and institutional change.

This short overview of recent literature allows the reader to appreciate the depth and breadth of Hamilton's understanding of the relevant fundamentals.

A. The U.S. Constitution

As indicated before, in the 1780s, the Federal Government was effectively bankrupt. Large debts accumulated during the War of Independence. At the same time the power to tax was vested in the separate States. Hence, the paper currency, issued to finance the war was dramatically debased, while, at the same time, bonds were trading at deep discounts. Deep discounts applied both to Congress and States' debt. Under the articles of the Confederation there was no viable solution to this political-financial conundrum.

This much was made abundantly clear by Alexander Hamilton in the *Federalist* 30. On the incompatibility of the political practice under the Articles of Confederation with the foundations of public credit he wrote:

> "The present confederation, feeble as it is, intended to repose in the United States an unlimited power of providing for the pecuniary wants of the union. But proceeding upon an erroneous principle, it has been done in such a manner as entirely to have frustrated the intention. Congress, by the articles which compose that compact (as has been already stated) are authorized to ascertain and call for any sums of money necessary, in their judgment, to the service of the United States; and their requisitions, if conformable to the rule apportionment are, in every constitutional sense, obligatory upon the states. These have no right to question the propriety of the demand; no discussion beyond that of devising the ways and means of furnishing the sums demanded… yet, in practice it has been continually exercised and would continue to be, as long as the revenues of the confederacy should remain dependent on the intermediate agency of its members."
>
> Alexander Hamilton, *Federalist* 30.

The relevant text of the Articles of the Confederation is Article VIII. It states that "All charges of war, and all other expenses that shall be incurred for the common defense or general welfare, and allowed by the united states in congress assembled, shall be defrayed out of a common treasury, which shall be supplied by the several states in proportion to the value of all land within each state…. The taxes for paying that proportion shall be laid and levied by the authority and the direction of the legislatures of the several states within the time agreed upon by the united states in congress assembled."

As it turned out, the fact that the problem of the financing of the Union was solved in principle did not help much in practice. Since revenues were to be collected under the "authority and direction" of the states it proved impossible to find practical solutions out of the financial bind under the Articles of the Confederation. A Constitutional solution was called for.

The U.S. Constitution:

1. Strengthened the ability of federal government to tax (article 1, section 8, clause one: the power to impose and to collect taxes and duties);

2. Gave the central government exclusive competence to regulate external trade and interstate commerce (article 1, section 8, clause three: the commerce clause).

Alexander Hamilton anticipated the substance and form of the solution in a letter to James Duane, written in 1780. The two passages below show that Hamilton was fully aware of the political nature of the problem and also of the Constitutional form of the solution.

> "The Confederation, too, gives the power of the purse too entirely to the State Legislatures. It should provide perpetual funds, in the disposal of Congress, by a land tax, poll tax, or the like. All imposts upon commerce ought to be laid by Congress, and appropriated to their use. For, without certain revenues, a government can have no power. That power which holds the purse strings absolutely, must rule. This seems to be a medium which, without making Congress altogether independent, will tend to give reality to its authority."
>
> Alexander Hamilton, Letter to James Duane, September 1780.
>
> "The Confederation, in my opinion, should give Congress complete sovereignty, except as to that part of internal police which relates to the rights of property and life among individuals, and to raising money by internal taxes. It is necessary that everything belonging to this should be regulated by the State Legislatures. Congress should have complete sovereignty in all that relates to war, peace, trade, finance; and to the management of foreign affairs; the right of declaring war; of raising armies, officering, paying them, directing their motions in every respect; of equipping fleets, and doing the same with them; of building fortifications, arsenals, magazines, etc., etc.; of making peace on such conditions as they think proper; of regulating trade, determining with what countries it shall be carried on; granting indulgences; laying prohibitions on all the articles of export or import; imposing duties; granting bounties and premiums for raising, exporting or importing, and applying to their own use, the product of these duties—only giving credit to the States on whom they are raised in the general account of revenues and expenses; instituting Admiralty Courts, etc.; of coining money; establishing banks on such terms, and with such privileges as they think proper; appropriating funds, and doing whatever else relates to the operations of finance; transacting everything with foreign nations; making alliances, offensive and defensive, treaties of commerce, etc., etc."
>
> Alexander Hamilton, Letter to James Duane, September 1780.

With clause 1, of section 8, of the first article of the U.S. Constitution, the U.S. Federal Government had the means to ensure solvency. Not only under the specific circumstances of the moment but even in the face of unforeseeable contingencies in the future. In the *Federalist* 30, Alexander Hamilton, contrasts the case of a government constrained in its ability to tax with the case of a government capable of generating additional sources of future revenue. In the case of the constrained government, if a war were to break out, it would immediately cause:

> "… the destruction of public credit at the very moment that it was becoming essential to the public safety. To imagine that at such a crisis credit might be dispensed with, would be the extreme infatuation…. The loans it might be able to procure, would be as limited in their extent, as burdensome in their conditions. They would be made upon the same principles as usurers commonly

> lend to bankrupt and fraudulent debtors… with a sparing hand and at enormous premiums."
>
> Alexander Hamilton, *Federalist* 30.

In contrast, the government that can generate additional sources of revenue can guarantee access to funding at favorable terms:

> "The power of creating, by its own authority, new funds from new objects of taxation, would enable the national government to borrow, as far as its necessities might require. Foreigners, as well as the citizens of America, could then reasonably repose confidence in its engagements; but to depend upon a government that must itself depend upon thirteen other governments, for the means of fulfilling its contacts, when once its situation is clearly understood, would require a degree of credulity, not often to be met with in the pecuniary transactions of mankind, and little reconcilable with the usual sharp sightedness of avarice."
>
> Alexander Hamilton, *Federalist* 30.

Sargent (2013) emphasizes that the U.S. Constitution marks a clean break from the fiscal policy regime defined under the Articles of the Confederation. The Constitution empowered the U.S. Federal Government to honor the debts accumulated during the War of Independence. It did also provide the Federal Government with the means to meet future financial challenges (most likely associated the war). According to Sargent, George Washington and Alexander Hamilton wanted to create the conditions for a fundamental turnaround in U.S. public finances and financial policies. That enabled a fundamental shift in the political process generating government revenues (and expenditures). The rules for a new political game were set.

But it was still necessary to apply the new rules to the particulars of the situation. The Treasury Department was created on September 2, 1789. On September 21, Congress asked the newly appointed Secretary of the Treasury, Alexander Hamilton, to submit a plan "for an adequate provision for the public credit." On January 14, 1790, the *First Report on Public Credit* was delivered to Congress.

B. U.S. Federal Budget and Treasury Finance

> "In nothing are appearances of greater moment than in whatever regards credit. Opinion is the soul of it; and this is affected by appearances as well as realities."
>
> Alexander Hamilton, *First Report on the Public Credit,* 1790.

In the year after the start of U.S. Federal Government, the situation of public finances was dire. The situation is clear from the presentation in Sylla (2011). The total debt at the federal level could be accurately estimated in *The First Report on Public Credit* at

$54.1 million, of which $11.7 was foreign-owned. The totals include interest arrears. The total amount of debt accumulated by the States was—at the same time—estimated (also including arrears) at about $25 million. The total came close to $80 million, which is about 40 percent of estimates of U.S. GDP for 1790. It is important to emphasize that just as the new Federal Government was taking office it was bankrupt. As a matter of fact, it was in default both on its domestic as well as on its foreign debt (see Garber, 1991 for a detailed account).

Under the contractual conditions for interest payments, the United States would have to pay annually almost $4.6 million. This compares with Hamilton's estimate of the government's operating expenditures at $0.6 million—in fact the first budgetary outturn for a full fiscal year stood at $0.829 million (Sylla, 2011). That puts interest payments on total debt at a staggering almost 85 percent of total expenditures. The situation looks even darker when expenditures are compared with revenues.

Sylla (2011) documents Federal tax revenue for the years 1789–1800. For the crucial period 1789–1794, the information does not seem to be available from sources preserved in the U.S. (such as the Historical Statistics of the United States). Sylla, however, was able to find records in the archives of the University of Amsterdam. He discovered these records in the Van Eeghen documentary collection. The Van Eeghen were investors in America and, as part of due diligence, kept records of data on U.S. finances. It was from these records that Sylla was able to compile his series.

In any case, for the fiscal year 1790 total federal tax revenues amounted to $1.640 million. Debt service alone was about 2.8 times the tax revenue available in 1790.

Sylla (2011) further reports that in March 1790 Alexander Hamilton informed the President that the U.S. Treasury did not have enough funds to honor current expenditures and interest payments on Dutch loans. Hamilton sought authorization for a new $100,000 loan. Within two days Washington authorized the loan. The Federal Government was, in 1790, operating under a binding cash constraint.

Sylla (2011) strongly warns us against hindsight bias. He reports many scholars who argue that the solvency of the U.S. Federal Government was evident from its early days. Clearly the quote that opens this sub-section shows that Alexander Hamilton would want his contemporaries to think so. Management of expectations (opinion) was crucial. Nevertheless, it is the case that at the beginning the feasibility of Alexander Hamilton's plan to restore public credit was very far from obvious.

Hamilton himself formulates the crucial problem in *The First Report on Public Credit*:

> "The interesting problem now occurs: Is it in the power of the United States, consistently with those prudential considerations which ought not be overlooked, to make a provision equal to the purpose of funding the whole debt,

> at the rates of interest it now bears, in addition to the sum which will be necessary for the current service of the Government?
>
> The Secretary will not say that such provision would exceed the abilities of the country, but he is clearly of the opinion that to make it would require the extension of taxation to a degree and to objects that the true interest of public creditors forbids. It is therefore… to be expected… that they will concur… in such modification of their claims… as will facilitate to the Government….
>
> … every practical exertion ought to be made to scrupulously fulfill the engagements of Government: that no change in the rights of creditors ought to be attempted without their voluntary consent; and that this consent ought to be voluntary in fact as well as in name."
>
> Alexander Hamilton, *First Report on Public Credit,* 1790.

It is clear that Alexander Hamilton was looking at ways to reduce the interest burden of public debt. In the second paragraph of the excerpt reproduced above, Alexander Hamilton argues that it is in the best interest of domestic creditors to facilitate debt service to the government. Otherwise taxation would have to increase so much that it would be inconsistent with public interest. In the third and last paragraph, Hamilton argues that the process of changing contractual provisions must be fully voluntary. Under these principles it is proper to consider that the proposed procedure was "a market-based debt service reduction scheme." (see Garber, 1991).

The challenge to Alexander Hamilton was very difficult: how to build U.S. federal public finances so that the fundamentals of debt sustainability could be ensured? How to manage expectations and perceptions of U.S. and international investors in order to facilitate smooth financing?

U.S. debt was dominated, as was frequently the case in the 18th century, by consolidated perpetual annuities (consols). Consols paid a percentage of their face value forever. The government, however, had the option to redeem, at any time, the consol at face value. That allowed the government to benefit from falling interest rates. Hamilton needed to generate expectations of falling interest rates (increasing bond prices).

Interestingly, Garber (1991) documents that there was little controversy on Hamilton's proposal to pay for foreign debt in full. He also shows that even in the case of foreign debt, Hamilton did not allow for compound interest to apply to interest rate arrears. According to estimates in Garber (1991) the value saved as of January 1, 1790 represented about 2.3 percent of the total of foreign debt. The payment of external creditors made it possible for the U.S. to tap European bond markets. As described below, European finance played an important role in Hamilton's market-based strategy, through the use of the Sinking Fund.

For internal debt, Hamilton's proposals and debated options were much richer (see Sylla, 2011 for a summary presentation and Garber, 1991, for the details). In the end, the Funding Act of August 1790 provided that domestic debt could be converted, under prescribed conditions, into new domestic debt instruments. The new bonds were 6 percent coupon bonds (the 6s); 6 percent coupon bonds with interest payments deferred 10 years (the deferred) and 3 percent coupon bonds (3s). The new bonds paid interest quarterly. The conversion offer treated principal and interest differently. For the principal, the offer was conversion at par into two-thirds 6s and one-third deferred. For interest arrears, the conversion was at par into 3s. There were specific provisions for the conversion of the debts of the States. The details are of no particular relevance for the line pursued in this paper.

Garber documents that the market value of the offer was significantly below par. Hence there was a substantial reduction in net present value of U.S. Treasury liabilities. On the same vein, Sylla shows that interest payments were reduced from about $4.6 million to $3.6 million. This was a substantial reduction.

In line with the last paragraph of the above quote from *The First Report on Public Credit* the conversion offered in the Funding Act was voluntary. Old bond holders were promised that they would be paid in 1791 as if they had subscribed 6s on two-thirds of the par value of their claims (Garber, 1991). Sylla asserts that the conversion was a major success. By the end of 1794, 98 percent of domestic debt had been voluntarily converted into the new instruments (see Sylla, 2011).

Moreover, while the take up of the voluntary offer was gradual—by September of 1791 $31.8 million of the new instruments had been subscribed—the reaction of market prices of bonds was much more immediate. Bond prices rose (bond yields fell) already in anticipation of the approval of the Funding Act—which occurred in August 1790. The adjustment continued subsequently.

A very important element of Alexander Hamilton's plan was the Sinking Fund. The Fund would benefit from revenue originating from the operation of the Post Office. In the *First Report on Public Credit* the current revenue generated by the Post Office is estimated at $100,000. It is further asserted that the sum is likely to considerably grow over time. Hence, the Fund benefited from an important and reliable source of funding. The main ostensive argument for the Sinking Fund was the need to repay (to extinguish) public debt.

> "[It is] a fundamental maxim in the system of public credit of the United States, that the creation of debt should always be accompanied with the means of extinguishment. This he regards as the true secret of rendering public credit immortal."
>
> Alexander Hamilton, *First Report on Public Credit,* 1790.

A public debt scheme that respects the maxim above can be said to provide for appropriately funded debt. Hence, this feature of Hamilton's scheme was directly a confidence building device.

But the Sinking Fund also provided Alexander Hamilton with considerable flexibility to manage the evolution of bond markets. It helped in smoothing the transition and in anchoring expectations. The relevant rules are explicit from the *Report:*

> "The Secretary proposes that the net product of the Post Office to a sum not exceeding one million of dollars be vested in commissioners, to consist of the Vice-President of the United States, or President of the Senate, the Speaker of the House of Representatives, the Chief Justice, Secretary of the Treasury, and Attorney-General of the United States, for the time being, in trust; to be applied by them, or any three of them, to the discharge of the existing public debt, either by purchases of stock in the market, or by payments on account of the principal, as shall appear to them most advisable, in conformity to public engagements; to continue so vested until the whole of the debt shall be discharged. As an additional expedient for effecting a reduction of the debt, and for other purposes, which will be mentioned, the Secretary would further propose, that the same commissioners be authorized, with the approbation of the President of the United States, to borrow, on their credit, a sum not exceeding twelve millions of dollars."

The possibility of resorting to external loans was, therefore, justified because "… it ought to be the policy of the government to raise the value of the stock to its true standard as fast as possible." Therefore, the Sinking Fund was meant to play three very important (and related) roles: first, to anchor expectations on a regime where Treasuries were properly funded; second, to accelerate the transition (increase) in bond prices to their new fundamental value ("true standard"); and, third, to provide the Treasury with an effective instrument for bond market stabilization in case of disturbances. The latter role was not yet made explicit. It became clear through the actions of the Sinking Fund in stopping the financial panics of 1791 and, more clearly and importantly, 1792.

Coming back to the quote that we used in the epigraph to this subsection, Alexander Hamilton was fully aware of the importance of opinion. Today, it would be standard to refer instead to perceptions and expectations. In any case the crucial point is that financial market developments are sensitive to changes in opinions, perceptions and expectations. The Sinking Fund gave Alexander Hamilton tactical flexibility. Such flexibility was instrumental for the management of expectations. Hence, it facilitated convergence to a new and superior equilibrium. The same tactical flexibility also allowed the Secretary of the Treasury to resist pressures leading to possible self-fulfilling crisis in public financing. But that is the theme to be discussed in the next subsection.

III. HOW TO RESTORE STABILITY IN THE FACE OF FINANCIAL PANIC?

The success of Hamilton's plan described in the previous section and the rapid development of financial markets and financial organizations led, in 1792, to a dangerous threat to financial stability. In January 1792, Alexander Hamilton was monitoring financial developments and wrote a letter to William Seton with his assessment:

> "I have learnt with infinite pain the circumstances of a new bank having started up in your city. Its effects cannot but be in every way pernicious. These extravagant sallies of speculation do injury to the government and to the whole system of public credit, by disgusting all sober citizens and giving a wild air to everything."
>
> Alexander Hamilton to William Seton, January 18, 1792.

The letter is important. It shows Hamilton's accuracy in observing financial market developments: securities' prices peaked in February 1792. More importantly, it makes it explicit that Hamilton was concerned with the stability of the system. Repeating the quote for emphasis: "these extravagant sallies of speculation do injury to the government and to the whole system of public credit."

A letter to William Seton (private) dated March 25, 1792 provides an overview of Hamilton's approach to stabilize financial panic. Clearly the Sinking Fund figures prominently. The additional aspect to highlight is that it makes explicit the role of external financing. This may have been one of the main motivations to repay foreign debt (almost) in full. In particular, Hamilton stresses that a loan has just been obtained in Amsterdam at an interest rate of 4 percent. It provided the U.S. Treasury with a sizeable cash buffer.

Hamilton considers the possibility of the 6-percents falling below par. Such development would warrant intervention. He also argues that it is hard to understand how domestic investors are unwilling to lend to government at an interest rate (4 percent) acceptable to foreigners. He regrets that investors are dumping Treasuries below their fundamental value. He conjectures that extraneous factors "Duer's failure" are affecting expectations in ways incompatible with fundamentals.

> "If six per cents should sink below par, you may purchase on account of the United States at par to the extent of fifty thousand dollars. You will not, however, declare on whose account you act, because, though there is, as to a purchase on that principle, no difference of opinion among the trustees, the thing is not formally arranged, and this is Sunday.
>
> It will be very probably, conjectured that you appear for the public, and the conjecture may be left to have its course, but without confession. The purchase ought, in the present state of things, to be at auction, and not till to-morrow

evening. But if the purchase at auction will not tend as well to the purpose of relief as a different mode, it may be departed from; the usual note must be made of persons, time, etc. You will consider whether done all at once, or a part now and a part then, will best answer the purpose; in the state of this market the latter mode is found preferable. I have just received a letter from Mr. Short, our minister resident, dated Amsterdam, 28th December, by which he informs me that he has effected a loan for three millions of florins at four per cent interest, on account of the United States. This may be announced; and as, in the present moment of suspicion, some minds may be disposed to consider the thing as a mere expedient to support the stocks, I pledge my honor for its exact truth. Why then so much despondency among the holders of our stock? When foreigners lend the United States at four per cent, will they not purchase here upon a similar scale, making reasonable allowance for expense of agency, etc.? Why then do individuals part with so good a property so much below its value? Does Duer's failure affect the solidity of the government?

After paying the present quarter's interest I shall have near a million dollars in cash, and a million more in bonds from the duties of last year. All this is truly so much beforehand. The duties for the current year being fully adequate to the objects of the year, except the further sum of about five hundred thousand dollars for the western expedition, for which the ways and means have been proposed. Is the treasury of Great Britain comparatively in so good a state? Is the nation comparatively so equal to its debt? Why then so much depression? I shall be answered: The immediate necessity for money. But if the banks are forbearing as to the necessity of paying up, cannot the parties give each other mutual credit and avoid so great a press? If there are a few harpies who will not concur in this forbearance, let such be paid and execrated, and let others forbear.

The necessity of great sacrifices among your dealers cannot affect the nation, but it may deeply wound the city of New York by a transfer to foreigners and citizens of other States of a large mass of property greatly below its value. The face of your affairs may undergo for a considerable time a serious change.

Would not the plan I suggested to you in my last be a means of securing more effectually the debts due to the bank by accepting in part payment the credits on your books? While I encourage due exertion in the banks, I observe that I hope they will put nothing to risk. No calamity truly public can happen while these institutions remain sound. They must, therefore, not yield too far to the impulse of circumstances."

Alexander Hamilton to William Seton (private letter), March 25, 1792.

The plan referred to by Hamilton in the last paragraph of the letter of March 25 is explained in another letter to William Seton, extensively quoted in Sylla, Wright and Cowen (2009).

The authors interpret the actions and reasoning of Hamilton as anticipating Walter Bagehot's lender of last resort doctrine. It is worth recalling the doctrine. The classical function of lender of last resort was articulated by Thornton (1802) and Bagehot (1873). An excellent presentation is Humphrey (1992). The lender of last resort function aims at protecting the financial system as a whole. It does not aim to save individual organizations. Only illiquid but solvent corporations are eligible. Insolvent entities should fail. The balance sheet and financial integrity of the liquidity provided are protected by adequate collateral. According to the doctrine, liquidity, through the lender of last resort function, should be available only at penalty rates.

Hamilton defended a very large supply of liquidity—$1,000,000—that compares with Bagehot's reference to "unlimited." The two are compatible if interpreted as "as large as necessary to stem the panic and stabilize the situation." One million dollars was, in late 18th century America, a very large amount.

Bagehot refers to "a very high rate of interest" while Hamilton points specifically to 7 percent. Seven percent was the usury ceiling in New York and the "normal" rate was 6 percent. In the various documents quoted above even lower interest rates have been referred to: 4 percent for the Dutch loan and 5 percent as a discount rate to evaluate the fundamental value of Treasuries. Hamilton emphasizes that liquidity is to be provided only against good collateral. In sum, for Hamilton the system must generate the necessary liquidity for undertaking capable of posting good collateral. Credit is to be provided at a high interest rate. It follows that Hamilton anticipated the classical lender of last resort doctrine (see Sylla et al., 2009).

But there is another fundamental question. What assets did Hamilton identify as eligible collateral? In the letter quoted in Sylla et al. (2009), Hamilton lists the 6s, the 3s and the deferred as the appropriate assets for the purpose. He suggests that the 6s should be accepted as collateral at par, the 3s should be accepted at 50 percent of nominal value and the deferred at 60 percent. The values indicated are below but close to the market prices that were to prevail in April 1792 (but clearly below those that had prevailed in early March). Sylla et al. also quote a remarkably clear message from Hamilton to William Seton. There Hamilton urges Bank of New York to ponder "how much more can be done in favor of parties who can pledge *public stock* as collateral security. This security of credit you are sure is a good one." It is hard to think how a case for U.S. Treasuries as safe and liquid assets could be made more emphatically.[4]

[4] It is worthwhile to refer to the language used by Walter Bagehot in *Lombard Street.* Bagehot refers that there are two rules to be followed in order to stay a financial panic. The first we have already referred to in the text: credit should be provided only at very high interest rates. But the second is more important from the perspective we are using in our argument. The second is that credit should be provided "freely and vigorously"… "on all good banking securities." And Bagehot argues: "The reason is plain. The object is to stay alarm, and nothing should be done therefore to cause alarm. But the way to cause alarm is to refuse someone who has good security to offer. The news of this will spread in an instant through all the money market in a moment of terror …." Perceptions about what is a good and safe security are cornerstones of financial structures.

At the same time that Alexander Hamilton suggested this plan, he was giving instructions to intervene in the market to stabilize the value of Treasury liabilities. By making these same values eligible as collateral in a panic, Hamilton was favoring the emergence of U.S. Treasuries as the ultimate safe asset. By doing so, Hamilton managed to put public credit at the very center of the U.S. financial system. The operation of the Sinking Fund and, more broadly, Hamilton's actions in the financial panic of 1792 made it clear that the U.S. financial system was, after little over two years, capable of preventing accidents getting out of control.

In my view, there is a point which should be highlighted. In the Thornton-Bagehot classical lender of last resort doctrine, actions by the authorities aim at stabilizing the financial system in the face of panic. In Alexander Hamilton's actions, his goal was broader. It did encompass halting the financial panic and ensuring financial stability. But it was also focused on the purpose of building public credit on strong foundations and ensuring stability in the market for Treasury securities. By doing so, Alexander Hamilton effectively excluded adverse self-fulfilling equilibria.

IV. LESSONS FOR THE EURO AREA AND ITS MEMBER STATES

The first lesson is the very close relation between fiscal policy, finance and politics. The process described in sections 2 and 3 was politically loaded. In order for a program to be successful, it needs to be viable in all three dimensions simultaneously. Clearly, sovereign debt crises in the euro area illustrate the co-evolutionary nature of fiscal policy, finance and politics (at the national and at the international levels). A systemic crisis requires systemic solutions. One of the outstanding talents of Alexander Hamilton was his ability to reason in an integrated way taking into account multiple systemic interdependencies.

Politics are also very prominent in subsequent developments. The competence to issue bank charters was a matter of dispute between Federal and State governments. A coalition between State governments looking for financing for infrastructure projects; rural debtors seeking financial insurance, and bank incumbents that wanted to protect local monopolies and rents led to the fragmentation of the U.S. banking system around a myriad of local banking monopolies. For similar reasons, the charter of the Bank of the United States was not renewed. Some aspects of the banking system, as conceived by Hamilton program, did not prove politically resilient. However, the system developed clearing houses and correspondent bank networks, as substitutes for continental coverage by inter-state and intra-state bank branching. Alexander Hamilton referred to banks as "the happiest engines that were ever invented to advance trade." He would have been proud that the U.S. had, by far, the largest banking system in the world at the beginning of the 20th century.[5]

---

[5] I am grateful to Richard Sylla for the perspective in the last sentence in the paragraph and for bringing the Hamilton quote to my attention.

The close relation between fiscal policy, finance and politics was also clearly revealed in later episodes of stress in States' finances. In the U.S., the quarter of century after 1815 has been labeled "era of internal improvement." Many States invested heavily in transport projects (e.g., canals) and in banks. From the 1830s, banks issued paper bank notes backed by Federal or State debt (a requirement to obtain a bank charter). The U.S. was characterized by a specie standard that coexisted with multiple paper currencies. Bank notes were redeemable at par at the bank of issue. However, they traded at discounts higher the further the operation from the location of the bank of issue. This increased transactions' costs. Moreover, bank notes traded at floating exchange rates. As documented in Wallis et al. (2004), between 1841 and 1842, eight States and the Territory of Florida defaulted on their debts. Three other States were very close to default but just managed to avoid it. There was a clear link between States' risk and banking risk. During the 1840s, Congress debated whether the Union ought to assume States' debts (again) (see Sargent, 2013, James, 2014, Kincaid, 2014). The decision was not to do it. It negatively affected the credit standing of non-defaulting States and of the Federal Government. But it also fostered balance budget amendments in more than half of the American States. Sargent (2013) interprets the episode as decisive for the survival of the political autonomy of the States inside the overall U.S. political system. A second bail-out would have been associated with intrusive political controls.

In my view the primacy of the national dimension of politics in the European Union makes the case for market-based discipline in Europe unavoidable. Only if Member States are ultimately responsible for the consequences of their fiscal decisions can national sovereignty be preserved.

There are three points of fundamental political relevance. These points are crucial for a correct interpretation of this first lesson. First, distribution issues lie at the heart of politics. This is clearly illustrated by the politics of public finance and public credit. In the U.S., distributional concerns led to violence. One example was the Shays rebellion of 1786-1787. It was a revolt by debt burdened farmers against foreclosures and regressive taxation. Another example is the Whiskey Rebellion of the early 1790s motivated by resistance to excises on whiskey. Moreover, Hamilton's funding plan resulted from a political deal that involved the federal assumption of States' debts, the temporary transfer of the federal capital to Philadelphia and its eventual permanent locations on the banks of the Potomac (at the end Washington D.C.—see Chernow, 2004, for details).[6]

Also, in Europe, questions of distribution lie at the heart of the policy debate. Two brief examples will suffice. First, there is the question of legacy assets. It is a question of distribution and since it relates to initial conditions at the beginning of the crisis, it is

[6] The Federal government took on state debts accumulated during the War of Independence, which constituted a "pure public good." This contrasts with the more recent accumulation of public debt in Europe. In the latter case, the motivation for debt accumulation was national.

particularly difficult to solve. The question divides the Union in creditor and debtor countries. Second, in all Member States the question of distribution of adjustment costs is of great salience. In particular, in Europe unemployment, in general, and youth unemployment, in particular, is very high. That makes distribution concerns one of the most salient political issues in the crisis.

The second point of fundamental political relevance is that the U.S. public finances in the 18^{th} and 19^{th} centuries and Europe's public finances in the 20^{th}–21^{st} centuries are very different. U.S. public finances were in line with the principles of Gladstone (see Schumpeter, 1954). According to this model, government intervention in the economy and society was to remain minimal. The share of public expenditures on GDP was very low (in 1790, federal government's operating expenditures were about 0.4 percent of GDP). The purpose of taxation was to raise tax revenue to ensure the functioning of administration and the servicing of public debt. In peacetime, government was to have a surplus that would lead to the reduction of debts incurred in war. In 1789, most debt was federal and the decisive factor in debt accumulation was a common cause: the War of Independence. In contrast, States in Europe developed after the Second World War very powerful welfare states. Europe developed a model of social market economy. Government intervention aims at macroeconomic stability, social security and fairness in distribution. General government expenditures amount to about 50 percent of GDP in some countries. Public expenditure is concentrated at the national level. Most public debt is national and has accumulated in the conduct of national fiscal and financial policies.

The last fundamental political point relates to differences between the U.S. and Europe in the organization of the inter-state (inter-national) political system. The European Union is a Union of states, peoples and citizens. From this point of view it is a confederation. It was formed a few years after the end of the devastation caused by the Second World War. Its main aim is to prevent any such conflict from devastating the European continent ever again. But the European Union developed an effective framework for international law among its Member States. This corresponds to a concrete application of Kant's idea of a "federation of free states."

The process of European integration has been driven to a very large extent by economic integration. The Single Market and the Single currency are its most emblematic realizations. The European Union provides a pole of attraction and a role model favoring peace, democracy and human rights. In sum, the European Union demonstrates the real world possibility of a federation of free states. Specifically it shows the possibility of effective application of international law.

Further progress is necessary and can reasonably be hoped for. The Global Crisis has shown that the current level of economic and financial integration at world level makes coordination and cooperation at global level a necessary prerequisite for effective policy action, in crucial domains. These include security, climate change, natural resources' security, regulation of world trade and finance and much else. The experience provides an example of what is possible to achieve.

The European Union provides an example for continental integration in other parts of the world. It also provides a basis for global political cooperation. European integration and unification is a new process in history. It is a new and important institutional design. It has to be considered in its own terms and not as a kind of incomplete federation. Europe is fundamentally different.

The second lesson is that there is a strong case to give priority to public credit. There is a strong case to pay the public debt. The case is based on political, public finance and also on broader economic and financial arguments. The arguments put forward by Hamilton are in line with the implications of recent empirical research by Christoph Trebesch and co-authors. Alexander Hamilton managed to establish public credit while ensuring debt-service at favorable terms.

The importance of this lesson has been emphatically repeated by Jean-Claude Trichet during his tenure as president of the ECB. Alexander Hamilton's argument shows that the case for supporting public credit is very general and far-reaching. There are arguments related to public finance; the overall financing of the national economy; financial development and effects on economic activity and growth mostly through impacts on innovation and entrepreneurship. But there are even broader arguments associated with the quality of institutions and political stability.

The third lesson is that the fundamental foundation of public credit requires fiscal sustainability. In the U.S. that required the U.S. Constitution to substitute for the Articles of the Confederation.

In the euro area, after the failure of euro area governance to prevent the crisis, significant progress was achieved. First, the fiscal governance of the euro area has been strengthened through the adoption of important EU legal acts (the Six Pack and the Two Pack). Second, and more importantly, in parallel, member states have also adopted the Fiscal Compact. Broadly speaking, the rules in the Fiscal Compact are in line with the Six Pack.[7] The important difference is that the Fiscal Compact aims at internalizing the European constraints into national governance frameworks. This aspect is decisive. In Europe politics are dominated by the fundamental principle of the dominance of the national dimension of politics. Hence European rules can only be fully effective once subsumed in the national frameworks.

The European rules prescribe a fiscal position close to balance or in surplus over the medium term. The effective operation of such rule ensures a slowly declining public debt to GDP ratio (assuming positive nominal growth of GDP over the medium term). Fiscal sustainability is guaranteed by compliance with European rules. Nevertheless it is sobering to recall that government bankruptcy in the early years of the U.S. had, at its

[7] The fiscal governance framework in the Euro Area has also become more complex, which gives rise to a number of other challenges (see Eyraud and Wu, 2014).

root, political behavior not in line with the letter of the Articles of the Confederation. At the end of the day the responsibility has to be national: in accordance with the principle of the primacy of the national dimension of politics.

The fourth lesson is that smooth and quick transition requires active and skillful management. This is particularly so given the importance of perceptions and expectations. The transition must be so managed that perverse equilibrium paths are avoided.

Alexander Hamilton was able to secure external financing and to quickly establish public credit in the U.S. He did so through an ingenious market based debt service reduction strategy. He further backed it through the active operation of the Sinking Fund. The Fund helped to accelerate the transition to a high credibility regime where U.S. Treasuries were regarded as the ultimate safe asset.

For Alexander Hamilton, successful management of the transition was in the best interest of both the U.S. Treasury and of its creditors. This point is fundamental and of general relevance: a lasting and true solution to a debt crisis requires a good understanding between debtors and creditors. This is a difficult collective action problem that requires considerable political skill. Hamilton managed this difficult balance with impressive success.

Clearly a transition is never complete until the new institutions are ready to prevent and manage accidents. In managing the 1792 crisis, Hamilton proved that the system was resilient at the same time that it consolidated the role to Treasuries as the ultimate safe asset.

In Europe financial support has been made available in diverse forms. The ECB has signaled that "Within our mandate, the ECB is ready to do whatever it takes to preserve the euro" and Mario Draghi, the President of the ECB added, "and believe me it will be enough." The ECB announcement came in July 2012. One month after, heads of states or government reached a political agreement on deeper Economic and Monetary Union. Since August 2012 quick progress has been achieved. In the autumn of 2013, the catastrophic risk associated with euro area fragmentation was no longer a salient concern for global investors. The acute stage of the euro area crisis is behind us. European financial architecture is now much changed. It will have the banking union at its core, with the Single Supervisory and Single Resolution Mechanisms.

Nevertheless it is worth repeating that a transition is never complete before the new framework is capable to prevent accidents and to minimize their effects in case they occur. Clearly there is still some way to go both for the euro area and at the national level. This point is even more important when it is recognized that the performance of financial system is much affected by financial stability. To be explicit: empirical evidence suggests that financial development is good for growth when it is compatible with financial stability. Given the long lasting adverse effects from financial crises and instability they may dominate the effects of finance on growth. All results are uncertain.

Calomiris and Haber (2014) managed to identify only 6 countries (out of 117) that combine efficiency and stability in finance.

That leads to the **fifth lesson**, given that it is always possible that accidents will happen public finance and the financial system must be robust and resilient. The institutional framework underpinning budgetary discipline and financial stability must be designed so as to be able to stem episodes of financial panic and to exclude perverse self-fulfilling equilibria. Alexander Hamilton proved more than equal to the task during the financial panic of 1792.

In 2009-2010, the euro area was not prepared for sovereign debt crises in the euro area. The euro area was unable to prevent financial fragmentation and negative sovereign – bank credit risk negative feedback loops. Much progress has been made. But the job is not yet done. The priority is the realization of the banking union complemented by the integration and development of financial markets. The credibility of the banking union requires the existence of financial backstops of sufficient capacity to break the vicious sovereign-bank links and, hence, to ensure robust and resilient financial integration.

To conclude: For Europeans, the most inspiring message from Alexander Hamilton may well be:

> "Whoever considers the nature of our government with discernment will see that though obstacles and delays will frequently stand in the way of the adoption of good measures, yet when once adopted, they are likely to be stable and permanent. It will be far more difficult to *undo* than *to do.*"
>
> *Gazette of the United States,* September 1, 1790.

Paraphrasing Thomas Sargent: That may well have been true of the U.S. then and it is certainly true for Europe now.

V. REFERENCES

Arellano, Cristina, 2008. Default Risk and Income Fluctuations in Emerging Economies. *American Economic Review,* 98(3): 690-712.

Arellano, Cristina and Narayana Kocherlakota, 2008, Internal Debt Crises and Sovereign Defaults, *NBER Working Paper,* 13794, February.

Bean, Richard, 1973, War and the Birth of the Nation State, *The Journal of Economic History.*

Bagehot, W., 1873, *Lombard Street*, London: H.S. King in *The Collected Works of Walter Bagehot,* volume nine, edited N. St. John-Stevas, London: The Economist.

Barro, Robert, 1979, On the Determination of the Public Debt, *Journal of Political Economy,* vol. 97 (5), 940-971.

Basseto, Marco, 2005, Equilibrium and Government Commitment, *Journal of Economic Theory,* 124 (1): 79-105.

Bi, Huixin and Eric M. Leeper, 2013, Analyzing Fiscal Sustainability, available at http://mypage.iu.edu/~eleeper/Papers/BiLeeper_Sustainability.pdf

Bianchi, Javier, 2011, Overborrowing and Systemic Externalities in the Business Cycle," *American Economic Review,* 101 (7): 3400-3426.

Bohn, H., 1998, "The Behavior of U.S. Public Debt and Deficits," *Quarterly Journal of Economics*, 113(3): 949–963.

Broner, Fernando, Aitor Erce, Alberto Martin and Jaume Ventura, 2013, "Sovereign Debt Markets in Turbulent Times: Creditor Discrimination and Crowding-Out Effects," draft, CREI and UPF, Barcelona.

Brunnermeier, Markus, Luis Garicano, Philip Lane, Marco Pagano, Ricardo Reis, Tano Santos, Stijn Van Nieuwerburgh and Dimitri Vayanos, 2011, European Safe Bonds (ESBies), euro-nomics, available at http://euronomics.com/wpcontent/uploads/2011/09/ESBiesWEBsept262011.pdf

Calomiris, Charles and Stephen Haber, 2014, *Fragile by Design: the Political Origins of Banking Crises and Scarce Credit,* Princeton: Princeton University Press.

Calvo, G. 1988. Servicing the Public Debt: The Role of Expectations, *American Economic Review*, 78(4), 647-661.

Calvo, G., 2013, The Liquidity Approach and the Price Theory of Money: Disentangling the Mysteries of Financial Crises, Mimeo dated October 24, 2013 available at http://www.columbia.edu/~gc2286/documents/CalvonotesonliquidityandcrisesOctober242013.pdf

Chernow, Ron, 2004, *Alexander Hamilton,* Penguin Books.

Cole, H. and T. Kehoe, 2000, Self-Fulfilling Debt Crises, *The Review of Economic Studies*, Vol. 67, No. 1. pp. 91-116.

Conesa, J. and T. Kehoe, 2012, Gambling for Redemption and Self-Fulfilling Debt Crises, *Federal Reserve Bank of Minneapolis Research Department Staff Report* 465.

Conesa, J and T. Kehoe, 2014. Is It Too Late to Bail-Out the Troubled Countries in the Eurozone? *Federal Reserve Bank of Minneapolis Research Department Staff Report* 497.

Cruces, Juan J. and Christoph Trebesch, 2013, Sovereign Defaults: The Price of Haircuts, *American Economic Journal: Macroeconomics*, 5 (3), pp 85-117.

Diamond, Douglas W., and Philip H. Dybvig, 1983, "Bank Runs, Deposit Insurance and Liquidity," *Journal of Political Economy*, 91(3), pp 401-419.

Drelichman, Mauricio and Hans-Joachim Voth, 2014, *Lending to the Borrower from Hell: Debt, Taxes and Default in the Age of Philip II,* Princeton: Princeton University Press.

Eaton, J., and M. Gersovitz (1981), Debt with Potential Repudiation: Theoretical and Empirical Analysis, *Review of Economic Studies*, 48(2): 289-309.

Eichengreen, Barry and Kevin O'Rourke, 2009, 2010, A Tale of Two Depressions, VoxEU, available at http://www.voxeu.org/article/tale-two-depressions-what-do-new-data-tell-us-february-2010-update

Eyraud, Luc, and Tao Wu, 2014, "Euro Area Policies: 2014 Article IV Consultation Selected Issues," IMF Country Report No. 14/199.

Garber, Peter, 1991, Alexander Hamilton's Market Based Debt Reduction Plan, *NBER Working Paper* 3597, January.

Gaspar, Vítor, 2005, Markets and Politics, *The Eurosystem, The Union and Beyond: an ECB Colloquium Held in Honor of Tommaso Padoa-Schioppa,* Frankfurt: European Central Bank, available at http://www.ecb.europa.eu/pub/pdf/other/eurosystemtheunionandbeyond200512en.pdf

Gaspar, Vítor, 2007, Bagehot and Coase Meet the Single European Market, in Douglas D. Evanoff, George G. Kaufman and John R. LaBrosse (eds.), *International Financial Instability: Global Banking and National Regulation,* World Scientific Studies in International Economics Volume 2.

Gaspar, Vitor, 2009, The European Union: a Great Transformation Toward Global Peace and Prosperity, unpublished manuscript presented at a session of the course Political Economy of European Integration at IEP, Universidade Católica Portuguesa, Academic Year 2009-2010.

Goodfriend, M. and R. King, 1988, Financial Deregulation, Monetary Policy and Central Banking, *Federal Reserve of Richmond, Economic Review,* May/June, pp. 3-22.

Ghosh, A. R., J. I. Kim, E. G. Mendoza, J. D. Ostry, and M. S. Qureshi, 2011, Fiscal Fatigue, Fiscal Space and Debt Sustainability in Advanced Economies, *NBER Working Paper*, No. 16782.

Hamilton, Alexander, 1780, Letter to Robert Morris, *First Letter,* Available from Alexander Hamilton, 1904, *The Works of Alexander Hamilton,* volume III, ed. Henry Cabot Lodge (Federal Edition), New York: G.P. Putnam's Sons.

Hamilton, Alexander, 1780, Letter to James Duane, dated September 3, *Second Letter,* Available from Alexander Hamilton, 1904, *The Works of Alexander Hamilton,* volume I, ed. Henry Cabot Lodge (Federal Edition), New York: G.P. Putnam's Sons.

Hamilton, Alexander, 1781, Letter to Robert Morris dated April 30, *Third Letter,* Available from Alexander Hamilton, 1904, *The Works of Alexander Hamilton,* volume III, ed. Henry Cabot Lodge (Federal Edition), New York: G.P. Putnam's Sons.

Hamilton, Alexander, 1790, *First Report on the Public Credit,* Report from the Treasury to Congress dated January 14, 1790. Available from Alexander Hamilton, 1904, *The Works of Alexander Hamilton,* volume II, ed. Henry Cabot Lodge (Federal Edition), New York: G.P. Putnam's Sons.

Hamilton, Alexander, 1795, *Defence of the Funding System*. Available from Alexander Hamilton, 1904, *The Works of Alexander Hamilton,* volume VIII, ed. Henry Cabot Lodge (Federal Edition), New York: G.P. Putnam's Sons.

Hamilton, Earl J., 1947, Origin and Growth of the National Debt in Western Europe, *The American Economic Review, Papers and Proceedings of the Fifty-ninth Annual Meeting of the American Economic Association,* Vol. 37, No. 2, May, 1947: pp. 118-130.

Henning, C. Randall, and Martin Kessler, 2012, "Fiscal Federalism: U.S. History for Architects of Europe's Fiscal Union," Peterson Institute for International Economics Working Paper No. 2012-1.

Humphrey, T., 1975, The Classical Concept of the Lender of Last Resort, *Federal Reserve of Richmond Economic Review* (January/February), 61: 2-9.

Humphrey, T., 1989, Lender of Last Resort: the Concept in History, *Federal Reserve of Richmond Economic Review* 75, March-April: 8-16.

Humphrey, T., 1992, Lender of Last Resort, in P. Newman, M. Milgate and J. Eatwell (eds.), *The New Palgrave Dictionary of Money & Finance,* London: Macmillan.

Humphrey, T. and R. Keleher, 1984, The Lender of Last Resort: a Historical Perspective, *Cato Journal*, vol 4, nº 1, (Spring/Summer), pp. 275-318.

James, Harold, 2014, U.S. Precedents for Europe, mimeo, to appear in a Federal Reserve of Cleveland Conference Volume edited by Owen Humpage.

Lienau, Odette, 2014, *Rethinking Sovereign Debt: Politics, Reputation and Legitimacy in Modern Finance,* Cambridge: Harvard University Press.

Kincaid, Russell, 2014, Comments on Vitor Gaspar's paper, "The Making of a Continental Financial System: Lessons For Europe from Early American History."

Krishnamurthy, Arvind and Annette Vissing-Jorgensen, 2007, The Aggregate Demand for Treasury Debt, *NBER Working Paper* 1288.

North, Douglass C., 1990, *Institutions, Institutional Change and Economic Performance,* Cambridge: Cambridge University Press.

North, Douglass C. and Barry R. Weingast, 1989, Constitutions and Commitment: The Evolution of Institutional Governing Public Choice in Seventeenth-Century England Source: *The Journal of Economic History*, Vol. 49, No. 4 (Dec.), pp. 803-832.

Panizza, Ugo, Federico Sturzenegger, and Jeromin Zettelmeyer. 2009. "The Economics and Law of Sovereign Debt and Default." *Journal of Economic Literature,* 47(3): 651–698.

Rosseau, Pierre and Richard Sylla, 1999, Emerging Financial Markets and Early U.S. Growth, *NBER Working Paper* 7448, December.

Rosseau, Pierre and Richard Sylla, 2001, Financial Systems, Economic Growth and Globalization, *NBER Working Paper* 8323, December.

Roch, Francisco and Harald Uhlig, 2012, The Dynamics of Sovereign Debt Crisis and Bailouts, Mimeo.

Sargent, Thomas and Neil Wallace, 1981, Some Unpleasant Monetarist Arithmetic, *Federal Reserve of Minneapolis Quarterly Review,* Fall.

Sargent, Thomas and François Velde, 1995, Macroeconomic Features of the French Revolution, *The Journal of Political Economy,* 103, (3), June: 474-518.

Sargent, Thomas, 2012, United States Then, Europe Now, *Nobel Lecture,* Chapter 10 in Thomas Sargent, 2013, *Rational Expectations and Inflation,* Third Edition, Princeton: Princeton University Press.

Schultz, Kenneth and Barry R. Weingast, 2003, The Democratic Advantage: Institutional Foundations of Financial Power in International Competition, *International Organization*, Vol. 57, No. 1 (Winter): pp. 3-42

Schumpeter, Joseph, 1954, *History of Economic Analysis,* London: George Allen & Unwin.

Sylla, Richard, 2011, Financial Foundations: Public Credit, the National Bank, and Securities Markets, in Douglas Irwin and Richard Sylla (eds.), *Founding Choices: American Economic Policy in the 1790s,* Chicago: University of Chicago Press.

Sylla, Richard, 2014, Early U.S. Struggles with Fiscal Federalism: Lessons for Europe?, *Comparative Economic Studies,* pp. 1-19.

Sylla, Richard, Robert Wright and David Cowen, 2009, Central Banker: Crisis Management during the Financial Panic of 1792, *Business History Review,* Spring, pp. 61-86.

Thornton, H., 1802, *An Enquiry into the Nature and Effects of the Paper Credit of Great Britain,* F. von Hayek, (ed.) London: George Allen & Unwin, 1939.

Trebesch, Christoph, 2011, Sovereign Default and Crisis Resolution, Ph.D. Dissertation, Free University of Berlin.

Uhlig, Harald, 2013, Sovereign Default Risk and Banks in a Monetary Union, *CES-Ifo Working Paper* 4368, August.

Wallis, John Joseph, Richard Sylla and Arthur Grinath IIII, 2004, Sovereign Debt and Repudiation: The Emerging Market Debt Crisis in the U.S. States: 1839-1843, *National Bureau of Economic Research Working Paper,* 10573, September.