Money and Banking (ECON UN3265)

Meeting time: M, W 4.10 - 5.25
Meeting place: Northwest Corner 501

Office address: IAB 1002A
Office hours: W 11.00 - 12.00 and other times by appointment

Course Objective

The modern banking and financial system is highly interconnected and characterized by many different types of players and institutions as well as a high pace of innovations. This course provides a comprehensive view on the evolution of banking, from the eighteen century to the most recent financial innovations in wholesale banking and interbank markets and discusses two main themes.

The first central theme will be that the fundamental principle of money and banking is the same despite all financial innovations and the evolution of institutions and markets in the last two hundred or so years. The second and reoccurring theme is about the causes of a financial crisis. An opinion often articulated in popular and policy discussions is that the financial crisis in 2007/08 and previous financial crises were mainly caused by (greedy) bankers.

This course employs different methodologies to approach these two main themes. In order to understand the working of the banking system and its benefits and costs for society a historical perspective and conceptual frameworks are needed. A historical perspective and economic theory will highlight the (few) fundamental principles of money and banking and can provide a broader context to discuss the question whether a financial crisis is caused by financial greed and
excessive risk taking and whether bankers are more entrenched and self-centered than corporate managers, lawyers, tax advisors, politicians or other professionals. A better understanding of these two main themes will have significant implications for the management and internal governance of banks, policy design as well as banking regulations.

The course is divided into two broad sections. Section I discusses money and banking since the 18th century. Section II focuses on policy responses and banks’ reactions to regulations since the financial crisis in 2007/08 as well the most recent trends in banking and the impact of technology on finance. In particular, the following topics are covered.

I.1. Evolution of the Banking System
I.2. Bank Holding Companies
I.3. New Forms of Money and Banking
I.4. The Financial Crisis in 2007/08

II.1. Central Bank Policies and Interventions
II.2. New Regulation and Unintended Liquidity Consequences
II.3. Market Making and Risk Management of Banks
II.4. Most Recent Trends

Methodologies

The course employs four different methodologies to understand the fundamental as well as specific issues of money and banking. These approaches will provide different but complementary perspectives on the same subject matter.

Institutional Analysis

The institutional analysis focuses on the structural aspects of institutions, markets and products. We will analyze the banking structure during the Free Banking Era and the National Banking Era as well as the modern commercial, investment and wholesale banking industries. We discuss new forms of money and banking and have a detailed description of the players and products in the money market fund (MMF) industry, the syndicated loan markets, the securitization markets for mortgage backed securities (MBS), asset backed securities (ABS), asset-backed commercial papers (ABCP), collateralized debt obligations (CDO) and collateralized loans obligations (CLO) as well as the sales and repurchase agreement (repo) markets. These are multi trillion dollar markets each and they constitute fundamental parts of the modern financial system. In order to better understand these markets, we will look at legal documents such as a repo master
agreement, a private placement memorandum of ABS issuance and syndicated loan prospectus. Furthermore, we will discuss the most recent trends and the impact of technology on banking and finance. A focus of discussion will be the rapid rise and dominance of China in Fintech.

Theoretical Analysis

The theoretical analysis provides the conceptual foundation and interpretation of institutional structures. A common feature of all types of banking whether it is in the Free Banking Era or modern repo markets, is the prevalence of debt-on-debt. Free banknotes are debt contracts which are backed by state bonds which are debts. National banknotes are debt backed by government bonds. Demand deposits are debt contracts which are backed by the bank’s portfolio of loans and other debt instruments. MMF shares are (de facto) debts that are backed by a portfolio of other debt securities. Securitized products such as MBS, ABS, CDO, CLO and ABCP are debts that are backed by mortgages, loans and commercial papers, respectively, which are all debt securities. Similarly, repo is a debt contract that uses other debt instruments as collateral. We use the concept of information sensitivity as a unifying framework to provide a micro-foundation for the optimality of debt-on-debt and explain the differences between banks and money markets on one hand and capital markets on the other hand as well as the role of rating agencies in debt markets. This theory does not only explains the prevalence of debt-on-debt in banking and funding markets but also what triggers a bank run and financial crisis without assuming moral hazard. Furthermore, we will discuss other theories of bank runs. The theoretical framework highlights the common structure of money and banking in the last two hundred or so years.

Empirical Analysis

Only empirical evidence and data can tell which hypothesis, story and theory is the most relevant explanation of a financial crisis. We will discuss several academic studies of popular opinions. (1) Are there systematic evidences for Wildcat banking during the free banking era and did deposit insurance lead to risk taking and bank failures? (2) Are there adverse selections in securitization markets where banks sold bad securities to investors? (3) How did the collapse of the markets for ABCP, Prime MMF and repo evolve? (4) What is the mechanism between risk taking and bank runs and is there a link at all? Empirical studies that use large data sets and sophisticated empirical methods can provide a systematic account of these questions.

Case Studies

We will discuss a number of specific cases to highlight institutional details. (1) The Goldman Sachs Abacus case illustrates the complex structure of a synthetic CDO which combines techniques used in securitization and credit default swaps markets and highlights conflicts of
interests between issuers and investors. (2) The Lehman Brothers Bankruptcy case illustrates the complexity of a bank’s corporate structure, the management of the balance sheet, the use of repo and the global contagion. (3) The JP Morgan London Whale case illustrates risk models, risk management practices and hedging versus proprietary trading. (4) The Basel III case illustrates how banks respond to regulation and minimize the impact of the liquidity coverage ratio by developing new financial products such as callable commercial papers. (5) The Volker Rule case illustrates how CLO issuers respond to the risk retention rule in securitization by creating new vehicles such as a Majority Owned Affiliate (MOA) or capitalized MOA and shows how new regulation leads to new financial innovations. (6) The An Financial case illustrates the usage of big data and machine learning technology in banking and finance.

**Course Requirements**

The main course requirements are homework assignments (four problem sets), a midterm exam and a final exam. Grades will be allocated based on the following weights:

- Problem sets: 15%
- Midterm exam: 40%
- Final exam: 45%.

It is important that you be regular in preparations for this course. Important concepts will be developed through both lectures and homework assignments.

Some of the background material and institutional details are not covered in the lectures but can be found in the recommended readings.

Be prepared to participate in class discussions about assigned reading and previous lectures. Please ask questions during the lecture. Critical comments are highly appreciated.

Working on the homework assignments is a very important part of this course. You should expect to spend a considerable amount of time working through lecture notes and problems sets.

You are allowed to work together on problem sets. However, students must submit their homework individually. In case of collaboration, the names of students you worked with should be stated on the first page of the solution sheet.

Also, please feel free to talk to me if you need career advice and want to hear my opinion.
Readings

Textbook (recommended but not required)

Lecture notes (Slides)
For each session students will obtain comprehensive notes that can be downloaded from Courseworks typically before class.

Optional readings
The following papers can be downloaded from JStor or ScienceDirect or will be provided online.


Fannie Mae (2012): Basics of Fannie Mae Single-Family MBS.


International Monetary Fund (2017): Fintech and Financial Services: Initial Considerations, Staff Discussion Notes, No. 17/05.


Tentative Course Outline

Lecture 1

Introduction
Course Overview

Chapter 1

Lecture 2 (Evolution of the Banking System)

The Relevance of History
Historical Overview
The Free Banking Era
The Wildcat Banking Hypothesis

Chapter 4;
Rolnick and Weber (1985)

Lecture 3 (Evolution of the Banking System)

Empirical Test of the Wildcat Banking Hypothesis
The National Banking Era
Banking Panics during the National Banking Era
Clearinghouse and Suspension of Convertibility

Chapter 7;
Rolnick and Weber (1984)

Lecture 4 (Evolution of the Banking System)

A Model of Bank Runs
Information Sensitivity: A Measure of Default Risks

Chapter 7;
Diamond (2007); Diamond and Dybvig (1983);
Dang, Gorton and Holmstrom (2015b)
Lecture 5 (Evolution of the Banking System)

Bank Diversification dominates Individual Diversification
Banking Panics and Business Cycle
The Great Depression
Speeches and the Recreation of Confidence

Chapter 8;
Dang, Gorton and Holmstrom (2015b); Gorton (1988); FDIC (1998)

Lecture 6 (Evolution of the Banking System)

Deposit Insurance, Information Sensitivity and Confidence
Glass-Steagall Act and FDIC in 1933
Commercial Banking and the 3-6-3 Rule
The Rise of Debt Market Finance in 1980s

Chapter 10;
FDIC (1998); Walter (2006);

Lecture 7 (Evolution of the Banking System, Bank Holding Companies)

Bank Merger Waves and Industry Consolidation
The Structure of Bank Holding Companies
Case: Business Model of Goldman Sachs versus JPMorgan Chase

Chapter 9, 15;
Jones and Critchfield (2005); Avraham, Selvaggi and Vickery (2012)

Lecture 8 (Bank Holding Companies)

Investment Banking Activities
M&A Business
Syndicated Loan Business

Chapter 13;
Armstrong (2003); Standard & Poor’s (2011);
Lecture 9 (Bank Holding Companies)

Bond Underwriting Business
Equity Underwriting Business
Asset Management Business

Chapter 12, 16;
Bond Market Association (2004a)

Lecture 10 (New Forms of Money and Banking)

Information Sensitivity and the Value of Information
The Role of Rating Agencies in Bond and Money Markets
Bond versus Stock Markets

Chapter 5;
Dang and Felgenhauer (2012); Holmstrom (2014);
Gallagher, Schmidt, Timmermann and Wermers (2018)

Lecture 11 (New Forms of Money and Banking)

Production of Money and Secret Keeping
The Evolution of Opacity in Banking

Chapter 5;
Dang, Gorton, Holmstrom and Ordonez (2017);
Brancati and Macchiavelli (2018)

Lecture 12 (New Forms of Money and Banking)

Overview of Money Market Instruments
Money Market Fund Industry
MMF Secret Keeping: Rule 2a-7

Federal Reserve Bank of Richmond (1998); Comptroller Handbook (1997);
Lecture 13 (New Forms of Money and Banking)

Securitization: Basics and History
Agency MBS
The Financial Infrastructure of Securitization

Chapter 17;
Cetorelli and Peristiani (2012); Comptroller Handbook (1997);
Fannie Mae (2012)

Lecture 14 (New Forms of Money and Banking)

The Markets for MBS, ABS, CDO and CLO
The Market for ABCP

Bond Market Association (2004b)

Lecture 15 (New Forms of Money and Banking)

Synthetic CDOs and Credit Default Swaps
Case: Goldman Sachs Abacus Deal
Case: SEC versus Goldman (Abacus)

SEC (2010)

Lecture 16 (New Forms of Money and Banking)

Sales and Repurchase Agreement (Repo)
A Theory of Repo Trading and Haircut

Euroclear (2009);
Dang, Gorton and Holmstrom (2013)
Lecture 17 (New Forms of Money and Banking)

Chinese Shadow Banking
Illegal Fundraising Scandal and Bank Loan Pricing

_Dang, Wang and Yao (2014); Dang, Liu, Wang, Wang Yao (2018); Dang, Mo and Li (2017)_

Lecture 18 (The Financial Crises in 2008)

The Housing Market, Subprime Loans and Subprime MBS
The ABX.HE Index: Mechanics and Information Revelation
A Chronology of Events

_Chapter 18, 20; Ashcraft and Schuermann (2008)_

Lecture 19 (The Financial Crises in 2008)

Run on ABCPs in 2007
Run on Repos and Prime MMFs in 2008
Liquidity, Accounting and Collateral Calls

_Chapter 18, 20; Covitz, Liang and Suarez (2013); Gorton and Metrick (2012); Schmidt, Timmerman and Wermers (2016)_

Lecture 20 (The Financial Crises in 2008)

A Theory of Debt-on-Debt
A Theory of Financial Crises

_Dang, Gorton and Holmstrom (2015a, 2019)_
Lecture 21 (The Financial Crises in 2008)

Case: Lehman’s Bankruptcy
Case: Lehman’s Derivative Portfolio
Case: Lehman’s Balance Sheet Management and Repo 105
Case: Lehman’s Corporate Structure and Intra-Firm Contagion

Wiggins, Piontek and Metrick (2014); Wiggins and Metrick (2014a)
Wiggins and Metrick (2014b,c)

Lecture 22 (Central Bank Policies and Interventions)

Overview of Government Responses to the Collapse of Funding Markets
The Fed: Rescue Lending and Asset Purchase
TARP and Supervisory Actions
Costs and Profits of the Rescue Policies
The Fed: Mission and Conventional Policies

Webel (2013); Gorton and Metrick (2014)

Lecture 23 (New Regulation and Unintended Liquidity Consequences)

Overview of Regulatory Responses
Dodd Frank Act in 2010
Reform of MMF Industry and Triggered Redemptions
Overview of Basel III
Case: Liquidity Coverage Ratio and Callable Commercial Papers

Report of the President’s Working Group on Financial Markets (2010);
Baghai, Giannetti and Jäger (2018);
McNamara, Wedow and Metrick (2014); Namara, Bennett and Metrick (2014)
Lecture 24 (New Regulation, Market Making and Risk Management of Banks)

Case: Risk Retention Rule and the Rise of MOA and CMOA
Bank Risk Management
Risk Measure: Value at Risk (VaR)
Case: JPM London Whale

Zeissler, Bennett and Metrick (2014b,d)

Lecture 25 (Risk Management of Banks, Most Recent Trends)

Case: JMP Risk Limits and Metrics
Case: JPM Hedging versus Proprietary Trading
Funding Mix of Banks
Alternative Asset Managers as Credit and Liquidity Providers

Zeissler, Bennett and Metrick (2014a,c)

Lecture 26 (Most Recent Trends)

Technology and Finance
China as the Leader in Fintech
Case: Ant Financial
Innovation, Regulation and Information Sensitivity in Banking

IMF (2017); BIS (2018)