

The Changing Fortunes of Central Banking

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Abstract

Understanding the changing role of central banks and the novel policies they have pursued recently is absolutely essential for analysing many economic, financial and political issues, ranging from financial regulation and crisis, to exchange rate dynamics and regime changes, and QE and prolonged low interest rates. This book features contributions by many of the world's leading experts on central banking, providing in accessible essays a fascinating review of today's key policy and research issues for central banks. Luminaries including Stephen Cecchetti, Takatoshi Ito, Anil Kashyap, Mervyn King, Donald Kohn, Otmar Issing, Hyun Shin and William White are joined by Charles Goodhart of the London School of Economics, whose many achievements in the field of central banking are honoured as the inspiration for this book.

The Changing Fortunes of Central Banking discusses the developing role of central banks and the policies they pursue in seeking monetary and financial stabilisation, while also giving suggestions for model strategies. This comprehensive review will appeal to central bankers, financial supervisors, academics and economists working in think tanks.

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Chapter 1

Introduction and Overview

Philipp Hartmann, Haizhou Huang and Dirk Schoenmaker

1.1 Introduction

This volume tells the story of the changing fortunes of central banks from powerful, narrowly targeted, monetary institutions to expanded institutions with multiple tasks and uncertain outcomes. During this journey, the central banks gained hard-fought independence in the 1990s, which they are about to lose, at least partly, under a broader monetary and financial stability mandate. When governments must provide a fiscal backstop to the financial system, they also want to have a say. The script starts with twelve key contributions from the life of a central banker, Charles Goodhart.

The first contributions concern, fittingly, monetary history. Examining the 1907 collapse of the US economy, Goodhart (1969) established in his Harvard PhD thesis, *The New York Money Market and the Finance of Trade, 1900–1913*, that part of the explanation was found in fluctuations in the banking system, which operated at the time without a central bank. The interaction between money and banking has been at the heart of central banking until today. Goodhart (1972) repeated the historical ‘banking’ exercise for the UK in *The Business of Banking, 1892–1914*. Another key paper on monetary history by Goodhart (2018) is ‘The Bank of England, 1694–2017’, which will be published shortly by the world’s oldest central bank, the Sveriges Riksbank. This history examines *inter alia* the relationship between the government and the Bank of

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England. Goodhart identifies a general pattern that the more severe the crisis is, and the less successful the central bank is in defusing that, the more likely will it be that the government will (re)take control. Independence is not an absolute concept.

The second set of contributions is in the area of monetary policy with Goodhart's move to the Bank of England. This period – covering the late 1960s until the early 1980s – reflects the rise and subsequent collapse of monetary aggregates. At the time, the monetarist debate in the USA (Friedman and Schwartz, 1963) was crossing the Atlantic. In a key paper, 'The Importance of Money', Goodhart and Crockett (1970) investigated whether money was a leading indicator for moves in output and prices. While initial results suggested quite a stable relationship, Goodhart (1984) discovered 'The Problems of Monetary Management: The UK Experience'. This led to the famous Goodhart's Law that 'whenever a government seeks to rely on previously observed statistical regularity for control purposes that regularity will collapse' (Goodhart, 1984, p.96). This Law also appears to be applicable to financial regulation, as discussed below. Finally, Goodhart's (1989a) *Economic Journal* paper, 'The Conduct of Monetary Policy', makes the point that state-of-the-art macroeconomic models have a much greater tendency to revert to a (unique) equilibrium than the economy in practice. The many imperfections behind this behaviour justify more intervention and more discretion than contemporaneous theory would suggest.

A third set of papers is on the determination of the money supply. In Chapter VI of his textbook, *Money, Information and Uncertainty*, Goodhart (1989b) argues that the multiplier approach – to go from base money to broad monetary aggregates – obscures the behavioural process whereby people and institutions choose to apportion their wealth and income (see also Goodhart, 2009). More recently, Goodhart (2017) argues that it has become impossible to continue with the fiction that the central bank sets the money stock by varying the monetary base within a system in which there was a predictably stable

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money multiplier. As banking is a services industry, it is more relevant to find the optimal balance between the control of monetary expansion and flexibility in allowing client access to money, via borrowing from banks. This conflict between 'control' and 'flexibility' mirrors the long-running debate between the 'Currency' and 'Banking' Schools, whereby the former puts greater weight on control and the latter on flexibility. In the aftermath of a financial crisis, there is a tendency for control, even at some expense in efficiency, growth and flexibility. In contrast, the greater the prior experience of stability, and the greater the ingenuity of the bankers, the more the banking system is allowed to generate flexibility and (apparent) efficiency.

A fourth set of contributions covers the heyday of central banks, as powerful institutions with narrowly defined monetary mandates. Mainstream academics stressed time inconsistency as the principal reason for central bank dependence. Politicians will reduce interest rates just ahead of elections to stimulate employment. This argument assumes short (or no) lags in monetary policy. But Goodhart and Huang (1998) argued that there are long lags in monetary policy. Politicians are then liable to vary interest rates 'too little, too late', but not in a desire to fool people into working harder. Given the time lags, the aim of monetary policy must be to control the future forecast of inflation, i.e. inflation targeting (the next topic below). This academically inspired move to central bank independence can be remembered as a period with high spirits and expectations. Charles Goodhart was a member of the Roll Committee (1993), a committee of the great and the good from the City that paved the way for the independence of the Bank of England, and was also among the first group of external members of the Bank's Monetary Policy Committee. On the academic side, Goodhart (1994) wrote a tongue-in-cheek paper, 'Game Theory for Central Bankers: A Report to the Governor of the Bank of England', making fun of the time-inconsistency literature. On a more serious note, Capie, Goodhart and Schnadt (1994) did a major review, 'The Development of Central Banking', covering thirty-two central banks, including their rise to independence.

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As the newly independent central banks started a quest for a new compass for monetary policy in the late 1980s/early 1990s, Goodhart provided supporting evidence to the parliament in Wellington for the Reserve Bank of New Zealand as the first mover towards inflation targeting in 1989. In a fifth set of papers, which include 'Strategy and Tactics of Monetary Policy: Examples from Europe and the Antipodes' (Goodhart and Vinals, 1994) and 'The Political Economy of Inflation Targets: New Zealand and the UK' (Goodhart, 2010), Goodhart made the case for inflation targeting, whereby the government sets the objective and provides the central bank autonomy to vary interest rates so as to reach the target. Next, Goodhart, Osorio and Tsomocos (2010) discuss the ongoing debate whether monetary policy should target inflation (i.e. consumer prices) or asset prices. Their results suggest that the interest rate is preferable to the money supply instrument because in times of financial distress the central bank automatically satisfies the increased demand for money (note the earlier argument of the Banking School about flexibility). While monetary policy aimed at stabilising consumer inflation, but not asset price inflation, can produce financial instability, they show that central banks' financial stability objective should be primarily achieved by regulatory measures, a topic to which we return below.

Moving on to the monetary architecture on the international scene, the sixth set of contributions covers the currency board of Hong Kong, which Charles Goodhart helped to establish in 1983. In his 'Hong Kong Financial Crisis (1983)' paper, Goodhart (1997) exposes the usual pattern of the political origins (faltering negotiations between Chairman Deng Xiaoping and Prime Minister Margaret Thatcher on the future of Hong Kong) of the subsequent monetary crisis. As the Hong Kong dollar had no anchor, the exchange rate fell and in turn so did property prices. The answer was to establish such an anchor through the Hong Kong currency board, which is one of the longest, and still existing, arrangements of its kind. In a fascinating study, Goodhart and Dai (2003) describe how the Hong Kong Monetary Authority (HKMA) coped with the

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speculative attack in 1998. Speculators had developed an ingenious ‘double-play’, simultaneously selling both the foreign exchange market and the Hang Seng equity market short; whether the authorities used an interest rate defence, or abandoned the ‘link’, the speculators would gain either way. Therefore, the authorities decided on a bold, unexpected and unconventional response. HKMA undertook a massive counter-intervention, again both in the equity and foreign exchange markets, amounting to buying up around 5 per cent of the total capitalisation of the Hang Seng equity market.

Foreign exchange markets and high-frequency data analysis, the seventh area of contributions, are important for the international financial system. In his inaugural lecture at the London School of Economics (LSE), ‘The Foreign Exchange Market: A Random Walk with a Dragging Anchor’, Goodhart (1988a) investigates what determines exchange rate movements. He found it hard to find evidence of either short-term overshooting or longer-term reversion to equilibrium, as predicted by theory. The interplay between those basing their views on fundamentals and those who use a random walk approach influences the market outcome. In his research, Goodhart sought to watch actual behaviour of exchange rates and to talk to practitioners, culminating in a raft of studies based on high-frequency exchange rate data. This way, he – together with a group of PhD students at the LSE – became one of the pioneers of high-frequency data analysis. For example, in *The Foreign Exchange Market*, Goodhart and Payne (2000) explain the regular patterns in intra-day foreign exchange rate activity and the effects of macroeconomic news of rates and analyse the profitability of technical trading rules in these markets. Goodhart and O’Hara (1997) review the huge spectrum of applications and the new insights that can be gained from high-frequency data analysis in financial markets in general.

The eighth set of contributions covers monetary union. While academics tend to make the economic argument for the Economic and Monetary Union (EMU) applying the theory on optimal currency areas, Goodhart (1995) recognised from the start that it was a political project, with a paper aptly titled

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'The Political Economy of Monetary Union'. In a stimulating paper titled 'The Two Concepts of Money: Implications for the Analysis of Optimal Currency Areas', Goodhart (1998) draws on monetary history to examine the concept of money. The Metallists assert that the value of money lies in its ready adoption by the market as an efficient way of carrying out transactions in an 'optimal currency area'. However, the Cartalists consider instead that the value of money comes from an act of government that coerces people to use its money, in particular to pay taxes, by declaring it the sole legal tender. The Cartalists stress that a state is needed behind the currency. It is no surprise that Goodhart sides with them.

Moving to broad central banking, the ninth area covers the functions of monetary policy and financial stability and their interaction. In his epic volume *The Evolution of Central Banks*, Goodhart (1988b) examines the rationale for having central banks. In response to the free banking school, Goodhart argues that a *not for profit* central bank plays a necessary, stabilising role in the banking system. He thus stresses its financial stability role, including being the lender of last resort to the banking system, in the early days of central banks. In Goodhart (1987), he adds that banks are special (compared to other financial intermediaries) in requiring particular regulation, supervision and a lender of last resort, because they combine non-marketed loans, whose true value is uncertain, with fixed-value deposits. The question of the interaction between money and banking came back at the planning for EMU in the 1990s: Should the European Central Bank (ECB) get a narrow monetary mandate or should it be a broad central bank combining the monetary and financial stability mandates? In a paper titled 'Should the Functions of Monetary Policy and Banking Supervision Be Separated?', Goodhart and Schoenmaker (1995) seek to address that question. While there could be conflicts of interest between the two mandates, they argue that any central bank, narrow or broad, has to take into account the health of the banking system when implementing monetary policy, as banks are at the heart of the monetary transmission mechanism. With hindsight it is

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interesting to note that the ECB started on the narrow (Bundesbank) model and after the global financial crisis (2007/8) and the subsequent euro sovereign debt crisis (2010) has ended up on the broad (Bank of England) model combining monetary policy and banking supervision.

While central banks as well as separate supervisory agencies started to regulate and supervise banks and other financial institutions, it was not clear exactly which market failures and externalities supervisors were addressing. The tenth set of contributions starts with an influential book, *Financial Regulation: Why, How and Where Now?*, in which Goodhart, Hartmann, Llewellyn, Rojas-Suarez and Weisbrod (1998) examine the rationale. They highlight three main reasons for government intervention in the financial sector: (1) asymmetric information between customers and financial firms justifying prudential and conduct of business supervision of individual financial firms; (2) externalities in the financial system justifying the financial stability or macro-prudential role of central banks; and (3) market power of financial institutions and/or infrastructures justifying competition policy. It appears that supervisors are mainly concerned with the first, depositor protection, and wider investor/policyholder protection, partly because their political masters are mostly concerned with the protection of consumers, who are also voters. That means that externalities, or endogenous feedback loops in the financial system, get less attention. Ahead of the global financial crisis, Danielsson, Embrechts, Goodhart, Muennich, Keating, Renault and Shin (2001) warned in 'An Academic Response to Basel II' that the newly designed Basel II rules to safeguard individual banks would make the overall banking system more procyclical and fragile with self-reinforcing dynamics. They stressed the endogeneity of risk in the financial system, while the Basel II regulations assumed that risk is exogenous. Looking at the early years, in *The Basel Committee on Banking Supervision* Goodhart (2011a) argues that the Basel Committee suffered from the fallacy of composition, which concerns the idea that to safeguard the system it suffices to safeguard the components. But in trying to make themselves safer,

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financial firms can (be made to) behave in a way that collectively undermines the system. The Basel Committee thus failed to strengthen the stability of the financial system as a whole.

The eleventh set of contributions contains courageous endeavours to model financial stability. The great success of monetary policy in the 1990s and early 2000s was supported by models designed to forecast inflation in the medium term. If only such models were available for financial stability, central banks could also improve their track record in this domain. Back at the financial stability wing of the Bank of England, Goodhart, Sunirand and Tsomocos (2004, 2006) made a theoretical step in this direction by developing 'A Model to Analyse Financial Fragility'. This clarifies a number of issues, from problems relating to individual bank behaviour and risk-taking, to possible contagious interrelationships between banks, and the appropriate design of prudential requirements and incentives to limit 'excessive' risk-taking. Importantly, the authors use heterogeneous commercial banks, allowing them to study the interaction between banks. By doing so, they deviate from the representative agent approach, which is dominant in academic macroeconomics.

The twelfth and final contribution covers the new challenges for central banks after the global financial crisis. Taking a long-term view, Goodhart (2011b) identifies four periods in 'The Changing Role of Central Banks'. The first (Victorian) and third (1980–2007) epochs of central banking were characterised by highly successful monetary regimes (gold standard and inflation targeting, respectively), reliance on market mechanisms and independent central banks. Post World War I, the first epoch came to a crashing halt in the Great Depression (the second epoch), and deflation then led to a period of government domination, direct controls and subservient central banks. Goodhart (2011b) argues that there is a good chance we will return towards the second epoch, with more intrusive regulation and greater government involvement (e.g. in bank resolution and with a bank tax). The old Scottish saying that 'he who pays the piper calls the tune' is still applicable. Goodhart predicts that the idea of the

central bank as an independent institution will be put aside in these areas, while the operational independence in setting the official short-term rate may stay.

1.2 Overview of the Book

The above contributions provide an excellent introduction to the chapters in this volume. They cover the same topics, as most authors have been colleagues and/or co-authors of Charles Goodhart.

Part I contains contributions relating to monetary economics and policy. Chapter 2 in this volume is by the former Governor of the Bank of England, Mervyn King, with the title ‘Money: How Could Economists Do without It?’. King argues that monetary economics has given up the idea of money, by focusing on the real interest rate in a simple model of a single commodity and a single inter-temporal price (i.e. the real interest rate). This simple model cannot tackle questions about the consequences of the massive expansion of central bank balance sheets and base money (i.e. quantitative easing), and of the impact of negative interest rates on private sector behaviour. King highlights that a more sophisticated understanding of the monetary and financial sectors of our economies is needed.

Chapter 3, by Forrest Capie and Geoffrey Wood, both of Cass Business School, is titled ‘Monetary Control in the UK: The Impossible Dream?’. They discuss the difficulties of monetary control under different exchange rate regimes following World War II. After attempts to control the money supply domestically (e.g. under the ‘Competition and Credit Control’ approach) had foundered, resort was made to an external constraint. When the sterling–Deutschmark link subsequently collapsed, the UK adopted an inflation-targeting regime, with no mention of money or monetary control. The authors, like Mervyn King, discern signs of a return of money in monetary policy discussions.

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In [Chapter 4](#), Paul Tucker, former Deputy Governor of the Bank of England, discusses central bank independence in his chapter titled 'Pristine and Parsimonious Policy: Can Central Banks Ever Get Back to It and Why They Should Try'. Tucker begins by noting that central banks are more powerful now than they have been for almost a century, which has contributed to discomfort and criticism. He argues that central bank mandates need to comply with general criteria for the legitimacy of unelected power. He finally develops general principles for constraining central bank balance sheet management, with the aim of achieving an appropriate demarcation between monetary policy and fiscal territory.

[Chapter 5](#), by Donald Kohn, former Vice-Chairman of the Federal Reserve Board, carries the title 'Central Bank Talk about Future Monetary Policy: Lessons from the Crisis and Beyond'. Forward guidance about future policy actions (or pledge of lack of action) has come into much wider and more intensive use since policy interest rates approached zero in the fall of 2008. But time-based guidance is not compatible with the considerable uncertainties that surround our knowledge of how the economy works. Kohn argues such guidance should be exited as policy rates lift off.

[Chapter 6](#), by Hyun Song Shin, Economic Adviser and Head of Research at the Bank for International Settlements (BIS), is titled 'Bank Capital and Monetary Policy Transmission'. Shin notes that standard macroeconomic models make little explicit mention of banks. But how banks manage their balance sheets has implications for monetary policy and financial stability. Shin provides two examples. First, while research supports the notion that soundly capitalised banks enjoy lower funding costs and lend more, banks still pay substantial dividends instead of improving their capital base through retained earnings. Second, the usual relationship that lower interest rates engender more lending may break down when market rates turn negative. Negative interest rates may weaken bank profitability, given that deposit rates rarely follow policy rates below zero. Shin concludes that a better understanding of banks' funding

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methods is important to assess the macroeconomic outcomes of monetary policy.

The monetary economics and policy part concludes with [Chapter 7](#), ‘When are Central Banks More Likely to Target Asset Prices?’, in which Haizhou Huang, Managing Director at China International Capital Corporation, examines central banks’ monetary policy operations. Focusing on the working of the transmission channels and their interaction with the balance sheets of banks, firms and households, Huang finds that central banks are more likely to implement a monetary policy that targets asset prices during times of crisis. He also obtains empirically that developing and banking-based economies intend to target asset prices more directly, even during non-crisis times.

Part II contains contributions relating to financial stability and regulatory policy. In [Chapter 8](#), ‘The Macroprudential Toolkit’, Richard Berner, Director of the Office of Financial Research at the US Treasury, stresses the need for a policy framework for financial stability. Key ingredients are: an ongoing assessment of potential threats; high-quality data to inform that assessment; a comprehensive policy toolkit; criteria to assess the effectiveness of the tools; and clear governance, and roles and responsibilities to assure implementation. Although there are significant improvements in financial system resilience and the tools to promote it, Berner makes suggestions to enhance the macroprudential toolkit and the institutional framework to implement it.

[Chapter 9](#), by Jose Viñals, Tommaso Mancini-Griffoli and Erland Nier at the International Monetary Fund (IMF), is titled ‘Three Cooks or Three Wise Men? The Interplay between Monetary, Macroprudential and Microprudential Policies in Supporting Financial Stability’. The authors note that monetary, macroprudential and microprudential policies all affect financial stability. Moreover, the policies are not independent of one another. They find that a clear allocation of objectives and instruments is best able to achieve a safer financial system, and that appropriate institutional arrangements are needed to harness

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complementarities and reduce conflicts. The three policies can reinforce and complement each other like ‘three wise men’.

Chapter 10, ‘Liquidity, Default and the Interaction of Financial Stability and Monetary Policy’, is authored by Dimitrios Tsomocos at the University of Oxford, together with Udara Peiris at the Higher School of Economics, Russia and Alexandros Vardoulakis at the Federal Reserve Board. The authors argue that the assessment of both liquidity and default within a framework of missing financial markets, multiple currencies, heterogeneous economic actors and multiple externalities is needed for analysing the interplay of financial and price stability. The complementarity and substitutability of regulatory and monetary policies can be examined. The optimal policy mix may be subsequently determined given the objectives of the fiscal and monetary authorities.

Chapter 11, ‘Systemic Risk Quantification for Macroprudential Stress Testing’, is by Miguel Segoviano and Raphael Espinoza at the International Monetary Fund. While the devastating effects of systemic risk are well known, the quantification of losses due to systemic risk amplification mechanisms between banks and non-banks within the financial system, and their incorporation into macroprudential stress-testing frameworks remains challenging. The authors develop a novel framework for estimating systemic risk amplification losses based on readily available supervisory and market information. The framework enables policymakers to quantify the likelihood and intensity of contagion events.

In Chapter 12, ‘What Binds? Interactions between Bank Capital and Liquidity Regulations’, Stephen Cecchetti of the Brandeis International Business School and Anyl Kashyap of the Booth School of Business examine the working of supervisory rules. The authors present a simplified framework in which the risk-weighted capital ratio, the leverage ratio, the liquidity coverage ratio and the net stable funding ratio are all related to a small set of fundamental bank balance sheet characteristics. Next, they examine the interactions among the requirements to understand which are likely to bind. Cecchetti and Kashyap

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conclude that the two liquidity requirements will almost never bind at the same time and that stress tests can change which of the two capital requirements binds.

In [Chapter 13](#), which concludes the financial stability and regulatory policy part, Dirk Schoenmaker of Erasmus University Rotterdam poses the question ‘Is Burden Sharing Needed for Financial Stability?’. Schoenmaker begins to note that a credible fiscal backstop is needed to underpin banking stability. But is such a backstop feasible in an international banking system? First, the fiscal capacity of the home country can be limited. Small and medium-sized countries have therefore started a process of downsizing their banks. Next, the home country only cares about the domestic externalities of its banks in crisis times. Schoenmaker argues that countries can only address this issue through some form of burden sharing, if we want to maintain international banking as well as financial stability.

Part III moves on to the topic of foreign exchanges and international architecture. [Chapter 14](#), by Charles Wyplosz of the Graduate Institute Geneva is titled ‘The Case for (and Requirements of) Monetary Unions’. The founding fathers were focused on the essentials: central bank independence backed by fiscal discipline. The sceptics correctly observed that a central bank must be ready to lend in last resort, which creates liabilities that fiscally independent countries may refuse to accept. To enhance monetary union, Wyplosz argues that: the central bank must be concerned with financial stability (including having to lend in last resort); collective supervision and backstops are needed for banks; central bank management must be shielded from political pressure; fiscal discipline must be constitutionally guaranteed at the proper level.

In [Chapter 15](#), Takatoshi Ito of Columbia University discusses the market microstructure of foreign exchange markets with the intriguing title ‘Machines versus Humans: Will Human Forex Dealers Become Extinct?’ By the early 2000s, the interbank human brokers were almost all replaced by electronic broking systems, which centralised interbank forex trading. While bank computers made

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the market more efficient and more liquid, high-frequency trading strategies turned away human dealers. Many microstructure changes in the 2010s, such as minimum quote life and retreating from decimalisation to half pip price unit, were designed to protect human dealers. Human dealers may provide heterogeneity among market participants that may prevent a potential flash crash.

Chapter 16 is by Robert Aliber of the University of Chicago and critically examines flexible exchange rates with the title 'The Case for Flexible Exchange Rates Revisited'. The positive claims of the advantages of a floating currency arrangement (notably monetary policy independence) depend on an implicit assumption that investor demand for foreign securities would be constant despite various money market shocks. Yet, the banking crises over the last forty years resulted from an increase in cross border investment inflows to a country, which led to an increase in the price of its currency and an increase in the demand for (and price of) its securities and an economic boom. Aliber argues that the case for flexible exchange rates is flawed as a guide to policy.

Chapter 17, by Marcus Miller of the University of Warwick, is titled 'Cross-Border Banking and Monetary Independence: Difficult Partners'. First, he examines how, with cross-border banking, financial crisis can spread internationally irrespective of the exchange rate regime. Second, he looks at why appropriate regulation must take account of 'externalities', particularly those operating through asset prices. With Value-at-Risk rules and mark-to-market pricing alone, the financial system can exhibit 'catastrophic' behaviour. Miller concludes that with cross-border banking, a floating exchange rate cannot ensure monetary independence. Prudential regulation is a more relevant policy option.

Chapter 18, 'International Liquidity', is the final chapter in Part III. Here Philipp Hartmann of the ECB discusses how international liquidity has evolved before, during and after the financial crisis. Based on a framework that is broader than the ones recently used by the BIS, the IMF or academic scholars, he

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does not find a general shortage of liquidity across the five dimensions considered. The reasons behind diverse developments point to a number of important policy considerations. For example, financial regulation has to preserve incentives for market making, spillovers of extreme unconventional monetary policies cannot be ignored, soaring corporate cash hoarding needs to be brought back into real investment, and large public debt overhangs suggest that fiscal consolidation would be a sustainable avenue for re-increasing the availability of liquid and safe international assets.

Finally, Part IV covers the millennium challenges of central banks. In [Chapter 19](#), Otmar Issing, former Chief Economist of the ECB, discusses central bank independence with the title 'Overburdened Central Banks: Can Independence Survive?' Issing argues that expectations have been exaggerated regarding the role of central banks, not only in crisis management but beyond, in controlling the macroeconomic situation. Central banks are overburdened with new responsibilities and competences. It will be hard, if not impossible, to meet those heightened expectations. As a consequence, the status of their independence will come under heavy pressure.

[Chapter 20](#), by Andrew Sheng of the Asia Global Institute, analyses central bank balance sheets under the title 'Central Banks, National Balance Sheets and Global Balance'. Central banks manipulate their balance sheets to achieve their monetary policy and financial stability goals. Given the rising size of their balance sheets, central bank balance sheets are no longer independent of national and even global balance sheets. Using recently available net international investment positions, Sheng examines how reserve currency countries can run up large deficits in trade and capital accounts, so long as these are financed by the surplus countries. He also shows that monetary policy by the reserve currency countries can facilitate capital account flows larger than trade flows, so that global imbalances could become exacerbated by central bank balance sheets.

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William White, former Economic Advisor of the Bank for International Settlements, discusses the shortcomings of modern macroeconomics in [Chapter 21](#), titled 'Recognising the Economy as a Complex, Adaptive System: Implications for Central Banks'. While monetary policy has been conducted for decades on the basis of a simple, understandable and stable model, White argues that the economy is a complex adaptive system like many others found in both nature and society. Monetary policy could thus draw lessons from other disciplines. While taking steps to 'lean against' rapid credit growth to reduce the likelihood of financial crises, steps must also be taken to deal with crises when they do occur. Central banks should also adapt to the associated need to cooperate more actively with other arms of government. White concludes that there are limits to central bank independence.

In the final chapter, [Chapter 22](#), Charles Goodhart of the London School of Economics provides a lucid tale: 'The Changing Fortunes of Central Banking'. During the last fifty years there have been some dramatic changes in the powers, role and functions of central banks, with more independent power to vary interest rates in pursuit of price stability, and more powers to regulate and supervise key financial institutions in pursuit of financial stability. Goodhart discusses the underlying causes of such trends. He concludes with a brief 'wish-list' about what differing characteristics he would like to see in such a braver new world. The first item on this wish list is to stop anthropomorphising banks. Strategy is set, and decisions are taken, by individuals – mainly senior bank managers, especially the chief executive (CEO) – not by an institution. The second item is the reform of housing finance. The typical financial boom/bust cycle has involved the interaction of a property price cycle with a bank lending cycle. The worst mix which we had was the finance of long-term mortgages, with a small equity buffer, on the basis of short-term, wholesale, runnable bank funding. What is needed, since property finance is, by nature, long term, is some combination of a much larger equity buffer with finance provided by much longer-term funding, e.g. covered bonds. The third item is to remove the fiscal

advantages for debt finance. There is a need to shift the balance of advantage more towards equity and away from debt finance. The fourth item is that central bank economists need to combine macroeconomics and finance/financial expertise, and the recruitment needs of central banks require university curricula that combine the two.

1.3 Conclusions

The main conclusion of this volume on the changing fortunes of central banking is that a 'full' central bank is responsible for both monetary and financial stability, which are inextricably linked. These central banking functions form two sides of the same coin. Studying the one without the other is at one's peril. On the monetary side, several authors in this volume argue for the return of money in our models. On the financial side, the design and use of macro-models without well-characterised financial systems (including financial intermediaries, markets, frictions and/or even states of major dislocation) should be something of the past. The common denominator of the two sides is the overlap between money and banks (or other intermediaries creating inside money). Next, financial stability models with only exogenous shocks and no endogenous feedback loops should be mistrusted. The chapters in this volume contribute to the challenging research agenda in these areas.

Another important conclusion is that central banks cannot work in isolation. The cross-border linkages in the international monetary and financial system create important interdependencies. While central bank governors have had a long-standing practice of monthly meetings in Basel, the Financial Stability Board has become a focal point for finance ministries, central bankers and financial supervisors to discuss the international agenda for regulatory reform in the aftermath of the global financial crisis. The expanding tasks of central banks both in monetary policy with quantitative easing and in financial stability with

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macroprudential policy take them closer to the fiscal authority (i.e. the government) and threaten the cherished independence of government. The room for independent manoeuvre of central banks has thus decreased, both internationally and nationally.

A final conclusion of this volume is that incentives matter for behaviour. An important distorting incentive is that the cost of debt is deductible for corporate tax, while that of equity is not. This leads to excessive debt financing, which makes the financial system extra fragile. The IMF (2016) has dubbed this the Great Distortion. Academics and policymakers are united in their call for an equivalent treatment of the cost of debt and equity for tax purposes.

While central banks' fortunes are changing, a much deeper understanding of the importance of central banks and their role in, and interactions with, monetary policy and financial stability, as well as economic growth and society at large, is needed. The collection of chapters in this volume not only celebrates the life of a great central banker in our time, but also opens new avenues for policy making and academic research in central banking in a challenging world.

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