The Inaugural Oxford Saïd Macrofinance Workshop: Money Creation

Saskatchewan Room, Exeter College, Turl Street, Oxford, OX1 3DP
Tuesday, 10th April 2018
Organised by Alan Morrison, Dimitrios Tsomocos and Xuan Wang, Saïd Business School, University of Oxford

Preliminary Programme
Session format: 30 minutes of presentation, 10 minutes of discussion, 5 minutes of Q & A

8:30 - 9:00 am **Registration**

9:00 – 9:30 am **Opening remarks from Charles Goodhart (London School of Economics)**
What Determines the Growth of the Money Supply?

We start by examining four theories that seek to explain money supply growth, and find none of them fully satisfactory. We focus mostly on the shortcomings of the currently favourable theory, i.e. that commercial bank credit expansion is the main determinant of monetary growth.

Instead, we argue that the banking system has evolved as a mechanism whereby both the public and private sectors can create liquid assets for themselves. This raises questions about the relative merits of flexibility versus control, i.e. the currency versus the banking school, and of the relationship between sovereign states and central banks, as evidenced by the euro-zone.

9:30 – 10:15 am **Endogenous Liquidity and Contractionary Monetary Easing**

Michael Kumhof (Bank of England, presenter), Dimitrios Tsomocos (Oxford), Xuan Wang (Oxford)

The paper builds a DSGE model of endogenous money creation by banks. Because only banks can commit, deposit creation through loans is essential for real activity, because deposits alone make economic exchange possible. In our infinite-horizon setup deposits continuously circulate between firms and households via the credit extension mechanism of banks, so that banks are intermediaries between spenders and spenders and not between savers and borrowers. We show why price level determinacy obtains despite the complete absence of outside money. We study optimal monetary policy, and find that reductions in the policy rate near the ZLB are contractionary because they reduce banks' incentives to create money

Discussant: Udara Peiris, High School of Economics, National Research University

10:15-11:00 am **The Money Creation Approach to Banking**

Salomon Faure(ETH), Hans Gersbach (ETH, presenter)

We study money creation and destruction in today's monetary architecture and examine the role of monetary policy and capital regulation in a general equilibrium setting. There are two types of money created and destructed: bank deposits, when banks grant loans to firms or to other banks, and central bank money, when the central bank grants loans to private banks. We show that equilibria yield the first-best level of money creation and lending when prices are flexible, regardless of the monetary policy or capital regulation. When prices are rigid, we identify the circumstances in which money creation is excessive or breaks down and the ones in which an adequate combination of monetary policy and capital regulation can restore efficiency.

Finally, we provide a series of extensions and generalizations of the results.

Discussant: Thomas Norman, University of Oxford

11:00-11:15 am   **Tea and Coffee**

11:15- 12:00 am   **Warehouse Banking**

Jason Donaldson (WUSTL), Giorgia Piacentino (Columbia), Anjan Thakor (WUSTL, presenter)

We develop a theory of banking that explains why banks started out as commodities warehouses. We show that warehouses become banks because their superior storage technology allows them to enforce the repayment of loans most effectively. Further, interbank markets emerge endogenously to support this enforcement mechanism. Even though warehouses store deposits of real goods, they make loans by writing new "fake" warehouse receipts, rather than by taking deposits out of storage. Our theory helps to explain how modern banks create funding liquidity and why they combine warehousing (custody and deposit-taking), lending, and private money creation within the same institutions. It also casts light on a number of contemporary regulatory policies.

Discussant: Ji Yan, Saïd Business School, University of Oxford

12:00 – 12:45 pm   **Optimal Banking Regulation with Endogenous Liquidity Provision**

Tai-wei Hu (Bristol, presenter), Yiting Li (National Taiwan University)

In a money-search model where deposits are used as means-of-payments, banks have expertise to obtain higher returns from assets with a cost and an economy of scale but are subject to limited commitment and moral hazard. They can pledge a proportion of asset holdings to issue deposits. Optimal regulation trades off efficiency in asset- management and liquidity service banks provide. An optimal charter system restricts banking licence to crate profits for banks to sustain a leverage ratio above the laissez- faire level to improve liquidity. A moral hazard problem for banks is also considered where banks may choose to gamble with the assets to obtain a stochastic higher private returns but with lower overall expected returns and we characterize the optimal capital requirement. As moral hazard becomes more serious, optimal regulation allows banks to be larger and have higher profits to compensate for stricter capital requirement due to moral hazard. However, we also show that when such capital requirement becomes too restrictive, it is in fact optimal to allow banks to gamble.

Discussant: Tianxi Wang, University of Essex

12:45 – 2:00 pm   **Lunch in Hall**

2:00 – 2:45 pm   **A New Approach to Bank Liquidity**

Alan Morrison (Oxford), Tianxi Wang (Essex)

The dominant approach to bank liquidity in economics, namely that of Diamond and Dybvig (1983, JPE), is founded on the assumption that when a depositor needs liquidity, say for immediate consumption, he has to withdraw from the bank. This naturally drives banks to offer demand deposit contracts and to hold liquid assets, and also equalizes a bank's liquidity need to the aggregate liquidity needs of its depositors. However, we observe that in reality demand deposit is widely used as a means of payment and therefore depositors typically do not withdraw when they have liquidity needs. Based on this observation, we present a new approach to bank liquidity, specifically, a new economic rationale for banks' offering demand depositor and a new examination of banks' liquidity issue. Furthermore, we show how a policy of good bank – bad bank works to improve efficiency.

Discussant: Dimitrios Tsomocos, Saïd Business School, University of Oxford

2:45 – 3:30 pm	**The Fisher Equation Revisited**

The Fisher Equation Revisited

Udara Peiris (HSE, presenter), Herakles Polemarchakis (Warwick)

According to Alvarez, Lucas, Weber (2001) ``Interest rates and inflation,'' there exists systematic evidence that increases in average rates of money growth are associated with equal increases in average inflation rates and in interest rates; which conforms to the quantity theory or, alternatively, the Fisher equation. And this is a puzzle, as there is a consensus that inflation can be reduced by increasing short term interest rates.

Here, we develop an argument to resolve the conundrum. The Central Bank sets the interbank rate that we identify with the short term rate; commercial banks trade in the interbank market to accommodate flows in balances. The interbank rate, thus, poses a wedge between the return to deposits and the cost of borrowing; which accounts for a negative relation between the short term rate and inflation or, alternatively, between the short term rate and economic activity with no contradiction either with the quantity theory or the Fisher equation.

Discussant: Xuan Wang, Saïd Business School, University of Oxford

3:30 – 3:45 pm Tea and Coffee

3:45 – 4: 30 pm Consumption Dynamics, Housing Collateral and Stabilisation Policies: A Way Forward for Policy Co-ordination?

Jagjit S. Chadha (NIESR Cambridge, presenter), Germana Corrado (University of Rome Tor Vergata), Luisa Corrado (University of Rome Tor Vergata)

We decompose aggregate consumption of heterogeneous consumers by modelling both savers and their links to collateral constrained borrowers through a bank which prices credit risk. Savers own both firms and the commercial bank while borrowers require loans from the commercial bank to effect their consumption plans. The bank lends at a premium over the interest rate on central bank money in proportion to the riskiness of loans, the demand for loans, the asset price and the quantity of housing collateral. We show that even though house prices do not represent wealth, aggregate consumption is closely related to movements in house prices. House price-induced changes may lead to large variations in household spending via the collateral effect with important policy implications. We consider the case for jointly determined macro-prudential, fiscal and monetary policies in order to minimise losses for a representative household. We also analyse the implications when there is uncertainty over some of the policy parameters such as the loan default rate.

Discussant: Mathias Drehmann, Bank for International Settlements

4:30—5: 15 pm Financial Innovation, Shadow Banking, and Divisia Velocity

Richard Anderson (University of Missouri), John Duca (Oberlin College and Fed Dallas, presenter) and Barry Jones (Binghamton University)

It is well known that empirical demand equations for monetary aggregates experience occasional large shifts stemming from financial innovation and regulatory changes that alter the ability of specific monetary assets to satisfy the transactions and store of value demands for money. In recent years, these shifts have been reflected in out-sized and persistent declines in the velocity of M2-level aggregates, both simple-sum aggregates and the Divisia indexes that seek to measure "monetary services." In this study, we note that the velocity of broader measures, including the most-inclusive Divisia index, have been notably more stable. We trace this stability to the way in which the shadow banking system creates "money" via liquidity and maturity transformation— broader monetary measures better internalize the impact of monetary services provided by short- term liabilities created by the shadow bank system. During the last decade, the velocity of broader

indexes (including the Center for Financial Stability's M4) has reflected, in part, the shrinkage of shadow banks' money-like liabilities following the global financial crisis. Our study attributes to two factors the bulk of recent velocity fluctuations: (1) increases in the quantity of monetary services furnished by assets not included in the Divisia indexes (that is, continuing financial innovation), and (2) regulatory shifts affecting the intermediation of less liquid assets and thereby the funding of them with shadow-bank liabilities whose services are not included in broad Divisia aggregates. By constructing sensible models of the demand for Divisia monetary services, this study demonstrates the importance of shadow bank short-term and long-term liabilities for understanding the demand for liquidity and how some—but not all—monetary services indexes can help provide information about nominal aggregate demand. Reliable models of the demand for monetary services (e.g., Divisia velocity) could help analysts glean information about the underlying pace of nominal spending.

Discussant: Tatjana Schulze, Saïd Business School, University of Oxford

5:15pm -   **Drinks at Kings Arms**