

A Money View of Credit and Debt¹

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Perry Mehrling

Barnard College, Columbia University

Institute for New Economic Thinking

“Capitalism is *essentially* a financial system, and the peculiar behavioral attributes of a capitalist economy center around the impact of finance upon system behavior” (Minsky, 1967, p.33, my emphasis).

Dirk Bezemer says, “Finance IS among the fundamentals.” I agree. Further, “the omission of debt (in its many forms) is the major problem.” Okay, but I think the devil is really in the details of those many forms, and that’s where we need to focus discussion, because that is where we may differ. Following Dirk’s lead, I too will try to state, as simply as I can, what I personally currently believe to be “the correct diagnosis and the helpful solutions”. Even more, I will follow his suggested outline: Challenge, Journey, Work, Plans.

The Challenge

To begin with, and notwithstanding the abstractions of DSGE, I think it is not really correct to say that standard economics, and finance too, have omitted debt per se. What they have omitted is most of the reasons that debt is important. So far as I understand, under standard assumptions—intertemporal optimization with a transversality constraint and complete markets-- in a pure exchange economy current wealth is more or less a sufficient statistic to describe the state of an individual agent. The distribution of wealth across agents matters, but the way that it matters can be absorbed in the parameters used to characterize the “representative” agent. Wealth is discounted present value of income, and debt allows agents to allocate that wealth to a time path of consumption that is not constrained by the time path of income. There is debt, but its fundamental function is to substitute for the missing set of time and state contingent markets for goods.

When Ken Arrow first proposed this model in the 1950s, it was not at all supposed to be a positive model of the actual economy, rather a normative model of an ideal economy that we could use to

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calibrate policy intervention in the actual economy. That was the Old Keynesian (and Monetarist too) consensus. But in the 1970s, stimulated by the revolution in finance, Lucas and others began to explore the idea that the very same model, perhaps with a friction or two added, was actually a fairly close approximation to the actual economy. That is the New Keynesian (and New Classical) consensus.

Most critics today argue against the Lucas positive interpretation of the model. I would go farther, arguing against the Arrow normative interpretation of the model as well. In short, I think it is simply impossible for any real world market economy to achieve, hence an inappropriate benchmark for policy, and for theory as well. It is impossible because it fundamentally misconceives the role that markets, and specifically financial markets, play in our economy. Neither markets, nor the state, whether separately or in cooperation, can ever be expected to defeat the dark forces of time and ignorance. (Nor would we honestly want them too, since life is all about experience and discovery.) Fundamental uncertainty is a fundamental fact of our economic life, and abstraction from that fundamental fact is the major problem.

From this point of view, debt appears in a different light. It is not so much about achieving an impossible optimal intertemporal allocation, but rather about realizing a deviation between present income and present expenditure. Surplus agents can realize their surpluses only if they accept promises from deficit agents to pay in the future. In a world of fundamental uncertainty, such promises are always more or less rash, but what other choice do we have? All we can do is to form a view of a possible future, and bet on it. Deficit agents bet on their own future cash flows by issuing debt claims, and when surplus agents accept those debt claims they are betting as well.

From this point of view, the web of financial claims is no veil but rather the very fabric of economic life. At any moment of time the pattern of claims reflects bets made in the past, and the valuation of those claims reflects current views about how those bets are working out. Inevitably, not all bets will work out, and there will be default, with wealth consequences for the immediate debtor and creditor, and perhaps for larger society as well because of the interlocking character of the web.

“The whole web of interlocking commitments is like a bridge we spin collectively out into the unknown future toward shores not yet visible. Mere ideas about the future become realities as they become embedded in financial relations, but inevitably over time the reality embodied in the pattern of cash commitments diverges from the reality embodied in the pattern of cash flows. Inevitably our ideas about the future are wrong, even when we all agree, indeed especially when we all agree.” (Mehrling 1999, 141)

That’s the way the world is, and models that abstract from the way the world is (such as DSGE models) are not going to help us very much in our attempts to manage our individual and collective lives in that world. But what would help us? That is the challenge. What kind of analytical tools can we build that do not abstract from the fundamental facts, but nonetheless facilitate a scientific approach to the problem?

My Journey

Monetary economics has been my main intellectual focus for thirty years now. The reason I first got into the field may help to explain why my work has developed as it has.

I did not major in economics as an undergraduate, and as a consequence I never got properly socialized into the customs and norms of the field. Instead, I majored in something called Social Studies, which was a general social science major organized around a year-long sophomore tutorial in which we read foundational texts of social science. Smith's Wealth of Nations and Marx's Capital were the economics texts, plus Max Weber, John Stuart Mill, Durkheim, Freud, and Levi-Strauss, to cover political science, sociology, psychology, and anthropology, respectively. That intellectual formation is probably the reason why, when I decided to pursue graduate study in economics, my instinct was to begin by studying its foundational texts, starting with Keynes' General Theory where I found some very interesting ideas about liquidity and liquidity preference. That was spring semester of my senior year, in 1981, two years into the momentous events of the Volcker Fed, which background context was no doubt also important. In any event, I was bitten by the money bug, and have been trying to deepen my understanding of money ever since.

One of the reasons I chose economics over other social sciences was that I thought my strong mathematics background would help me more in that field than in others, and that also explains my choice to begin my formal study of economics at the London School of Economics by doing their MSc in Econometrics and Mathematical Economics. I remember thinking that I wanted to get a strong foundation in the technical aspects of the subject so that when I did my PhD I could focus on the substantive issues at hand. But the choice turned out to be fateful in another way since it meant that I first learned formal modern monetary economics from Douglas Gale, at the very time he was writing the Cambridge Handbooks Money In Equilibrium and Money In Disequilibrium. Himself a student of Frank Hahn, Gale used the so-called Hahn Problem—the disturbing absence of money from the Arrow-Debreu model of general equilibrium—as the organizing principle for his story of formal development in the field; in his account it was all driven by attempts to get around the Hahn Problem. I remember being a bit puzzled by this. It seemed to me that the lesson of the Hahn Problem was that general equilibrium theory was simply a non-starter, at least for monetary economics. If you want to understand money, you have to start somewhere else. But where?

My PhD studies were all about trying out various different starting points. Like so many others before me, I found my way to Schumpeter's History of Economic Analysis, which led me to the incredibly rich literature in the history of monetary thought. Following Schumpeter, I read H.D. McLeod (possibly the origin of my later emphasis on accounting) and many others as well. Indeed, the title of my dissertation "Studies in the Credit Theory of Money" was homage to Schumpeter's hint about the possible superiority of a credit theory of money, rather than a monetary theory of credit. In the dissertation, I tried my hand at mathematical modeling, econometric modeling, and history of economic thought. I thought of these as three different ways to try to understand money.

When I started my academic career at Barnard College in 1987, I continued to pursue all three lines. In mathematical economics, I pursued the non-Walrasian path first opened up by Truman Bewley. In econometrics, I did a tremendous amount of work using the Compustat balance sheet data on liquidity positions of publicly traded firms. But when I got to the end of these papers, I realized that I didn't know much more about money than I had at the beginning. Instead, it was my study of the monetary economics of Allyn Young that set me on the course that led me to where I am today.

I found Young by asking when exactly monetary economics had gone off course—certainly with Arrow-Debreu, but probably earlier than that with the monetary Walrasianism of Hicks—and then by looking around at what alternative paths were alive then that might provide a starting point for our own time. I thought, “Let's go back to when monetary economics seemed to be on a more viable path, and build from there.” Probably it was Schumpeter who initially led me to Young, but Young was himself a student of Richard Ely, and one of the finest flowers of American Institutionalism. From the very first, there was something about his work that captivated me, and I wanted to read all of it, but first I had to find all of it since he had died suddenly, and without producing any treatise. That is when I became a serious historian of economic thought, toiling in the archives, reading Allyn Young's mail for clues to how he thought about money.²

Ironically, it was tenure pressure more than anything else that led me to put aside my mathematical and econometric work and to focus for a while on history of thought. To put it baldly, my lack of enthusiasm for the output of these first two research lines was more or less shared by the profession, and I found publication difficult. But people loved the Young stuff—even non-historians loved it—and since I felt that I was learning a lot about money by doing it, I decided to do more of it and that led to my first book. Following the Young trail led me to Alvin Hansen, another American institutionalist who is better remembered as an early American Keynesian, and then to Ed Shaw whose book (with Gurley) Money in a Theory of Finance (1960) re-energized monetary economics in the post-war period. Entering the minds of these three men, and grappling with the monetary events of their times, I got an education of a kind and started to feel that I was coming to understand money, at least a little bit. Mirabile dictu, the resulting book The Money Interest and the Public Interest: American Monetary Thought, 1920-1970 (1997) was also enough for tenure.

Having achieved job security, I stopped writing for the tenure committee and started my own independent monetary researches in earnest. The whole point of finding these ancestors, so it had always seemed to me, was to find a way to build on them, and so to continue the line into the present. And that meant building also on Minsky, a student of Schumpeter who I came to understand as the fourth in the Young-Hansen-Shaw line. I did not do a full biographical treatment on Minsky, only an article, but I did spend a summer reading everything he had ever written, asking myself what kind of mind had produced it all, and asking what a mind like Minsky's would be grappling with today, were he as young as me.

² To my mind, the best thing Young wrote on money was a set of unpublished Encyclopedia chapters, which I didn't find in time to include them in my published work on Young. But I use them today as the first reading whenever I teach Economics of Money and Banking.

It seemed obvious to me that developments in finance since 1970, in both theory and practice, were the most important things from a monetary point of view that needed to be understood, and integrated into the Young-Hansen-Shaw-Minsky line. So I decided to learn finance. When I found Fischer Black I knew I had my starting point, because he was also interested in money and as a critic of the economists. It took me seven years to write Fischer Black and the Revolutionary Idea of Finance (2005), but eventually I managed to get myself an education in finance.

All the while I was working on Fischer Black, I was also pursuing another line of self-education focused on understanding the operation of modern money markets. (As I recall, I was trying to find an intellectual analogue in my own life to Minsky's important engagement with the Mark Twain Bank.) This I did by creating a course, "Economics of Money and Banking", which used Marcia Stigum's The Money Market as its textbook. (While I was at it I also created another course, Topics in Money and Finance, organized around key articles in the history of monetary economics and finance, but mostly that was about filling in the gaps in my knowledge of that history. When you are department chair, you can assign yourself to teach anything you want!) The first year I taught the course, it was just Stigum, but over time I developed a set of lectures, and supplementary readings, and even problem sets. None of this was visible to the publish-or-perish academic world, which therefore continued to see me as a "nothing more than a historian of economic thought". But it was visible to my students, and most of all to me. I was finally getting to understand money.³

And then the crisis happened. I took a leave of absence with the intention of turning my course into a book, but instead Princeton Press asked me to write a book that put the crisis in historical perspective, and that seemed an opportunity not to be missed. The New Lombard Street: How the Fed Became the Dealer of Last Resort (2011) brings together the history of money and history of finance, with my long-gestating institutional study of money markets. The point to emphasize is that ground zero for the crisis, the place where the crisis was really a crisis, was the money market. An economics profession that had been spending 25 years refining the DSGE model to direct a policy program of inflation fine-tuning had essentially nothing to say about the crisis. But I had been doing something else entirely, and as a consequence I did have something to say.

My Work

Dirk Bezemer categorizes me as a proponent of the "accounting approach" to money, as opposed to stock-flow consistent, or agent-based modeling. I definitely see why he fits me there, but I have to say I don't agree with his sentence-long summary of New Lombard Street! So I guess I need to do more work to make my own position clearer than was possible in a book organized as a kind of intellectual biography of the Fed. In my Money and Banking course, I am much more programmatic and pedagogical, so let me just sketch the analysis I develop there, which has five key elements.

First, the "survival constraint" (Minsky 1957). In my mind, this is about the payments system, and about the necessity of meeting your obligations at the daily clearing. So far as I know, no one else gives such

³ It will soon be visible to the world since INET is filming the course this semester, and will be offering it free to all takers. See appendix for syllabus.

importance to understanding the payments system as I do, but I have come to think it is completely crucial. Once we abandon the idea of intertemporal equilibrium (much less the idea of an infinite-horizon transversality condition), the question immediately arises where the economy gets its coherence. I think the survival constraint is key to this. People get vital information about their position in the system as a whole from the cash flows in and out between themselves and that larger system. Not only that, they are forced to pay attention to that information, and the institution that does the forcing is the survival constraint.

In practice, of course, lots of mechanisms have been developed to mute the force of the survival constraint, to enable people to put off the day of reckoning to another later day. Those mechanisms are the money markets. The state of the money markets therefore gives information about the coherence of the system as a whole. Are people in general able to meet their cash commitments with the cash flows that are coming in to them, or are they in general trying to put off the day of reckoning to another later day? The money market is a sensitive barometer, telling everyone the current state of the system to which they are trying to adapt their own behavior.

As an example, consider the balance sheets below which show how two banks, one with a deficit and one with a surplus, settle at the end of the day by using the Fed Funds market to push the day of reckoning off to the next day.

Bank A—deficit		Clearinghouse		Bank B—surplus	
Assets	Liabilities	Assets	Liabilities	Assets	Liabilities
	\$10 due to CH	\$10 due from A	\$10 due to B	\$10 due from CH	
	\$ 10 Fed Funds loan			\$10 Fed Funds loan	

The settlement constraint organizes bank behavior, both individually and as a system, but its impact is by no means limited to banks. Indeed, when you view the economy as a payments system, everyone is a bank (cash in, cash out), and that brings us to the second element.

Second, the “money flow economy” (Copeland 1952). Copeland was an American Institutional, a student and admirer of Wesley Clair Mitchell (who was a contemporary and friend of Young). He developed what became known as the flow of funds accounts as an explicit alternative to both the NIPA accounting on which Keynes built, and the equation of exchange on which the monetarists built. Flow of funds simply follows the money and does not make invidious distinctions between new goods (value added) and old goods (value transferred). Even more, since it treats purely financial transactions on the same footing as transactions for goods and services, it provides a framework for analyzing the economy as essentially a financial system. Copeland dates himself, and reveals his inability to slough off his real-side institutionalist training, when he calls these purely financial transactions “fluff”. But in practice the destiny of his accounts has been to draw analytical attention to this fluff.

The logic of the accounts is shown below:

USES	Sources
Expenditures (Goods and Services)	Receipts (Goods and Services)
Financial Asset Accumulation Financial Liability Repayment Hoarding (of money)	Financial Asset Decumulation Borrowing Dishoarding

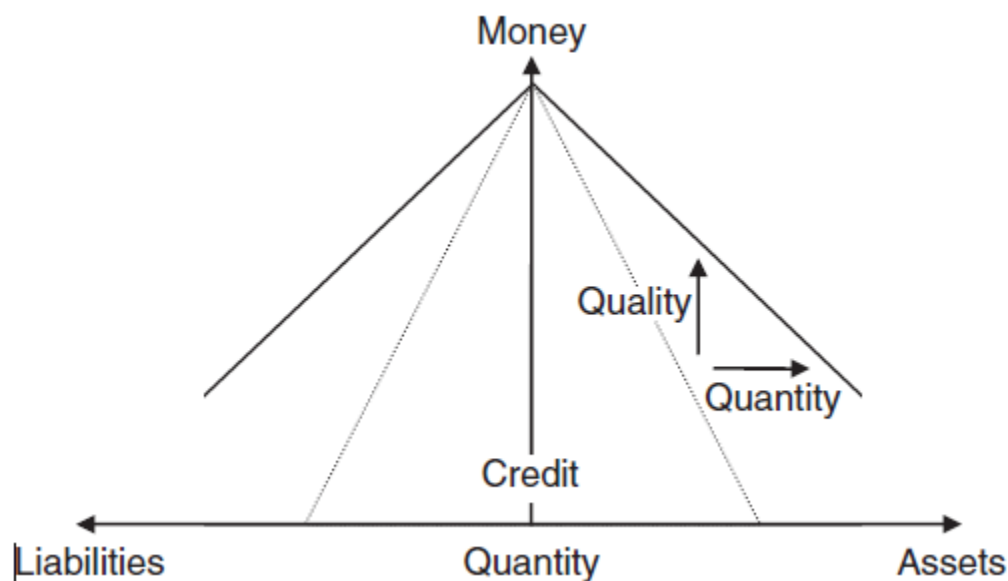
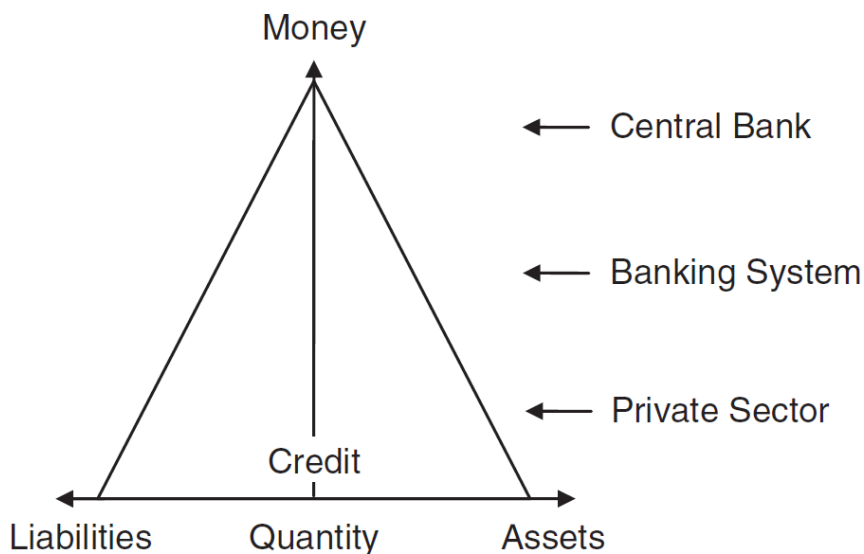
I show the flow of goods and services above the line, and the corresponding financial flows below the line. But there are lots of financial flows below the line that have no corresponding real flow above the line, indeed most of them.

The accounts are organized by two principles—every source is someone else’s use, and everyone’s source has a corresponding use. I show the accounts for an individual, but it is clear that the accounting rules mean that both sides of the accounts stretch into the larger economy. In this sense the money flow framework is the natural macroeconomic counterpart of the microeconomic settlement constraint.

In practice, the actual Flow of Funds accounts measure flows between highly aggregated sectors of the economy, not individuals, and there is a tremendous amount of netting out within the sectors. Further, the clear moneyflow conceptual apparatus is quite substantially muddled in practice by subsequent attempts to integrate the flow of funds with NIPA accounting, with the idea of showing the concrete mechanisms through which saving is channeled, through various financial intermediaries, into investment. And even in clean form the accounts have difficulty handling valuation changes and collateral flows, two key elements in the modern financial economy. So I find the accounts more useful as a conceptual analytical apparatus than as an empirical basis for macro, and as a step on the road not the final step. Probably here is a point of contention with the stock-flow consistent approach?

Third, the hierarchy of money and credit (Hawtrey 1930). One drawback of Flow of Funds is that it places every agent in the economy on the same footing, whereas in the real world it is clear that what counts as money and what counts as credit depends on who you are. To me and you, bank deposits are money, but not to a bank. To banks, reserve deposits at the Fed are money, but not to other central banks. This hierarchy of money and credit is what fluctuates over time, as credit (at all the various levels) expands and contracts. Bezemer emphasizes the business cycle frequency of this fluctuation; I see it at all time frequencies, ranging from the intraday operation of the payment system to secular rise and fall of nations.

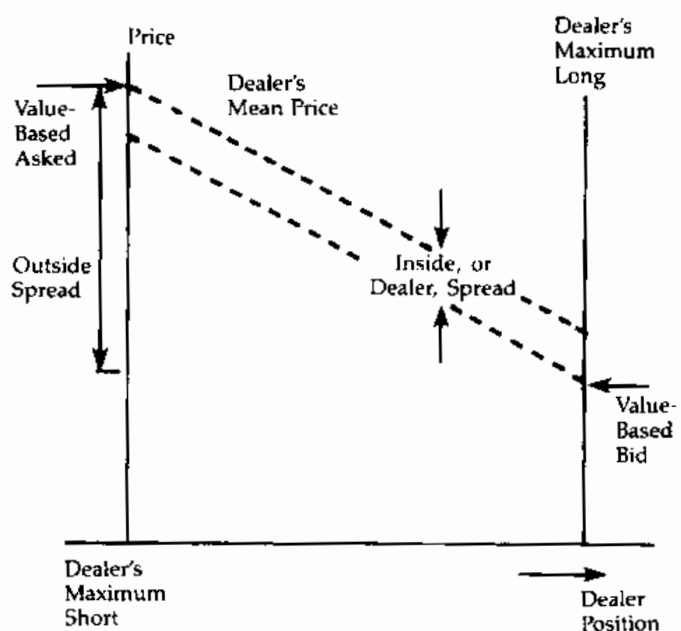
Another drawback of the Flow of Funds is that it tracks quantities not qualities, and so misses the way that what counts as money and what counts as credit changes over time. In booms, credit becomes more moneylike, while in contractions the differentiation reasserts itself. I use the following images to build intuition around this point:



Fourth, the central role of the dealer function (Hicks 1989). The reason the inherent hierarchy of the system is often missed is that dealers enter, motivated by profit, using their own balance sheets to straddle the layers of the hierarchy. They make markets by posting both buy and sell prices, and then let their balance sheet absorb the resulting order flow. As a result, qualitative differences appear to market participants as merely matters of price. The crucial role of dealers in achieving that result is pushed into the background in most treatments, in both economics and finance, which wind up therefore analyzing a world in which market liquidity is a free good, and the liquidity premium is zero. In the real world, dealers do not bear risk for free, and consequently there are liquidity premia everywhere, indeed (not surprisingly) a hierarchy of liquidity premia.

As an analytical tool for thinking about a world in which market liquidity is produced by dealers, Treynor's 1989 model is very simple and very useful. He was thinking about security prices, but the same model can be adapted for money markets. He was thinking about dealers facing price risk, but the same model can be adapted for matched book dealers who face no price risk, only liquidity risk.

Figure A Dealer's Spread and Maximum Position



An obvious application of this way of thinking is to provide analytical foundations for explaining the observed failure of both the expectations hypothesis of the term structure and the uncovered interest parity theory of forward exchange rates. Both theories should be true under the standard assumptions of both economics and finance, but the empirical facts regularly show them to be false. In a world where dealers make markets for profit, both "anomalies" make sense.⁴ The Treynor theory of the economics of the dealer function thus provides analytical foundations for the Hicks-Keynes theory of liquidity premia as a fundamental determinant of asset prices.

Indeed, more generally, once we take on board the idea that market liquidity is a market activity, there is no reason at all to expect that asset prices are efficient, in the sense that they capture all that is known about (non-financial) fundamentals and only what is known about them. Fischer Black's famous

⁴ My students Dan Neilson and David Grad, respectively, have done extensive empirical work documenting this point.

presidential address, in which he stated his belief that prices are within a factor of two of value most of the time, comes from this place.

Fifth, the central bank as dealer, and as agent of the state (Bagehot 1873). The first four elements lead to the idea that the central bank is essentially a dealer, perhaps a dealer of last resort whose outside spread enables lower level dealers to more comfortably quote an inside spread. In doing so, however, the central bank is crucially different from other dealers, since it is concerned about the stability of the system, not its own profit, even if it is purely a banker's bank.

The specialness of the central bank comes even more into focus when we take on board the idea that the central bank is also the government's bank, certainly in times of crisis (such as war finance) but also in more normal times (such as normal refinancing operations of the Treasury). It is clear that the state is a crucially important actor in modern monetary arrangements, notwithstanding my abstraction from it in all of the above four elements. So now the question arises, how to bring the state into the picture?

One idea is that the state is fundamental to everything (and that therefore I err by waiting until now to bring it in) because it has the power to assert, by fiat, what is money. This is the chartalist tradition of Knapp and others, which tends also to see this power as a force for good. On the other side is the metallist tradition of Menger and others, which does not so much deny the state's ability to assert what is money, but rather questions whether this is a force for good. As counter to the founding myth of state money, Menger and his followers put forward an alternative myth of natural emergence from exchange.

Personally, I find this whole debate, chartalist vs. metallist, to be a red herring, driven more by political ideology than scientific inquiry. Indeed, it seems pretty clear to me that modern monetary systems are quite typically hybrid systems, combining both chartalist and metallist elements. (Modern central banks are typically both bankers' banks and government banks.) But it was not always so. In my reading of the historical evidence, the origins of these two traditions in monetary thought lie in the institutional practice of the past where there was a sharp distinction between domestic "king's" state money and international "gold" private money. Both of these monies had a credit apparatus built on top of them, and there were dealers making markets between them; although they were essentially parallel currencies within individual countries, the international character of the private money meant that these markets were essentially about foreign exchange.

Pace the strong chartalist position, my reading of history is that the king's money was typically not very good money, and tended to depreciate against the private money, sometimes dramatically so and sometimes intentionally so as a mechanism of state finance. Law, even sometimes very draconian law, was powerless to prevent this. So-called seignorage turned out to be a rather weak reed on which to build state finance, and so the attention of modern states turned instead to private capital markets. War finance showed the ability of states to borrow large sums by tapping into the private international system, and so a bargain was struck. Bankers would help the state to borrow, and the state would legalize private money for domestic purposes. That's the typical deal, in various permutations, today.

Plans

First, extension of the money view to capital markets. I have dabbled in this with the work on asset price anomalies (failure of EH and UIP), but my current work on the economics of shadow banking confronts this extension directly.

Second, extension to foreign exchange. I have dabbled in this also in my attempt to bring the state into the money view (since the relative price between parallel currencies is a kind of exchange rate). My current work confronts this extension directly.

Third, extension to real side. I have dabbled in this with my work on the commodity reserve theory of money but have not confronted it directly. My sometime co-author Dan Neilson has been urging the possibility of a theory of “real liquidity”, perhaps starting with commodity markets. I think that may be the way to go in order to extend from a theory of the fluff, and to develop a proper theory of price level.

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The Economics of Money and Banking

Introduction to the principles of money and banking, the intermediary institutions of the American economy and their historical development, the principle financial instruments of the money market, current issues in monetary and financial reform.

Students who complete this course will learn how to:

- 1) Read, understand, and evaluate professional discourse about the current operation of money markets at the level of the Financial Times
- 2) Follow an argument/analysis that uses balance sheet reasoning
- 3) Construct an argument/analysis that uses balance sheet reasoning
- 4) Use diverse primary historical texts to understand current events
- 5) Understand the institutional structure of the dollar money markets, their connection to capital markets, and the mechanisms of central bank control

Readings: The main texts are:

Marcia Stigum and Anthony Crescenzi, Stigum's Money Market, 4th edition (McGraw Hill 2007), and

either

Neil Barofsky, Bailout, An Inside Account of How Washington Abandoned Main Street While Rescuing Wall Street (Free Press 2012)

or

Roman Frydman and Michael D. Goldberg, Beyond Mechanical Markets, Asset Price Swings, Risk, and the Role of the State (Princeton 2011).

Multiple copies will be available in the library, but you may also purchase at Columbia Bookstore or online.

In addition to the texts there will be weekly supplemental readings available on Courseworks. Regular reading of the financial press (for example, The Financial Times) is recommended as an invaluable aid for developing familiarity with the structure and function of modern banking institutions.

Problem Sets: There will five problem sets, graded check (minus/plus), to help you get on top of the more technical aspects of the course. These may be done and submitted in groups of no more than 4.

Prerequisites: Intermediate Macroeconomics (BC3033 or W3213) and Intermediate Microeconomics (BC3035 or W3211).

Grading: Work will be assessed by means of two exams with the following weights

Problem Sets	10%
Midterm	35%
Final	35%
Reading Period Assignment	20%

The reading period assignment is Barofsky or Frydman and Goldberg (your choice), which will be assessed by means of an essay question written as part of the final exam.

TA: The teaching assistants for this course will be holding weekly discussion sessions focused on the supplemental readings. They will also be available in office hours for help with the lecture material.

Agnieszka Janczuk-Gorywoda	anancz1@law.columbia.edu	Mon 3:10-4 903 Altschul
Keshav Dogra	kd2338@columbia.edu	Tues 4:10-5 LL104 Diana
Ildiko Magyari	im2348@columbia.edu	Fri 3:10-4 903 Altschul

Online: Selected lectures will be videotaped as part of a joint venture of Barnard College and the Institute for New Economic Thinking to offer the course online in the future. Every effort will be made to ensure that this filming is unobtrusive as possible. Students who are willing to appear on tape will be asked to sign releases, but participation is entirely voluntary. For those interested, the online dimension of the course will be facilitated by a dedicated teaching assistant,

Bilge Erten	be2203@columbia.edu
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Lecture Schedule

Introduction

9/5	1. The Four Prices of Money	Stigum 1-3	
9/10	2. The Natural Hierarchy of Money		Young
9/12	3. Money and the State: US Monetary History		
9/17	4. The Money View, Micro and Macro		Minsky

Banking as a Clearing System

9/19	5. The Central Bank as a Clearinghouse		PS1 “Balance Sheets” due
9/24	6. Federal Funds: Final Settlement	Stigum 12	Dunbar
9/26	7. Repos: Postponing Settlement	Stigum 13	
10/1	8. Eurodollars: Parallel Settlement	Stigum 18	Bagehot
10/3	9. Guest Lecture: Roman Frydman		PS2 “Repo Math” due

Banking as Market Making

10/8	10. The World that Bagehot Knew		Hicks
10/10	11. Dealers: Liquid Security Markets	Stigum 10	
10/15	12. Banks: The Market for Liquidity	Stigum 6	Treynor
10/17	13. Lender/Dealer of the Last Resort		PS3 “Dealer Econ” due
10/22	14. Review		
10/24	15. MIDTERM		

International Money and Banking

10/29	16. Chartalism, Metallism, and Key Currencies		Mundell
10/31	17. Money and the State: International Monetary History		
11/5	Election Day Holiday		McCauley
11/7	18. Banks: Global Liquidity	Stigum 7	
11/12	19. Foreign Exchange		Gurley/Shaw

Banking as Advance Clearing

11/14	20. Direct and Indirect Finance	Stigum 23, 26	PS4 “Intl Money” due
11/19	21. Forwards and Futures	Stigum 15	FOMC
11/21	22. No Class (Thanksgiving)		
11/26	23. Interest Rate Swaps	Stigum 19	Mehrling
11/28	24. Credit Derivatives		PS5 “Derivative Math” due

Banking and the Real World

12/3	25. Shadow Banking, Central Banking, and Global Finance		Time
12/5	26. Touching the Elephant: Three Views		
12/10	27. The Future of Banking		

FINAL EXAM (December 17, 7:10-10)

Supplemental Readings:

Bagehot = Bagehot, Walter (1873) Lombard Street, A Description of the Money Market.

Dunbar = Dunbar, Charles F. "The Check System", Ch. 4 in Chapters on the Theory and History of Banking (1891).

FOMC = "Report of the Ad Hoc Subcommittee on the Government Securities Market" (1952). Reprinted in U.S. House Committee on Banking and Currency, The Federal Reserve after Fifty Years, vol. 3. 88th Congress, 2nd session. (US GPO, 1964).

Gurley/Shaw = Gurley, John G. and Edward S. Shaw (1960) Money in a Theory of Finance

Hicks = Hicks, John. "The Nature of Money," "The Market Makes its Money," and "Banks and Bank Money." Chapters 5-7 in A Market Theory of Money (Oxford 1989): 41-63.

McCauley = McCauley, Robert. "Renminbi internationalization and China's financial development." BIS Quarterly Review (December 2011).

Mehrling = "The Art of the Swap" and "What Do Dealers Do?" Chapters 4-5 in The New Lombard Street, How the Fed became the Dealer of Last Resort (Princeton 2011): 71-112.

Minsky = Mehrling, Perry. "The Vision of Hyman Minsky." Journal of Economic Behavior and Organization 39 No. 2 (June 1999): 129-158.

Mundell = Mundell, Robert. "A Reconsideration of the Twentieth Century." American Economic Review (June 2000): 327-340.

Time = Mehrling, Perry. "The Problem of Time in the DSGE Model, and the Post Walrasian Alternative." Pages 70-79 in Post Walrasian Macroeconomics: Beyond the Dynamic Stochastic General Equilibrium Model, edited by David Colander. Cambridge University Press, 2006.

Treynor = Treynor, Jack L. "Economics of the Dealer Function." Financial Analysts Journal 43 No. 6 (November/December 1987): 27-34.

Young = Chaps. 31-34 in "Commerce: The Marketplace of the World", 1924. Reprinted as pp. 265-321 in Mehrling and Sandilands, ed. Money and Growth, Routledge 1999.