# 14.772 Development Economics: Macroeconomics Spring 2016

Lectures: Tuesdays and Thursdays 2:30-4:00 (E51-151)

Recitations: Thursdays 1:00-2:00 (E51-393)

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Office hours: Immediately after class

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Office hours: Mondays 1:00-2:00

Website: http://stellar.mit.edu/S/course/14/sp16/14.772/index.html

#### Contents:

The course shows how contract and general equilibrium theory can help our understanding of the functioning of financial markets, financial access and individual welfare, the occurrence of crises, and to evaluate the rationale for financial regulation. In particular, it emphasizes that identifying the *nature* of financial frictions is crucial to determining potential market failures and thinking about ex ante optimal design – we will see many instances in which markets achieve on their own constrained-optimal outcomes and get insights about ideal ways to intervene when they do not

## Requirements:

The grade will be based on class participation and a combination of problem sets and a research paper/proposal.

	Lecture	14.772 Topic
29-Mar	1	INTRODUCTION
31-Mar	2	MEASUREMENT, MAPPING THE FINANCIAL SYSTEM
31-Mar	Rec 1	
4-Apr	3	THEORY AND DATA
7-Apr	4	IMPLEMENTATION WITHOUT OBSTACLES
7-Apr	Rec 2	
12-Apr	5	RISK SHARING
14-Apr	6	PRIVATE INFORMATION AND LIMITED COM- MITMENT (I)
14-Apr	Rec 3	
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21-Apr	7	PRIVATE INFORMATION AND LIMITED COM- MITMENT (II)
21-Apr	Rec 4	
26-Apr	8	PLATFORMS (I)
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28-Apr	Rec 5	
3-May	10	MONEY AND LIQUIDITY
5-May	11	STUDENT PRESENTATIONS
5-May	Rec 6	STUDENT PRESENTATIONS
10-May	12	MICHAEL KREMER (I)
12-May	13	MICHAEL KREMER (II)

#### **INTRODUCTION (LECTURE 1)**

- \*Committee on Payments and Settlement System. 2011. "Payment, Clearing, and Settlement Systems in India," CPSS red book.
- \*Klapper, Leo. 2005. "The role of factoring for financing small and medium enterprises," World Bank working paper.
- \*Reserve Bank of India. 2012. "Financial Sector Regulation and Infrastructure," *Financial stability report*, Ch. 4, June.
- Adrian, Tobias, and Hyun Shin. "The changing nature of financial intermediation and the financial crisis of 2007-09." FRB NY Staff Report 439 (2010).
- Aghevli, B.B., 1999. Asian crisis: causes and remedies. In The Asian Financial Crisis: Origins, Implications, and Solutions (pp. 157-166). Springer US.
- Asian Development Bank (ADB) Team, 2012. Thailand Bond Market Guide.
- Bagehot, W., 1873. *Lombard Street: A description of the money market*, Henry S. King & Co.
- Bech, M.L., Martin, A. and McAndrews, J., 2012. Settlement Liquidity and Monetary Policy Implementation—Lessons from the Financial Crisis. *Economic Policy Review*, 18(1).
- Berger, S.C. & Gleisner, F., 2009. Emergence of Financial Intermediaries in Electronic Markets: The Case of Online P2P Lending. *BuR Business Research Journal*, 2(1)Strategic market design literature
- Bloomberg News, October 25th 2015. China's Leaders Shift from Short-Term Stimulus to Five-Year Plan.
- Chen, K., Fleming, M.J., Jackson, J.P., Li, A. and Sarkar, A., 2011. An analysis of CDS transactions: Implications for public reporting. *FRB of New York Staff Report*, (517).
- Copeland, A., Martin, A. and Walker, M., 2014. Repo Runs: Evidence from the Tri-Party Repo Market. *The Journal of Finance*, 69(6), pp.2343-2380.
- Devakula P., 2006. Thailand's Financial Sector Master Plan Handbook.
- Drechsler, I., Savov, A. and Schnabl, P., 2014. The Deposits Channel of Monetary Policy. *Working Paper*.
- French, K., Baily, M., Campbell, J., Cochrane, J., Diamond, D., Duffie, D., Kashyap, A., Mishkin, F., Rajan, R., Scharfstein, D. and Shiller, R., 2010. The squam lake report: Fixing the financial system. *Journal of Applied Corporate Finance*, 22(3), pp.8-21.
- Gorton, G. and Metrick, A., 2010. Regulating the Shadow Banking System. *Brookings Papers on Economic Activity*, 41(2 (Fall)), pp.261-312.
- Hansen, L.P., 2012. Challenges in Identifying and Measuring Systemic Risk. *mimeo University of Chicago*
- Lester, B. and Armenter, R., 2015. Excess Reserves and Monetary Policy Normalization. *Working Paper*.
- Radelet, S. and Sachs, J., 1998. *The onset of the East Asian financial crisis* (No. w6680). National bureau of economic research.
- Reinhart, C. and Rogoff, K., 2013. Financial and sovereign debt crises: some lessons learned and those forgotten.

- Tambunlertchai, K., 2014, April. Financial Inclusion, Financial Regulation, and Financial Education in Thailand. In *Presentation at the Conference on Financial Inclusion, Regulation, and Education. Tokyo* (Vol. 23).
- Townsend, R.M., 1990. Financial Structure and Economic Organization, Blackwell Publishers 2003.
- https://en.wikipedia.org/wiki/Bitcoin
- https://en.wikipedia.org/wiki/Ripple (payment protocol)
- https://www.trumid.com

#### TOPIC 1 – MEASUREMENT, MAPPING THE FINANCIAL SYSTEM (LEC. 2)

- \*Pawasutipaisit, A. and Townsend, R.M., 2011. Wealth accumulation and factors accounting for success. *Journal of econometrics*, 161(1), pp.56-81.
- \*Paweenawat, A. and Townsend, R.M., 2012. Village Economic Accounts: Real and Financial Intertwined. *The American Economic Review*, 102(3), pp.441-446.
- \*Samphantharak, K. and Townsend, R.M., 2009. *Households as Corporate Firms: An Analysis of Household Finance Using Integrated Household Surveys and Corporate Financial Accounting*. Cambridge University Press.
- \*Samphantharak, K. and Townsend, R.M., 2012. Measuring the return on household enterprise: What matters most for whom?. *Journal of development economics*, 98(1), pp.58-70.
- \*Schuh S., and Townsend, R. M., 2015. Integrated Household Surveys and Corporate Financial Accounting: Applications to Surveys of U.S. Households and Consumers. "Frontiers of Measuring Household Economic Behavior" Federal Reserve Bank of Boston workshop, April 28, 2015
- Agueci, P., Alkan, L., Copeland, A.M., Davis, I., Martin, A., Pingitore, K., Prugar, C. and Rivas, T., 2014. A primer on the GCF Repo® Service. FRB of New York Staff Report, (671).
- Asdrubali, P., Sorensen, B.E. and Yosha, O., 1996. Channels of interstate risk sharing: United States 1963-1990. *Quarterly Journal of Economics*: 1081-1110.
- Baker, S.R., 2015. Debt and the consumption response to household income shocks. *Available at SSRN*.
- Barattieri, A., Eden, M. and Stevanovi, D., 2013. The connection between Wall Street and Main Street: measurement and implications for monetary policy. *World Bank Policy Research Working Paper*, (6667).
- Bech, M.L. and Atalay, E., 2010. The topology of the federal funds market. *Physica A: Statistical Mechanics and its Applications*, 389(22), pp.5223-5246.
- Brainard, W.C. and Tobin, J., 1968. Pitfalls in financial model building. *The American Economic Review*, pp.99-122.
- Carpenter, S., Demiralp, S., Ihrig, J. and Klee, E., 2015. Analyzing Federal Reserve asset purchases: From whom does the Fed buy? *Journal of Banking & Finance*, 52, pp.230-244.
- Chari V. V., 2012. A Macroeconomist's Wish List of Financial Data. Mimeo.
- Christiano, L., Motto, R. and Rostagno, M., 2010. Financial Factors in Economic Fluctuations. *European Central Bank Working Paper Series*.

- Choi, J. and Shachar, O., 2013. Did Liquidity Providers Become Liquidity Seekers?. *Working Paper*.
- Feldstein, M., and Horioka, C.,1980. Domestic savings and international capital flows. Economic Journal90(June):314-329.
- Green C. J. and Moore, T., 2012. Empirical Application of a Flow of Funds Model for India. *CFP Flow of Funds Accounts and Savings Workshop*
- Guerrieri, V. and Lorenzoni, G., 2011. Credit crises, precautionary savings, and the liquidity trap (No. w17583). National Bureau of Economic Research.
- Livshits, I., MacGee, J. and Tertilt, M., 2007. Consumer bankruptcy: A fresh start. *The American Economic Review*, pp.402-418.
- Moll, B., Townsend, R.M. and Zhorin, V., 2013. Financial Obstacles and Inter-Regional Flow of Funds (No. w19618). National Bureau of Economic Research.
- Morse, A., 2015. Peer-to-Peer Crowdfunding: Information and the Potential for Disruption in Consumer Lending. *NBER Working Paper*, (w20899).
- Piazzesi, M. and Schneider, M., 2010. Interest rate risk in credit markets. *The American Economic Review*, pp.579-584.
- Samphantharak, K., 2006. Internal capital markets in business groups. *Available at SSRN 975562*.
- Srivisal, N., 2014. Essays in Financial Economics. Chapter 1: Noteworthy Microeconomic Impacts of Macroeconomic Shocks: A Case Study of Monetary Policy Shocks on Rural Thailand Economies. *Dissertation University of Chicago*.
- Tobin, J. and Brainard, W.C., 1963. Financial intermediaries and the effectiveness of monetary controls. *The American Economic Review*, pp.383-400.
- <a href="http://www.federalreserve.gov/apps/fof/efa/enhanced-financial-accounts.htm">http://www.federalreserve.gov/apps/fof/efa/enhanced-financial-accounts.htm</a>
- https://www8.nationalacademies.org/cp/projectview.aspx?kev=49725
- <a href="http://www.cfsp.org/research/workshops/flow-funds-accounts-and-savings-workshop">http://www.cfsp.org/research/workshops/flow-funds-accounts-and-savings-workshop</a>
- <a href="http://www.cfsp.org/research/research-projects/regional-approach-financial-savings-and-intermediation#.VqKWnTZllBx">http://www.cfsp.org/research/research-projects/regional-approach-financial-savings-and-intermediation#.VqKWnTZllBx</a>

# **TOPIC 2 - THEORY AND DATA (LECTURE 3)**

- \*Townsend, R.M., 1995. Financial systems in Northern Thai villages. *The Quarterly Journal of Economics*, pp.1011-1046.
- \*Townsend, R. & Xandri, J.P. Monograph on General Equilibrium and Welfare Theorems.
- Arrow, K.J., 1964. The role of securities in the optimal allocation of risk-bearing. *The Review of Economic Studies*, pp.91-96.
- Buera, F. and Nicolini, J.P., 2014. Liquidity Traps and Monetary Policy: Managing a Credit Crunch.
- Costinot, A., Donaldson, D. and Smith, C., 2012. Evolving Comparative Advantage and the Impact of Climate Change in Agricultural Markets: Evidence from a 9 Million-Field Partition of the Earth. *Journal of Political Economy*.
- Debreu, G., 1959. Theory of Value: Au Axiomatic Analysis of Economic Equilibrium. Yale University Press.

- Donaldson, D., 2010. Railroads of the Raj: Estimating the impact of transportation infrastructure (No. w16487). National Bureau of Economic Research.
- Foley, D.K., 1970. Lindahl's solution and the core of an economy with public goods. *Econometrica: Journal of the Econometric Society*, pp.66-72.
- Hahn, F.H., 1971. Equilibrium with transaction costs. *Econometrica: Journal of the Econometric Society*, pp.417-439.
- Hahn, F., 1973. On transaction costs, inessential sequence economies and money. *The Review of Economic Studies*, pp.449-461.
- Kilenthong, W.T., 2008. A Walrasian Equilibrium Model with Asset-Backed Securities. UCSB Working Paper.
- Kurz, M., 1974. Equilibrium in a finite sequence of markets with transaction cost. *Econometrica: Journal of the Econometric Society*, pp.1-20.
- Kydland, F.E. and Prescott, E.C., 1982. Time to build and aggregate fluctuations. *Econometrica: Journal of the Econometric Society*, pp.1345-1370.
- Mas-Colell, A., Whinston, M.D. and Green, J.R., 1995. *Microeconomic theory* (Vol. 1). New York: Oxford university press.
- Pesendorfer, W., 1995. Financial innovation in a general equilibrium model. *Journal of Economic Theory*, 65(1), pp.79-116.
- Quesnay, F., 1758. Le Tableau Économic. *New York: Mcmillan*.
- Scarf, H.E., 1967. The core of an N person game. *Econometrica: Journal of the Econometric Society*, pp.50-69.
- Scarf, H., 1967. The approximation of fixed points of a continuous mapping. *SI-AM Journal on Applied Mathematics*, *15*(5), pp.1328-1343.
- Scarf, H. and Hansen, T., 1973. The computation of economic equilibria. *New Haven*.
- Sertel, M.R. and Yildiz, M., 2003. Impossibility of a walrasian bargaining solution. In *Advances in economic design* (pp. 175-182). Springer Berlin Heidelberg.
- Starrett, D., 1973. Inefficiency and the Demand for" Money" in a Sequence Economy. *The Review of Economic Studies*, pp.437-448.
- Shoven, J.B. and Whalley, J., 1972. A general equilibrium calculation of the effects of differential taxation of income from capital in the US. *Journal of public economics*, 1(3), pp.281-321.
- Shoven, J.B. and Whalley, J., 1973. General equilibrium with taxes: A computational procedure and an existence proof. *The Review of Economic Studies*, pp.475-489.
- Townsend, R.M., 1987. Economic organization with limited communication. *The American Economic Review*, pp.954-971.
- Townsend, R.M., 1993. Medieval village economy. The University Press.
- Townsend, R. & Xandri, J.P., 2012. Regulation and the Optimal Design of Financial Markets. *Working Paper*.
- Ulph, A.M. and Ulph, D.T., 1975. Transaction costs in general equilibrium theory-A survey. *Economica*, pp.355-372.
- Walras, Leon, 1969, Elements of pure economics (translated by William Jaffe from the original French version, 1874) (Kelley, New York).
- Woodford, M., 1998. Doing without money: controlling inflation in a post-

- monetary world. *Review of Economic Dynamics*, *I*(1), pp.173-219.
- http://www.me.utexas.edu/~jensen/or site/models/unit/network/net8.html

## **Bubbles: theory**

- Bewley, T., 1980. The Optimum Quantity of Money. In J. H. Kareken & N. Wallace, eds. *Models of Monetary Economies*. Minneapolis: Federal Reserve Bank of Minneapolis, pp. 169–210.
- Bewley, T., 1983. A Difficulty with the Optimum Quantity of Money. *Econometrica*, 51(5), pp.1485–1504.
- Hellwig, C. & Lorenzoni, G., 2009. Bubbles and Self-Enforcing Debt. *Econometrica*, 77(4), pp.1137–1164.
- Samuelson, P.A., 1958. An Exact Consumption-Loan Model of Interest with or without the Social Contrivance of Money. *Journal of Political Economy*, 66(6), pp.467–482.
- Santos, M.S. & Woodford, M., 1997. Rational Asset Pricing Bubbles. *Econometrica*, 65(1), pp.19–57.
- Tirole, J., 1985. Asset Bubbles and Overlapping Generations. *Econometrica*, 53(6), pp.1499–1528.

#### **TOPIC 3 - IMPLEMENTATION WITHOUT OBSTACLES (LECTURE 4)**

- \*Dubey, P., 1982. Price-Quantity Strategic Market Games. *Econometrica*, 50(1), pp.111–126.
- \*Townsend, R.M., 1983. Theories of intermediated structures. *Carnegie-Rochester Conference Series on Public Policy*, 18, pp.221–272.
- \*Yanelle M. 1997. "Banking Competition and Market Efficiency" *Review of Economic Studies*, vol. 64(2) pp. 215-239.
- Breuer, T., Jandačka, M., Summer, M. and Vollbrecht, H.J., 2015. Endogenous leverage and asset pricing in double auctions. *Journal of Economic Dynamics and Control*, 53, pp.144-160.
- Budish E., Cramton P., Shim J. "The High-Frequency Trading Arms Race: Frequent Batch Auctions as a Market Design Response" *Quarterly Journal of Economics*, vol. 130(4) pp. 1547-1621
- Chicago Board of Trade, 1982. Grains, production, processing, marketing.
- Daniels, K.N. and Vijayakumar, J., 2001. The competitive impact of commercial bank underwriting on the market for municipal revenue bonds. *Journal of Financial Services Research*, 20(1), pp.57-75.
- Geanakoplos, John, April 2010. The Leverage Cycle, University of Chicago Press, p. 1–65.
- Kilenthong W., Qin C. 2014. "Trade Through Endogenous Intermediaries" *Journal of Mathematical Economics*
- Knapp, G., Roheim, C.A. and Anderson, J.L., 2007. The great salmon run: competition between wild and farmed salmon.
- Scarf, H.E., 1967. The core of an N person game. *Econometrica: Journal of the Econometric Society*, pp.50-69.
- Shapley, L. & Shubik, M., 1977. Trade Using One Commodity as a Means of

- Payment. Journal of Political Economy, 85(5), pp.937–968
- Tepper, N., 2015. A Wholesale Online Market in China Offeres a New Online Procurement Program.
- Wilson R. 1978. "Competitive Exchange" *Econometrica*, vol. 46(3) pp. 577-585

# **TOPIC 4 - RISK SHARING (LECTURE 5)**

- \*Alem, M. and Townsend, R.M., 2014. An evaluation of financial institutions: Impact on consumption and investment using panel data and the theory of risk-bearing. *Journal of econometrics*, 183(1), pp.91-103.
- \*Chiappori, Pierre-Andre, Krislert Samphantharak, Sam Schulhofer-Wohl and Robert M. Townsend (2013) "Heterogeneity and Risk-Sharing in Village Economies", Quantitative Economics, Volume 5, Issue 1, pages 1–27, March 2014.
- \*Kinnan, C. and Townsend, R., 2012. Kinship and financial networks, formal financial access, and risk reduction. *The American Economic Review*, pp.289-293.
- \*Suri, T., 2011. Estimating the extent of local risk sharing between households. Working Paper.
- \*Townsend, R.M., 1994. Risk and insurance in village India. *Econometrica: Journal of the Econometric Society*, pp.539-591.
- \*Townsend, R.M., 1995. Consumption insurance: An evaluation of risk-bearing systems in low-income economies. *Journal of Economic Perspectives*, pp.83-102.
- Altonji, J.G., Hayashi, F. and Kotlikoff, L.J., 1992. Is the Extended Family Altruistically Linked? Direct Tests. *The American Economic Review*, 82(5), p.1177.
- Altug, S. and Miller, R.A., 1990. Household choices in equilibrium. *Econometrica: Journal of the Econometric Society*, pp.543-570.
- Angelucci, M. and De Giorgi, G., 2006. Indirect effects of an aid program: The case of Progresa and consumption.
- Attanasio, O. and Davis, S.J., 1996. Relative Wage Movements and the Distribution of Consumption. *Journal of Political Economy*, pp.1227-1262.
- Auclert, A., 2014. Monetary policy and the redistribution channel. *Unpublished Manuscript, Massachusetts Institute of Technology*.
- Bonhomme, S., Chiappori, P.A., Townsend, R.M. and Yamada, H., 2012. Sharing wage risk. *manuscript, Massachusetts Institute of Technology*.
- Attanasio, O., Meghir, C. and Mommaerts, C., 2015. *Insurance in extended family networks* (No. w21059). National Bureau of Economic Research.
- Chandrasekhar, A.G., Townsend, R. and Xandri, J.P., 2013. Network Financial Centrality and the Price of Personalized Debt.
- Clavijo, J., 2013. Risk Capital Allocation for a Guarantee Fund in a Central Counterparty Clearing.
- Cochrane, J.H., 1991. A simple test of consumption insurance. *Journal of political economy*, pp.957-976.
- Greenwood, J. and Jovanovic, B., 1990. Financial Development, Growth, and the Distribution of Income. *The Journal of Political Economy*, 98(5 Part 1).

- Heathcote, J., Storesletten, K. and Violante, G.L., 2014. Consumption and Labor Supply with Partial Insurance: An Analytical Framework. *American Economic Review*, 104(7), pp.2075-2126.
- Mace, B., 1991. Consumption volatility: borrowing constraints or full insurance. *Journal of Political Economy*, *99*(5), pp.928-956.
- Mobarak, A.M. and Rosenzweig, M., 2014. *Risk, insurance and wages in general equilibrium* (No. w19811). National Bureau of Economic Research.
- Paweenawat, A. and Townsend, R.M., 2012. Village Economic Accounts: Real and Financial Intertwined. *The American Economic Review*, 102(3), pp.441-446.
- Sanders, A.B. and Slawson, V.C., 2005. Shared appreciation mortgages: Lessons from the UK. *Journal of Housing Economics*, 14(3), pp.178-193.
- Samphantharak, K. and Townsend, R., 2013. *Risk and return in village economies* (No. w19738). National Bureau of Economic Research.
- Schulhofer-Wohl, S., 2011. "Heterogeneity and Tests of Risk Sharing" *Journal of Political Economy*, 119(5), pp.925–958.
- Shiller, R.J. and West, K.D., 1995. Macro markets: Creating institutions for managing society's largest economic risks. *Journal of Economic Literature*, 33(3), pp.1359-1360.
- Sripakdeevong, P. and Townsend, R.M., 2012. Informal Networks and Shadow Banking. *unpublished project document, MIT*.
- Tazhibayeva, K. and Townsend, R.M., 2012. The Impact of Climate Change on Rice Production: heterogeneity and uncertainty.
- Wilson, R., 1968. The theory of syndicates. Econometrica: journal of the Econometric Society, pp.119-132.
- http://www.cmegroup.com/trading/weather/
- https://en.wikipedia.org/wiki/Contingent convertible bond
- https://en.wikipedia.org/wiki/Shared appreciation mortgage
- https://en.wikipedia.org/wiki/Mutual insurance
- <a href="http://www.nytimes.com/2015/05/03/magazine/want-a-steady-income-theres-an-app-for-that.html">http://www.nytimes.com/2015/05/03/magazine/want-a-steady-income-theres-an-app-for-that.html</a>? r=1

# Macro and labor supply

- Bonhomme, S., Chiappori, P.A., Townsend, R.M. and Yamada, H., 2012. Sharing wage risk. *manuscript, Massachusetts Institute of Technology*.
- Chang, Yongsung, and Sun-Bin Kim. 2006. "From Individual to Aggregate Labor Supply: A Quantitative Analysis Based on a Heterogeneous Agent Macroeconomy." *International Economic Review*, 47:1–27.
- Chetty, Raj, Adam Guren, Day Manoli, and Andrea Weber "Are Micro and Macro Labor Supply Elasticities Consistent? A Review of Evidence on the Intensive and Extensive Margins", *American Economic Review Papers and Proceedings* 101: 471-75, 2011.
- Hansen, Gary D. "Indivisible labor and the business cycle", *Journal of Monetary Economics*, Volume 16, Issue 3, November 1985, Pages 309-327.
- Ljunqvist, L. and T. Sargent, "Career Length: Effects of Curvature of Earnings

- Profiles, Earnings Shocks, Taxes, and Social Security", Working Paper, 08/2011.
- Prescott, Edward C. 2002. "Prosperity and Depression," *American Economic Review* 92:1–15.
- Rogerson, Richard "Indivisible labor, lotteries and equilibrium", *Journal of Monetary Economics*, Volume 21, Issue 1, January 1988, Pages 3-16.

## Incomplete markets, banks, and default

- Allen, F. & Gale, D., 2000. Financial Contagion. *Journal of Political Economy*, 108(1), pp.1–33
- Dubey, P., Geanakoplos, J. & Shubik, M., 2005. Default and Punishment in General Equilibrium. *Econometrica*, 73(1), pp.1–37.
- Makowski, L., 1980. Perfect Competition, the Profit Criterion, and the Organization of Economic Activity. *Journal of Economic Theory*, 22(2):222–242.
- Pesendorfer, W., 1995. Financial Innovation in a General Equilibrium Model. *Journal of Economic Theory*, 65(1), pp.79–116.
- Zame, W.R., 1993. Efficiency and the Role of Default When Security Markets are Incomplete. *The American Economic Review*, 83(5), pp.1142–1164.

## **TOPIC 5 - PRIVATE INFORMATION AND LIMITED COMMITMENT (LECS. 6 & 7)**

- \*Berlin M., Mester L. 1999. "Deposits and Relationship Lending" *The Review of Financial Studies*. vol. 12(3) pp. 579-607
- \*Karaivanov, A. and Townsend, R.M., 2014. Dynamic financial constraints: Distinguishing mechanism design from exogenously incomplete regimes. *Econometrica*, 82(3), pp.887-959.
- \*Kocherlakota, N.R., 1996. Implications of efficient risk sharing without commitment. *The Review of Economic Studies*, 63(4), pp.595-609.
- \*Townsend, R.M., 1979. Optimal contracts and competitive markets with costly state verification. *Journal of Economic theory*, 21(2), pp.265-293.
- \*Townsend, R.M., 1988. Information constrained insurance: the revelation principle extended. *Journal of Monetary Economics*, 21(2), pp.411-450.
- Aghion, P. and Bolton, P., 1997. A theory of trickle-down growth and development. *The Review of Economic Studies*, 64(2), pp.151-172.
- Doepke, M. and Townsend, R.M., 2006. Dynamic mechanism design with hidden income and hidden actions. *Journal of Economic Theory*, 126(1), pp.235-285
- Duffie, D. and Zhu, H., 2015. *Size discovery* (No. w21696). National Bureau of Economic Research.
- Fleming, M. and Nguyen, G., 2013. Order Flow Segmentation and the Role of Dark Trading in the Price Discovery of US Treasury Securities. *Working Paper*
- Green E., Oh S. 1991. "Can a Credit Crunch be Efficient: A Bleak Outlook for the U.S. Economy" *Federal Reserve Bank of Minneapolis Quarterly Review*, 15(4).
- Evans, D.S. and Jovanovic, B., 1989. An estimated model of entrepreneurial choice under liquidity constraints. *The Journal of Political Economy*, pp.808-827.
- Guinnane, T., 1998. Financial Intermediation for Poor People: The Development of Germany's Credit Cooperatives, 1850–1914.

- Green, E.J. and Oh, S.N., 1991. Contracts, constraints and consumption. *The Review of Economic Studies*, 58(5), pp.883-899.
- Kirk, A.M., McAndrews, J., Sastry, P. and Weed, P., 2014. Matching collateral supply and financing demands in dealer banks. *Economic Policy Review, Forth-coming*.
- Ligon, E., Thomas, J.P. and Worrall, T., 2002. Informal insurance arrangements with limited commitment: Theory and evidence from village economies. *The Review of Economic Studies*, 69(1), pp.209-244.
- Paulson, A.L. and Townsend, R., 2004. Entrepreneurship and financial constraints in Thailand. *Journal of Corporate Finance*, 10(2), pp.229-262.
- Paulson, A.L., Townsend, R.M. and Karaivanov, A., 2006. Distinguishing limited liability from moral hazard in a model of entrepreneurship. *Journal of political Economy*, 114(1), pp.100-144.
- Prescott, E. S. (1999). A primer on moral-hazard models. FRB Richmond Economic Quarterly 85(1), 47–77.
- Prince, R. A., May 16th 2014. What is Wealth Management? Forbes.
- Ru H., and Townsend R.M., 2015. Narrowing the GAP: the Costly State Verification Regime in Rural Thailand.
- Townsend, R.M., 1982. Optimal multiperiod contracts and the gain from enduring relationships under private information. *The Journal of Political Economy*, pp.1166-1186.
- Townsend R., Yaron J. 2001. "The Credit Risk-Contingency System of an Asian Development Bank" Federal Reserve Bank of Chicago Economic Perspectives, 3Q 2001
- Zhu, H., 2013. Do dark pools harm price discovery?. Review of Financial Studies.
- <a href="http://www.crossratetechnologies.com/u-s-treasury-dealers/symbiotic-dealer-relationships-benefits-the-client/">http://www.crossratetechnologies.com/u-s-treasury-dealers/symbiotic-dealer-relationships-benefits-the-client/</a>
- http://www.investopedia.com/terms/e/etf.asp

#### **Banks Runs**

- Andolfatto, David, Ed Nosal, and Neil Wallace (2007) "The role of independence in the Green–Lin Diamond–Dybvig model," *Journal of Economic Theory* 137(1): 709-715.
- Cavalcanti, R. & Monteiro P.K., 2011. "Enriching information to prevent bank runs," Working paper.
- Cipriani, M., Martin, A., McCabe, P.E. and Parigi, B.M., 2014. Gates, fees, and preemptive runs. *Working paper*
- Diamond, D.W. & Dybvig, P.H., 1983. Bank Runs, Deposit Insurance, and Liquidity. *The Journal of Political Economy*, 91(3), pp.401–419.
- Engineer, M., 1989. Bank runs and the suspension of deposit convertibility. *Journal of Monetary Economics*, 24(3), pp.443-454.
- Ennis, H.M. and Keister, T., 2009. Bank runs and institutions: The perils of intervention. *The American Economic Review*, pp.1588-1607.

- Green, E.J. & Lin, P., 2003. Implementing Efficient Allocations in a Model of Financial Intermediation. *Journal of Economic Theory*, 109(1), pp.1–23.
- Peck, J. & Shell, K., 2003. Equilibrium Bank Runs. *Journal of Political Economy*, 111(1), pp.103–123.
- Wallace, N., 1990. A Banking Model in Which Partial Suspension Is Best. Federal Reserve Bank of Minneapolis Quarterly Review, 14(4), pp.11–23.

## **TOPIC 6 - PLATFORMS (LETURES 8 & 9)**

- \*Ahlin, C. and Townsend, R.M., 2007. Using Repayment Data to Test Across Models of Joint Liability Lending. *The Economic Journal*, 117(517), pp.F11-F51.
- \*Ahlin, C. and Townsend, R.M., 2007. Selection into and across credit contracts: theory and field research. *Journal of Econometrics*, 136(2), pp.665-698.
- \*Diamond D. 1984. "Financial Intermediation and Delegated Monitoring" *The Review of Economic Studies*, vol. 51(3)
- \*Green D., and Liu E., 2015. Credit Markets without Commitment. *Mimeo*.
- \*Jain A., and Townsend, R. M., 2015. The Economics of Platforms in a Walrasian Framework.
- \*Townsend, R.M., 1978. Intermediation with costly bilateral exchange. *The Review of Economic Studies*, pp.417-425.
- Acemoglu D., Zilibotti F. 1997. "Was Prometheus Unbound by Chance? Risk, Diversification, and Growth" *The Journal of Political Economy*, vol. 105(4).
- Acharya V., Bisin A. "Counterparty Risk Externality: Centralized versus Overthe-Counter Markets" *Journal of Economic Theory*, vol. 149 pp. 153
- Bizer D., Demarzo P. 1992. "Sequential Banking" *The Journal of Political Economy*, vol. 100(1) pp. 41-61
- Boyd J., Prescott E. 1985. "Financial Intermediary-Coalitions" *Federal Reserve Bank of Minneapolis Research Department Staff Reports*, no. 87
- Duffie, D., 2014. Financial Market Infrastructure: Too Important to Fail (NBER Working Paper No. 14101).
- O'Hara, M. and Ye, M., 2011. Is market fragmentation harming market quality?. *Journal of Financial Economics*, 100(3), pp.459-474.

## **Retrading and externalities**

- D. Acemoglu, A. Simsek, "Moral hazard and efficiency in general equilibrium with anonymous trading," Working Paper, 2008.
- Greenwald, B. and J. Stiglitz (1986). Externalities in Economies with Imperfect Information and Incomplete Markets. *Quarterly Journal of Economics* 101 (2).
- Hart, O. and L. Zingales, 2013. Liquidity and Inefficient Investment, Manuscript
- Jacklin, C., 1987. Demand Deposits, Trading Restrictions, and Risk Sharing in E.
   C. Prescott & N. Wallace, Contractual Arrangements for Intertemporal Trade.
   Univ Of Minnesota Press.
- Jeanne, O. & Korinek, A., 2010. Managing Credit Booms and Busts: A Pigouvian Taxation Approach. *NBER Working Paper* No. 16377.

- Kilenthong, Weerachart T. and Robert M. Townsend (2010) "Information-Constrained Optima with Retrading: An Externality and Its Market-Based Solution" *Journal of Economic Theory*, 146 (3), 2011: 1042-1077.
- Kilenthong, W. and Townsend, R., 2014. Segregated Security Exchanges with Ex Ante Rights to Trade: A Market-Based Solution to Collateral-Constrained Externalities (No. w20086). National Bureau of Economic Research.
- Kilenthong, W.T. and Townsend, R.M., 2016. A Market Based Solution to Price Externalities and Other Pecuniary Externalities. *Working Paper*.
- Lorenzoni, G., 2008. Inefficient Credit Booms. *The Review of Economic Studies*, 75(3), pp.809 –833.

## **TOPIC 7 - MONEY, LIQUIDITY (LECTURE 10)**

- \*Dandekar, Pranav, Ashish Goel, Ramesh Govindan, and Ian Post. 2012. "Liquidity in Credit Networks: A Little Trust Goes a Long Way," arXiv:1007.0515v3.
- \*Ostroy, J.M. & Starr, R.M., 1974. Money and the Decentralization of Exchange. *Econometrica*, 42(6), pp.1093–1113.
- \*Townsend R and N Wallace, "Circulating Private Debt: An Example with Coordination Problem," in Contractual Arrangements for Intertemporal Trade, 1987.
- Bech, M.L., Martin, A. and McAndrews, J., 2012. Settlement Liquidity and Monetary Policy Implementation—Lessons from the Financial Crisis. *Economic Policy Review*, 18(1).
- Cass, David, and Menahem E. Yaari. 1966. "A Re-Examination of the Pure Consumption Loans Model." Journal of Political Economy 74 (August): 353–67.
- Dandekar, P., Goel, A., Govindan, R. and Post, I., 2011, June. Liquidity in credit networks: A little trust goes a long way. In *Proceedings of the 12th ACM conference on Electronic commerce* (pp. 147-156).
- Drechsler, I., Savov, A. and Schnabl, P., 2014. The Deposits Channel of Monetary Policy. *Available at SSRN*.
- Fleming, M.J. and Garbade, K., 2005. Explaining settlement fails. *Current Issues in Economics and Finance*, 11(9).
- Freeman, Scott. 1996. "The Payments System, Liquidity, and Rediscounting." American Economic Review 86 (December): 1,126–38.
- Fuerst, Timothy S. 1992. "Liquidity, Loanable Funds, and Real Activity." Journal of Monetary Economics 29 (February): 3–24.
- Garbade, K. and Ingber, J., 2005. The Treasury auction process: Objectives, structure, and recent adaptations. *Current issues in economics and finance*, 11(2).
- Garratt, R., Martin, A., McAndrews, J.J. and Nosal, E., 2015. *Segregated balance accounts* (No. 730).
- Green, Edward J. 1999. "Money and Debt in the Structure of Payments." Federal Reserve Bank of Minneapolis Quarterly Review 23 (Spring): 13–29.
- Grossman, Sanford J., and Laurence Weiss. 1983. "A Transactions Based Model of the Monetary Transmission Mechanism." American Economic Review 73 (December): 871–80.

- Jack, W., Suri, T. and Townsend, R.M., 2010. Monetary theory and electronic money: Reflections on the Kenyan experience. *FRB Richmond Economic Quarterly*, 96(1), pp.83-122.
- Kemmerer, E.W., 1911. Seasonal variations in the New York money market. *The American Economic Review*, *I*(1), pp.33-49.
- Lucas, Robert E., Jr. 1980. "Equilibrium in a Pure Currency Economy." Economic Inquiry 18 (April): 203–20.
- Lucas, Robert E., Jr. 1990. "Liquidity and Interest Rates." Journal of Economic Theory 50 (April): 237–64.
- Manuelli, R. and Sargent, T.J., 2010. Alternative monetary policies in a turnpike economy. *Macroeconomic Dynamics*, 14(05), pp.727-762.
- Martin, A. and McAndrews, J., 2010. A study of competing designs for a liquidity-saving mechanism. *Journal of Banking & Finance*, 34(8), pp.1818-1826.
- Munyan, B., 2014. Regulatory Arbitrage in Repo Markets. Working Paper
- Perez-Verdia, Carlos. 2000. "Transaction Costs and Liquidity." University of Chicago, PhD dissertation.
- Quinn, S. and Roberds, W., 2006. An economic explanation of the early Bank of Amsterdam, debasement, bills of exchange, and the emergence of the first central bank
- Romer, David. 1987. "The Monetary Transmission Mechanism in a General Equilibrium Version of the Baumol-Tobin Model." Journal of Monetary Economics 20 (July): 105–22.
- Rotemberg, Julio J. 1984. "A Monetary Equilibrium Model with Transactions Costs." Journal of Political Economy 92 (February): 40–58.
- Sargent, Wallace (1982), "The real-bills doctrine versus the quantity theory: A reconsideration", The Journal of Political Economy
- Schelling, T.C., 1960. The strategy of conflict. *Cambridge, Mass*.
- Shapley, L. & Shubik, M., 1977. Trade Using One Commodity as a Means of Payment. *Journal of Political Economy*, 85(5), pp.937–968
- Townsend, Robert M., (1980) "Models of Money with Spatially Separated Agents", In: Models of Monetary Economies, ed. by J. H. Kareken and Neil Wallace, Minneapolis: Federal Reserve Bank of Minneapolis, pp. 265--304.
- Townsend, Robert. 1983. "Financial Structure and Economic Activity." American Economic Review 73 (December): 895–911.
- Townsend, R.M., 1987. Economic organization with limited communication. *The American Economic Review*, pp.954-971.
- Townsend, Robert. 1989. "Currency and Credit in a Private Information Economy." Journal of Political Economy 97 (December): 1,323–44.
- Townsend, R., 1990. Financial structure and economic organization. Blackwell.
- Wallace, N., 2014. Optimal money creation in "pure currency" economies: a conjecture. *The Quarterly Journal of Economics*, 129(1), pp.259-274.
- Wallace, N., 2014. Optima in heterogeneous-agent monetary economies.
- Wicksell, Knut. 1935. Lectures on Political Economy. London: MacMillan.
- Woodford, M., 1990. Ch. 20 The Optimum Quantity of Money. In B. M. Friedman & F. Hahn, eds. *Handbook of Monetary Economics*. Elsevier, pp. 1067–1152