

CENTRAL BANK POLICY

Praise for *Central Bank Policy: Theory and Practice*

The book rigorously discusses the theories, empirical studies and practices of international financial and monetary policy in emerging market economies, including Indonesia. Furthermore, the book is an invaluable policymaking input for the central bank and government, teaching material for lecturers and students as well as an important reference for scientific development in academia.

**Prof. Boediono, Vice President of the Republic of Indonesia
(2009–2014); Governor of Bank Indonesia (2008–2009)**

The world has become increasingly challenging for central banks in both developed and emerging economies. While much has been written on central banks policies in the developed world, less known are the remarkable successes achieved by central banks in the emerging economies. This publication is a valuable source for policy makers in central banking. It not only offers knowledge on the theoretical foundations and institutional arrangements but also on the practical aspects of the policy tools that are at the disposal of central banks, particularly in the emerging world.

**Dr Zeti Akhtar Aziz, the 7th Governor (2000–2016)
of Bank Negara Malaysia, Malaysia's central bank**

This book is a major contribution to the theory and practice of central banking in emerging market economies. Drawing on the accumulated wisdom of many years of academic study and high-level policy experience, the authors provide an encyclopedic yet highly accessible survey and analysis that bridges theory and practice. No stone is left unturned in this comprehensive study, drawing as it does on economic history, the international monetary system, globalization, and the political economy of macroeconomic policy making.

The volume will be invaluable for a wide audience, including advanced undergraduate and graduate students, academic researchers, policy makers, financial market analysts, and anybody with an interest in contemporary macroeconomic challenges and issues. A highly recommended publication.

**Prof. Hal Hill, H.W. Arndt Professor Emeritus of
Southeast Asian Economies, Australian National University**

When a pure academic writes a book, it lacks practical knowledge and connections; when a pure policy maker writes a book, it lacks academic rigor; but, when an academic who is also an experienced policy maker writes a book, the resultant is a balanced book. It is this balance that the literature lacks and for this reason alone this book, by two experienced academics who have decades of central banking policy making experience, will remain unique.

This book is an amalgam of theoretical perceptions, empirical case studies and practical policy debates. While existing reference material would either be too empirical or too theoretical and almost always short of practical policy discussions, this book is far from it. A gap in the history of central banking policies and practices is now immaculately covered. It makes understanding central banking policies and practices easy. The book is both inspirational and thought-provoking. The value and impact of this book will be long lasting.

**Prof. Paresh Kumar Narayan, Alfred Deakin
Professor, Deakin University**

CENTRAL BANK POLICY: THEORY AND PRACTICE

BY

PERRY WARJIYO AND SOLIKIN M. JUHRO



United Kingdom – North America – Japan – India – Malaysia – China

Emerald Publishing Limited
Howard House, Wagon Lane, Bingley BD16 1WA, UK

First edition 2019

Copyright © 2019 Emerald Publishing Limited

Reprints and permissions service

Contact: permissions@emeraldinsight.com

No part of this book may be reproduced, stored in a retrieval system, transmitted in any form or by any means electronic, mechanical, photocopying, recording or otherwise without either the prior written permission of the publisher or a licence permitting restricted copying issued in the UK by The Copyright Licensing Agency and in the USA by The Copyright Clearance Center. Any opinions expressed in the chapters are those of the authors. Whilst Emerald makes every effort to ensure the quality and accuracy of its content, Emerald makes no representation implied or otherwise, as to the chapters' suitability and application and disclaims any warranties, express or implied, to their use.

British Library Cataloguing in Publication Data

A catalogue record for this book is available from the British Library

ISBN: 978-1-78973-752-3 (Print)

ISBN: 978-1-78973-751-6 (Online)

ISBN: 978-1-78973-753-0 (Epub)



ISOQAR certified
Management System,
awarded to Emerald
for adherence to
Environmental
standard
ISO 14001:2004.

Certificate Number 1985
ISO 14001



INVESTOR IN PEOPLE

Contents

List of Figures	<i>ix</i>
List of Tables	<i>xi</i>
About the Authors	<i>xiii</i>
Preface	<i>xv</i>

Part I General Review

Chapter 1 Introduction	<i>3</i>
1.1. The Central Bank and Economy	<i>4</i>
1.2. Central Bank, Academic Thinking, and Political Economy	<i>6</i>
1.3. Objectives of the Book	<i>9</i>
1.4. Systematics of the Writing	<i>10</i>
1.5. Utility of the Book	<i>16</i>
Chapter 2 Central Bank Evolution and Reform	<i>19</i>
2.1. Introduction	<i>19</i>
2.2. The Evolving Role of the Central Bank	<i>20</i>
2.3. Central Bank Policy Reform	<i>31</i>
2.4. Central Bank Institutional Reform	<i>39</i>
2.5. Concluding Remarks	<i>44</i>

Part II Monetary Policy and Economy

Chapter 3 The Role of Money and Monetary Policy in the Economy	<i>49</i>
3.1. Introduction	<i>49</i>
3.2. Theoretical Review	<i>50</i>
3.3. Empirical Evidence and Related Issues	<i>63</i>
3.4. Market Imperfections and the New Paradigm of Monetary Economics: Credit Matters	<i>69</i>
3.5. Concluding Remarks	<i>78</i>

Chapter 4	Exchange Rates and the Economy	81
4.1.	Introduction	81
4.2.	Exchange Rate Determination Theory	82
4.3.	Empirical Findings for Exchange Rates and the Economy	98
4.4.	Exchange Rate System and Policy	101
4.5.	Concluding Remarks	112
Chapter 5	Monetary Policy Transmission Mechanism	115
5.1.	Introduction	115
5.2.	Monetary Policy and the Transmission Mechanisms	116
5.3.	Monetary Transmission Channels: The Money View	124
5.4.	Monetary Transmission Channels: The Credit View	129
5.5.	Monetary Policy Transmission in Various Countries	140
5.6.	Concluding Remarks	157
 Part III Monetary Policy Framework		
Chapter 6	Monetary Policy Strategic Framework	161
6.1.	Introduction	161
6.2.	Conceptual Dimension and Theoretical Models	162
6.3.	Empirical Studies and Related Issues	170
6.4.	Implementation in Several Jurisdictions	176
6.5.	The Monetary Policy Regime in Indonesia (1968–1998)	186
6.6.	Concluding Remarks	190
Chapter 7	Monetary Policy Operational Framework	193
7.1.	Introduction	193
7.2.	Conceptual Dimension and Theoretical Models	194
7.3.	Application in Several Countries	205
7.4.	Monetary Operations in Indonesia	216
7.5.	Concluding Remarks	220
Chapter 8	Inflation Targeting Framework: Concept and Implementation at Central Banks	223
8.1.	Introduction	223
8.2.	Conceptual Dimension and Theoretical Model	224
8.3.	Institutional and Operational Framework	234
8.4.	Inflation Targeting Regimes	247
8.5.	Inflation Targeting and Economic Performance	252
8.6.	Concluding Remarks	259

Chapter 9	Inflation Targeting Framework: Implementation in Indonesia	261
9.1.	Introduction	261
9.2.	Institutional Framework	263
9.3.	Operational Framework	266
9.4.	Evolution Thus Far	271
9.5.	Strengthening the ITF Implementation Strategy after the Global Financial Crisis	277
9.6.	Concluding Remarks	281
Appendix 9.1:	Amendments to the Bank Indonesia Act and their Implications	283
Appendix 9.2:	Bank Indonesia Macroeconomic Models	287
 Part IV Institutional Aspect of Central Bank Policy		
Chapter 10	Monetary Policy Credibility and Time Consistency	291
10.1.	Introduction	291
10.2.	Conceptual Dimension of Policy Credibility	293
10.3.	Theoretical Model Concerning the Policy Credibility Problem: Time Inconsistency	298
10.4.	Empirical Studies: Measures of Credibility and Time Inconsistency	306
10.5.	Assessing Monetary Policy Credibility in Indonesia	311
10.6.	Concluding Remarks	318
Chapter 11	Central Bank Independence and Accountability	319
11.1.	Introduction	319
11.2.	Conceptual and Empirical Dimensions of Independence and Accountability	320
11.3.	Theoretical Models Concerning Independence and Accountability	327
11.4.	Empirical Studies and Related Issues	337
11.5.	Bank Indonesia's Independence and Accountability	344
11.6.	Concluding Remarks	346
Chapter 12	Policy Transparency and Communication Strategy	349
12.1.	Introduction	349
12.2.	Conceptual Dimension of Policy Transparency and Communication Strategies	350
12.3.	Theoretical Models on Policy Transparency: Conservative Central Bank and Imperfect Transparency	365

12.4. Practices and Empirical Studies of Transparency and Communication Strategies in Different Countries	370
12.5. Transparency and the Communication Strategy in Indonesia	380
12.6. Concluding Remarks	384
 Part V New Paradigm of Central Bank Policy	
Chapter 13 Monetary Policy and Foreign Capital Flows	387
13.1. Introduction	387
13.2. Theoretical Dimension and Foreign Capital Flow Developments	388
13.3. Foreign Capital Flows and Economic Performance	395
13.4. Foreign Capital Flows and Monetary Stability	400
13.5. Foreign Capital Flow Management: Theories and Practices	409
13.6. Concluding Remarks	417
 Chapter 14 Macroprudential Policy and Financial System Stability	423
14.1. Introduction	423
14.2. Conceptual Dimension of FSS	424
14.3. Theoretical Model and Empirical Evidence of Financial Procyclicality	435
14.4. Theoretical Model and Empirical Evidence for Interconnectedness and Financial Networks	444
14.5. Macroprudential Policy Theory and Practices	452
14.6. Concluding Remarks	459
 Chapter 15 Central Bank Policy Mix	461
15.1. Introduction	461
15.2. Conceptual Dimension of the Central Bank Policy Mix	463
15.3. Structural Macroeconomic Modeling: Integrated Inflation Targeting	473
15.4. DSGE Modeling with Macrofinancial Linkages	486
15.5. Bank Indonesia Policy Mix	502
15.6. Concluding Remarks	514
 Bibliography	517
 Index	553

List of Figures

Figure 3.1:	Bank-optimal Rate.	73
Figure 3.2:	Market Equilibrium Loanable Funds.	73
Figure 3.3:	Equilibrium Credit Rationing.	74
Figure 4.1:	Exchange Rate Determination Theory.	83
Figure 4.2:	Policy Analysis in the Mundell–Fleming Model.	86
Figure 4.3:	Policy Analysis According to Dornbusch’s Overshooting Model.	90
Figure 4.4:	Analysis of Monetary Operations in the Portfolio Balance Model.	92
Figure 5.1:	Monetary Policy and the Transmission Mechanism	118
Figure 5.2:	Business Decisions without Collateral Constraints.	136
Figure 5.3:	Business Decisions with Collateral Constraints.	136
Figure 6.1:	Demand-side Shocks: Targeting Prices and Nominal Income.	165
Figure 6.2:	Supply-side Shocks: Targeting Prices and Nominal Income.	166
Figure 6.3:	Output Loss Linked to Disinflationary Policy.	176
Figure 10.1:	Indifference Curve of the Time Inconsistency Problem.	300
Figure 10.2:	Policy Strategy and the Social Cost.	303
Figure 10.3:	Core and Headline Inflation Trends.	312
Figure 11.1:	Output Stabilization Preference Behavior.	331
Figure 11.2:	Monetary Policy Behavior ($c > 0$).	335
Figure 11.3:	Monetary Policy Behavior after Lowering c .	336
Figure 11.4:	Monetary Policy Behavior after Lowering h .	337
Figure 11.5:	<i>Ex Post</i> Accountability and Central Bank Reaction.	341
Figure 12.1:	Measuring the Transparency Index using the Guttman Scale.	376
Figure 13.1:	Aggregate GDP Per Capita of Capital Exporters (Weighted Current Account).	396
Figure 13.2:	Foreign Capital Flows to EMEs and Developing Countries (Annual Average in Billions of USD).	397
Figure 13.3:	Monetary Policy Trilemma.	402

Figure 14.1:	Linkages between Macro–Micro Policy and FSS.	428
Figure 14.2:	Financial Cycle and Economic Cycle Procyclicality.	436
Figure 14.3:	Incomplete Networking.	445
Figure 14.4:	Disconnected Network.	445
Figure 14.5:	Complete Network.	446
Figure 14.6:	Interconnectedness through Three Banks.	448
Figure 14.7:	Money Center Network.	449
Figure 14.8:	UK Banking Network.	450
Figure 14.9:	Global Banking Network.	450
Figure 15.1:	Integration of the Monetary Policy and Macroprudential Policy Framework.	468
Figure 15.2:	Macroprudential and Monetary Policy: Maintaining FSS in the Cyclical Dimension.	471
Figure 15.3:	Monetary and Macroprudential Policy Mix Cycle Maintains Macroeconomic and Financial System Stability in a Cyclical Dimension.	482
Figure 15.4:	Coordination and Losses after a Demand Shock.	486
Figure 15.5:	Coordination and Losses after a Supply Shock.	487

List of Tables

Table 6.1:	The Central Bank's Legal Monetary Policy Framework.	180
Table 6.2:	Average Economic Growth and Inflation in Several Countries from 1991 to 2014 (%).	181
Table 7.1:	Monetary Policy Operational Targets (2015).	206
Table 7.2:	Monetary Policy Instruments in Several Countries (Until 2004).	210
Table 7.3:	US Monetary Policy Reaction Function.	213
Table 8.1:	Characteristics of Inflation Targeting.	227
Table 8.2:	Provisions in Central Bank Laws.	235
Table 8.3:	Price Indexes Used.	237
Table 8.4:	Inflation Target: Point or Range.	238
Table 8.5:	Inflation Target Horizon.	239
Table 8.6:	Announcing the Inflation Target.	240
Table 8.7:	Inflation Targeting Regime Classification.	251
Table 9.1:	Actual and Target Inflation.	276
Table 11.1:	Central Bank Personal Independence.	324
Table 11.2:	Central Bank Accountability.	326
Table 11.3:	Central Bank Independence and Accountability Index.	327
Table 12.1:	Monetary and Financial Policy Transparency Index by Country.	373
Table 12.2:	Economic Forecast Publication Profile of Central Banks.	375
Table 12.3:	Transparency and Inflation: Correlation Analysis.	377
Table 12.4:	Transparency and Output Volatility: Correlation Analysis.	377
Table 13.1:	Global Foreign Capital Flows (% of GDP).	391
Table 13.2:	Determinants of Foreign Capital Flows: Push Versus Pull Factors.	394
Table 13.3:	Monetary Policy Trilemma Index in Indonesia.	407
Table 13.4:	A Decomposition of the Dynamic Correlation between Exchange Rates Versus Foreign Capital Inflows and Interest Rates.	407
Table 14.1:	Examples of Macroprudential Policy Instruments.	432
Table 14.2:	Interaction between the Business Cycle, Risk-taking Behavior and the Financial Cycle.	438

xii List of Tables

Table 14.3: Macroprudential Instruments Applied in Asian Countries.	454
Table 14.4: Macroprudential Instruments: Types and Risk Dimensions.	458
Table 15.1: Effect of Monetary Policy of FSS.	472
Table 15.2: Integration of Price Stability and FSS: Three Modeling Approaches.	475
Table 15.3: Central Bank Framework: Integrated Inflation Targeting.	478
Table 15.4: Three Approaches to Model Financial Frictions in DSGE.	489
Table 15.5: Four Cases of Price Stability and Financial System Stability.	506

About the Authors

Dr. Perry Warjiyo is currently the Governor of Bank Indonesia. Before serving as Governor, he was the Deputy Governor of Bank Indonesia (2013–2018). Previously, he also served as the Assistant Governor for monetary, macroprudential, and international policies. Dr Perry also held the prestigious position of Executive Director of the International Monetary Fund (IMF), representing 13-member countries in the South-East Asia Voting Group (2007–2009). He has a long, impressive, and outstanding career serving Bank Indonesia since 1984. His contributions have been primarily in economic and monetary policy research, international issues, organizational transformation and monetary policy strategies, education and research on central banks, and management of foreign reserves and external debts. Significantly, also, he has been the Editor-in-Chief of Bank Indonesia's flagship journal, the *Bulletin of Monetary Economics and Banking*. He is also an active Postgraduate Lecturer at the University of Indonesia and at several top ranked universities in the country. In addition, he has authored and published a number of books, journals, and papers on economy, monetary, and international issues. He has offered numerous high-level keynote speeches that have influenced public policy. He received his Bachelor's degree from Gajah Mada University, Indonesia, and Master's and Ph.D. degrees in International Monetary Economics and Finance from Iowa State University, USA.



Dr. Solikin M. Juhro is an Executive Director and the Head of Bank Indonesia Institute, Bank Indonesia. In his distinguished career at Bank Indonesia spanning more than 20 years, he has been extensively involved with monetary economic policy research and analysis, has spoken on academic and central banking issues at various national and international fora, and is an instrumental Editor of the Bank Indonesia flagship journal, the *Bulletin of Monetary Economics and Banking*. His current research focuses on macroeconomic transformation, central bank policy, and frontier issues in economic development, some of which have been published international outlets. Dr Juhro is currently a member of the SEACEN Advisory Group for Macroeconomic and Monetary Policy Management, representing Bank Indonesia. He was active in the Pacific Economic Outlook Structural Specialist projects in Osaka, Japan, from 2005 to 2015. He is also an active Postgraduate Lecturer at the University of Indonesia. He completed his Bachelor's degree in Economics at the Airlangga University, a Master's degree in Applied Economics at the University of Michigan, Ann Arbor, USA, a master's degree in Economics at the University of Maryland, College Park, USA, and a doctoral degree in Economics (with cum laude) at the University of Indonesia, Indonesia.



Preface

Alhamdulillah, with all praise to Allah, the most glorified and exalted, we would like to present this book entitled *Central Bank Policy: Theory and Practice* to the readers, drawing fully on our extensive capabilities, knowledge, and experience to write a book that, to our understanding, does not exist elsewhere, at least in Indonesia. This book also represents an important contribution to central bank and government policymaking as well as teaching materials for lecturers and students and a salient reference for scholarly development in Indonesia and internationally.

The idea for the book emerged from the experiences and concerns of the authors while teaching postgraduate international monetary and financial economics at the University of Indonesia. The teaching materials presented consist of a combination of theoretical studies, empirical reviews, and policy practices at central banks, which garnered an enthusiastic response from the students. Not only could the students explore and deepen the latest theories being developed in academia and empirically model the most interesting research topics, the inclusion of policy practices at central banks also embedded the students into the real world. Consequently, the courses were enlivened by interesting questions and discussions that enriched and enhanced the quality of the teaching.

Unfortunately, we were unable to find a single reference book complete with a combination of theoretical studies, empirical reviews, and policy practices at central banks, thereby motivating us to write this book. This was, admittedly, no mean feat due to the rapid development of policy theories and practices at central banks as well as the fact that most of the materiel had not yet appeared in print as a reference for this book. Fortunately, we could draw on our vast experience and direct involvement with policymaking at Bank Indonesia (BI) as well as our active roles as resource persons or discussants at various international fora. Additionally, one of the author's two-year tenure as Executive Director at the International Monetary Fund from 2007 to 2009 coincided with the global financial crisis, which further served to enrich the understanding and knowledge poured into this book, including the BI policy mix initiated in 2010 as a new policy paradigm at the central bank.

This book is firmly believed to be a first in terms of comprehensively discussing the latest central bank policy theories and practices. The inclusion of the latest material, coupled with clear and logical systematics of the writing, ensures this book's position as an unequivocal reference for policymakers at the central bank, practitioners, and academia. For academia, the book represents an important and leading reference for lecturers and students alike in terms of monetary and

financial economics at the intermediate and advanced levels of master's and doctoral programs as well as the latter stages of bachelor's programs. The panoply of theoretical and empirical references contained in this book will facilitate future research among students and researchers. Similar benefits will also be available to economists and those in the business community. Although the discussions are predominantly on a philosophical conceptual level, accompanied by in-depth theory, the rationale and writing of this book is presented in a manner that is readable and easily digestible.

To remain relevant and contemporary, the materials contained in this book will periodically be updated as per the latest developments and requirements in terms of new and innovative policy practices at the central bank. To that end, constructive criticisms and feedback from the readers are warmly welcomed in order to hone the contents of this book.

In closing, the authors would like to acknowledge the important contributions, direct and indirect, of various parties to produce this book. On top of the gratitude felt for the publication of this book, the authors would also like to thank the contributors who could not be named individually, particularly colleagues at the BI Institute for their help in finalizing the book. Hopefully, this publication will expand scientific understanding and knowledge.

Perry Warjiyo, S.E., M.Sc., Ph.D. and
Dr Solikin M. Juhro, S.E., M.A.E., M.A.
Jakarta, October 2018

Part I

General Review

This page intentionally left blank

Chapter 1

Introduction

Any news concerning central bank policy decisions always garners public attention. Statements from the governor of the central bank in the United States, the Chair of the Federal Reserve System (the Fed), or indeed other members of the Federal Open Market Committee (FOMC), about the Federal Funds Rate (FFR), for instance, are always eagerly awaited by markets around the world.¹ In fact, indications of the FFR direction, which are typically linked to statements from the Chair of the Fed or other FOMC members about US inflation and the economy, usually become a source of market speculation. Such conditions have become unequivocal since the Fed announced in May 2013 its plan to normalize the ultra-loose monetary policy stance adopted after the global financial crisis (GFC) of 2008/2009. This stance was to support the US recovery, which subsequently became known as the Fed's Taper Tantrum. Actual decisions, or even just indications of the policy rate direction, directly influence money market interest rates, dollar exchange rates on the foreign exchange market, and stock prices on Wall Street. Such developments lead to reactions of interest rate, exchange rate, and stock prices in a number of countries, including Indonesia.

Similarly, in Indonesia, statements released by Bank Indonesia (BI) are constantly in the news across various mass media outlets. The decisions of the BI Board of Governors regarding the BI Rate or even just indications about the possible future direction of the policy rate are increasingly becoming a reference for the markets and banks in terms of the financial transactions undertaken.² In practice, non-resident investors, specifically those that invest in financial

¹See, for example, the "Transcript of Chair Yellen's Press Conference," December 16, 2015, Board of Governors of the Federal Reserve System (2015), <http://www.federalreserve.gov>. At the press conference, Chair Janet Yellen relayed the FOMC decision to hike the FFR by 25 bps, from 0.25% to 0.50%. This follows seven years of a near 0% rate in order to support the US recovery in the wake of the worst GFC in the United States since the Great Depression in the 1930s.

²Pursuant to the BI announcement, dated April 15, 2016, effective from August 19, 2016 the BI Rate, which is equivalent to the 12-month money market rate, will be replaced by the BI 7-day (Reverse) Repo Rate, representing the seven-day money market rate.

instruments such as government bonds (SUN), stocks, BI Certificates (SBI), and corporate bonds in Indonesia, base their investment decisions on statements regarding the BI Rate. In addition to policy rate decisions, the BI policy in relation to macroprudential regulation and supervision, including down payments on automotive loans as well as the maximum loan-to-value (LTV) ratio on property and housing loans, also attracts public attention. So too does payment system policy, such as money supply, clearing, card-based payment instruments, and electronic money. Decisions relating to the policy rate, macroprudential policy and the payment system are based on rigorous assessments of global and domestic macroeconomic and financial system developments and projections that are regularly delivered by BI.³

1.1. The Central Bank and Economy

The brief overview in the preceding section demonstrates the importance of the central bank's role in the economy. Since inception, the central bank has been mandated to maintain domestic currency stability (inflation and exchange rates) as well as financial system stability. Maintaining currency and financial system stability is the primary contribution of the central bank toward supporting sustainable economic growth. Therefore, the functions of monetary and payment system policy, as well as the regulation and supervision of financial institutions, fall under the auspices of the central bank. Initially, such functions were comparatively simple but have become increasingly complex over time in line with global and domestic economic and financial development. This can be gauged from the changing role of the monetary sector, from the commercial paper predominance (rediscounted by the Bank of England in the seventeenth century) to monetary operations targeting interest rates. The function of the payment system, on the other hand, has also progressed from merely printing and circulating banknotes and coins to the regulation and supervision of payment instruments, mechanisms, and infrastructure. Likewise, in terms

³See, for instance, the BI Press Release, dated December 17, 2015, that announced the BI Rate would be held at 7.50% in anticipation of pressures from global financial markets, including the impact of the FFR hike. This resulted despite stable macroeconomic conditions at home. Indonesia, for instance, recorded low inflation and a sustainable current account deficit, which provided adequate space to ease the monetary policy stance. The BI Rate was subsequently lowered at the BI Board of Governors' Meeting in January, February, and March 2016 by a total of 75 bps to 6.75%. At the BI Board of Governors' Meeting in June 2016, in addition to reducing the BI Rate by 25 bps to 6.50%, BI also introduced macroprudential policy easing by raising the LTV ratio to boost lending and economic growth. In addition to news in the mass media, the decisions of the BI Board of Governors are published as press releases and posted to the official website of BI at <http://www.bi.go.id>. The BI also regularly publishes a quarterly Monetary Policy Report and monthly Monetary Policy Review that contains assessments of economic, financial, and monetary developments and projections that underlie BI Rate policymaking.

of financial system stability, the function of the central bank has progressed from been a lender of last resort (LOLR) to macroprudential regulation and supervision.

The monetary policy instituted by the central bank to influence money supply and interest rates is one determinant of macroeconomic stability; in particular, inflation and exchange rate stability. In the financial sector, the interest rate policy and exchange rate stabilization policy of the central bank directly influence bank funds and credit, as well as stock and bond prices on the capital market. Subsequently, through the influence of such monetary and financial developments on consumption, investment, exports, and imports, monetary policy also influences inflation, economic growth and, therefore, the creation of employment opportunities in addition to the balance of payments. In other words, the monetary policy stance adopted by the central bank has a major influence over public prosperity and welfare.

Similarly, microprudential and macroprudential regulation and supervision are imperative in terms of maintaining financial system stability. Microprudential regulation entails microregulation and supervision of financial institutions and focuses on the soundness and performance of each individual financial institution. Meanwhile, macroprudential regulation involves macroregulation and supervision of financial institutions and focuses on systemic risk in order to achieve financial system stability. In many countries, macroprudential and microprudential regulation and supervision fall under the auspices of the central bank. In contrast, several countries, including Indonesia, Australia, and South Korea, transferred the microprudential function to a financial services authority, while the central bank maintained control over macroprudential aspects. In its implementation, central banks direct macroprudential policy toward dampening accelerators in the financial cycle, while preventing and detecting a build-up of systemic risk that leads to financial system instability. Regulations concerning the LTV for housing loans as well as down-payments on automotive loans in Indonesia are concrete examples of macroprudential policy to combat excessive credit growth in both sectors that could disrupt financial system stability.

In terms of the payment system, currency is printed and circulated in line with the economic requirement and, therefore, supports monetary policy to achieve price stability and macroprudential policy to maintain financial system stability. In addition, payment system policy includes the reliable, efficient, and secure transfer of funds, clearing and financial transaction settlement, retail and wholesale, in the economy. Various payment instruments have also been developed in line with the advancement of financial product innovation and information technology development, such as automated teller machines (ATM), debit and credit cards, mobile and internet banking as well as electronic money. Even today, in the era of technological progress, the development of financial technology, or FinTech, has fundamentally changed the business models of various financial services offered by financial institutions to the public. Therefore, payment system development, monetary and financial system stability will affect each other, with all three considered crucial for economic advancement.

Due to the significant influence policy has on the economy and public welfare, it is understandable that the public, business, and financial communities, as well as government and parliament take an avid interest in the central bank. That interest extends beyond policy aspects to the institutional arrangements of the central bank in line with the ongoing change in the global economic and political landscape, with more and more countries applying a market-based economy and democratically elected governments. The institutional arrangements of the central bank are reinforced through the principles of good governance by strengthening the legal framework and in terms of policy implementation. This can be seen by the modernization of prevailing laws that provide a clear mandate for the central bank as well as independence in the execution of its duties. Furthermore, greater accountability and transparency from the central bank is now in increasing demand in terms of policy implementation. The various institutional arrangements of the central bank have been an ongoing concern for the past two decades and became increasingly important in the wake of the GFC. These changes reflect growing public awareness in various countries of the need to strengthen the role and standing of the central bank in order to support achievement of the economic policy targets.

1.2. Central Bank, Academic Thinking, and Political Economy

From a central bank standpoint, the challenges faced in terms of carrying out the mandate are onerous. In fact, the challenges have become even more complex since the onset of the GFC. In the implementation of monetary policy, for instance, maintaining low and stable inflation has become increasingly important to support economic growth and ameliorate public welfare. The volatility of non-resident capital flows and exchange rates in emerging market economy (EME), including Indonesia, have also increased since the GFC with monetary policy divergence stemming from ultra-loose monetary policy in advanced countries and ubiquitous uncertainty blighting global financial markets. The GFC also showed that price and exchange rate stability alone are insufficient to maintain financial system and macroeconomic stability to support sustainable economic growth. Increasingly rapid and complex development in terms of product innovation and financial operations on the one hand has facilitated economic financing but, on the other hand, has also amplified the risk of financial system instability and affected the monetary policy transmission mechanism in the economy. Likewise, payment instrument development has necessitated increased regulation and supervision by the central bank in order to maintain a reliable, efficient, and secure payment system. Institutionally, the strengthening of consistency, independence, and accountability as well as transparency and communication have become progressively more important, not only in terms of governance but also to support policy effectiveness and credibility and, therefore, the reputation of the central bank.

Throughout their evolution, economic conditions, political environment, and academic thinking have influenced how a central bank implements its mandate.

At its inception in the seventeenth century, for instance, the role of the central bank in the economy emphasized creating and circulating currency, purchasing government debt, and functioning as LoLR for financial system stability. Application of the gold standard strengthened central bank credibility in terms of achieving price, exchange rate, and financial system stability because the central bank was charged with maintaining currency convertibility in line with the gold reserves held. Nonetheless, government control over the central bank to finance the post-World War recovery triggered soaring inflation, leading to an economic crisis. Furthermore, central bank credibility was also lost.

Developments over the two decades prior to the GFC saw central banks focus shifted on price stability. This was in response to soaring inflation, while providing the central bank independence from government control. On the other hand, however, the focus on price stability was also based on the growing acceptance of New Neoclassical and New Keynesian synthesis, namely that monetary policy only influences inflation in the long term, despite a short-term trade-off between inflation and economic growth in line with the findings of the Phillips Curve. The economy is assumed to always be in equilibrium and the primary causes of imbalances are price and wage rigidities. Similarly, there is no friction in the financial system, therefore currency and credit are perfect substitutes that are affected by interest rates. Furthermore, non-resident capital flows freely and, therefore, a fully flexible exchange rate system is the optimal choice. Consequently, central bank policy merely needs to focus on stipulating the short-term interest rate in order to achieve price stability, while economic and financial equilibrium will generate economic growth and maintain macroeconomic and financial system stability. Central bank policy governance is strengthened by independence and is in line with rational expectations theory, policy consistency with the rules and the importance of transparency to form and anchor expectations. Such theories and ideas compelled central banks in many countries to target price stability, thereby adopting the Inflation Targeting Framework (ITF).

The GFC, however, turned central bank practices and theories on their head; not because ITF policy had failed but, in contrast, because ITF had successfully lowered inflation in many countries, coupled with low interest rates that had stimulated rapid economic growth. The problem was that long-term stability and economic boom had led to excessive credit growth, asset price bubbles (stocks and housing) as well as high leverage. Financial accelerators caused the financial cycle to amplify the economic cycle. Furthermore, economic stability led to financial system instability that ultimately culminated in the worst crisis (namely, the GFC) since the Great Depression of the 1930s. Evidently, price stability alone is insufficient to ensure macroeconomic stability if financial system stability is not also maintained; “there is no macrostability without financial stability.” In reality, financial friction is inevitable due to asymmetric information, financial product innovation, price setting, and valuation as well as risk-taking behavior, hence the financial system is constantly in a state of flux that produces financial accelerators and turns fragility to systemic risk.

Consequently, the GFC taught an invaluable lesson that the central bank should return to its original mandate, namely to achieve and maintain the stability of

domestic currency values (inflation and exchange rate), while supporting financial system stability. Central bank credibility and the framework that had been established through ITF became the foundation to achieve that mandate. Nevertheless, that was still not enough. Macrofinancial linkages demanded a macroprudential policy response from the central bank to mitigate procyclicality between the financial sector and economic activities that trigger economic and financial crises, such as the GFC. The policies of foreign exchange market intervention and non-resident capital flow management were also required to stabilize the exchange rate, while remaining in a flexible regime. Such developments encouraged many central banks to apply macroprudential policy and manage foreign capital flows in order to strengthen the effectiveness of monetary policy. In brief, the monetary and macroprudential policy mix became the new central banking paradigm in various countries after the GFC, including BI in 2010. This innovation in central bank policy practices also demands the development of underlying theories and empirical studies.

The previous description illustrates that the theory underlying central bank policymaking has developed with rapidity. Likewise, the practice of policy formulation and implementation at various central banks has experienced a paradigm shift that requires the development of underlying theory. In other words, the advancements have had an advantageous reciprocal influence between the development of financial and monetary economic theory in the academic world and the various schools of thought that underlie practical central bank policymaking. Academia, in the pursuit of clarifying or offering solutions to prevent problems, has contributed greatly to conceptual thinking and theories concerning various phenomena and economic behaviors. The theoretical constructs have become advanced and deep on a philosophical conceptual level and using quantitative methods along with empirical studies, although in this case relying on certain assumptions that simplify complex economic behaviors.

On the other hand, the central bank has also made various breakthroughs in terms of conceptual ideas and innovative policymaking as a solution to complex financial-economic problems. Oftentimes, policy innovations are also facilitated by close interaction between the central banking community at various global and regional forums and meetings. Theoretical development in academia is clearly a solid foundation for central bank policymaking. Nonetheless, the complexity of existing problems often necessitates an innovative policy response from the central bank, which also encourages the academic world to conduct theoretical studies and seek underlying empirical evidence.

Rapid development in terms of policy concepts and institutional arrangements at the central bank, from the perspectives of both academia and the innovative policy response of the central bank, demands stringent reviews, studies, and documentation. The various concepts underlying the policy response of the central bank are a vital reference for the central bank and other policymakers to draw lessons on the general and best practices available to prevent the problems faced as well as for academia to seek clarification and develop the theories further. On the other hand, the relentless development of theories and ideas in academia are a helpful reference for the central bank in terms of policymaking in response to emerging problems.