‘Neutrality of Money’ Revisited:
An Integrative Economic Ethics and Post-Keynesian Perspective

D I S S E R T A T I O N
of the University of St.Gallen,
School of Management,
Economics, Law, Social Sciences,
International Affairs and Computer Science,
to obtain the title of
Doctor of Philosophy in Organizational
Studies and Cultural Theory

submitted by

Urs Christian Mauchle

from

St.Gallen und Gossau (St.Gallen)

Approved on the application of

Prof. Dr. Florian Wettstein

and

Prof. Dr. Paul H. Dembinski

Dissertation no. 5188

Difo-Druck GmbH, Untersiemau 2022

The University of St.Gallen, School of Management, Economics, Law, Social Sciences, International Affairs and Computer Science, hereby consents to the printing of the present dissertation, without hereby expressing any opinion on the views herein expressed.

St.Gallen, October 21, 2021

The President:

Prof. Dr. Bernhard Ehrenzeller

Foreword

In 2011, I held my first classes in macroeconomics, using the German translation of Olivier Blanchard's textbook *Macroeconomics* for undergraduate students. When we discussed chapter 4 'Financial markets', one student initiated a discussion on the commercial banks' ability to create money. He questioned whether this ability was a good thing. I had no answer. At that moment, my interest in the role of money, banking, and finance for the economy was born and eventually led to this PhD project.

The thesis is positioned in the discipline economic ethics. This discipline combines normative as well as positive thinking on business and economics. It crosses the borders of several disciplines such as economics, business administration, ethics, political philosophy, and political economy. Economic ethics is by nature interdisciplinary. Such interdisciplinary work has the potential to stimulate each other discipline but at the same time may also lead to irritation or even rejection by involved disciplines.

Apart from better understanding money and normative reasoning, writing this thesis taught me a lot. I grasped one thing in particular about academic work. Much of what we write today may have been conceived and written already 100 or even 1000 years ago. Yet, this is not bad thing. On the contrary, it is a very important function of scholarly work. The stock of academic papers is ever increasing and thus serves as a broad basis for future research. Even if a scholarly publication may not produce new ideas, it may help substantiate earlier theories or even restore long forgotten ones. I hope that my thesis serves both of these purposes.

It is at this point that I wish to express my gratitude. I am very much obliged to my supervisors. I am very fortunate to have had Prof Dr Florian Wettstein as my first supervisor and Prof Dr Paul Dembinski as my second supervisor. I also kindly thank my wife Gloria. She patiently listened whenever I wanted to discuss my newest ideas. Furthermore, she constantly offered encouragement. Lots of credit goes to many friends too, who also discussed my ideas with me. Finally, I thank my parents for giving me life, love, and moral guidance. Given the importance of their input, this thesis is a product, in part, of their work.

St. Gallen, May 2021 Urs Mauchle

Overview

Foreword ..... **I**
Overview ..... **II**
Table of Contents ..... **III**
Figures ..... **V**
Abbreviations and Acronyms ..... **VI**
Summary ..... **VII**
Zusammenfassung ..... **VIII**
1 Introduction **1**
1.1 The Problem 1
1.2 The Aims of this Thesis 7
1.3 The Relevance of the Thesis' Aims 9
1.4 The Normative Foundation: Integrative Economic Ethics 13
1.5 The Economic Foundation: Post-Keynesianism 15
1.6 The Epistemic Perspective 19
1.7 The Structure of the Thesis 22
2 Foundations for Reflecting on 'Neutrality of Money' **23**
2.1 Ulrich's Integrative Economic Ethics 24
2.2 An Anchor for 'Neutrality': The Purpose of Economic Activity 28
2.3 The 'Non-Neutrality' of Markets 31
2.4 The 'Non-Neutrality' of Economic Theory 34
3 Exploring the Term 'Neutrality of Money' **41**
3.1 Economics on 'Neutrality of Money' 41
3.2 Integrative Economic Ethics on 'Neutrality of Money' 50
4 Money and the Fractional Reserve System **62**
4.1 Money Defined by its Functions 62
4.2 The Fractional Reserve System 67
4.3 The Fractional Reserve System: Participants, Monies, and its Working 70
4.4 The Creation of Money in a Fractional Reserve System 74
5 Is the Fractional Reserve System 'Neutral'? **90**
5.1 Groundwork for the Analysis 91
5.2 The General Dynamic: The GDP Growth Imperative 97
5.3 The Built-in Debt Machinery 103
5.4 The Built-in Redistribution Machinery 116
5.5 No, the Fractional Reserve System Is Not 'Neutral'. 128
6 Achievements, Limitations, and Further Research Needs **130**
6.1 Achievements: Research Results 130
6.2 Reflection on the Study Design: Limits 134
6.3 Outlook: Research Desiderata 137
Sources **143**
Curriculum Vitae **162**

Table of Contents

Foreword ..... **I**
Overview ..... **II**
Table of Contents ..... **III**
Figures ..... **V**
Abbreviations and Acronyms ..... **VI**
Summary ..... **VII**
Zusammenfassung ..... **VIII**
1 Introduction **1**
1.1 The Problem 1
1.2 The Aims of this Thesis 7
1.3 The Relevance of the Thesis' Aims 9
1.4 The Normative Foundation: Integrative Economic Ethics 13
1.5 The Economic Foundation: Post-Keynesianism 15
1.6 The Epistemic Perspective 19
1.7 The Structure of the Thesis 22
2 Foundations for Reflecting on 'Neutrality of Money' **23**
2.1 Ulrich's Integrative Economic Ethics 24
2.2 An Anchor for 'Neutrality': The Purpose of Economic Activity 28
2.3 The 'Non-Neutrality' of Markets 31
2.4 The 'Non-Neutrality' of Economic Theory 34
3 Exploring the Term 'Neutrality of Money' **41**
3.1 Economics on 'Neutrality of Money' 41
3.1.1 The term's history and its usage in three different statement categories 42
3.1.2 A critical reflection from an integrative economic ethics point of view 47
3.2 Integrative Economic Ethics on 'Neutrality of Money' 50
3.2.1 'Neutral money' and the question of purpose 50
3.2.2 'Neutral money' and the question of legitimation 53
3.2.3 Well-understood 'Neutrality of Money' 58
4 Money and the Fractional Reserve System **62**
4.1 Money Defined by its Functions 62
4.2 The Fractional Reserve System 67
4.3 The Fractional Reserve System: Participants, Monies, and its Working 70
4.4 The Creation of Money in a Fractional Reserve System 74
4.4.1 The creation of deposits and reserves 75
4.4.2 The creation of cash 83
4.4.3 The entire money creation process in practice 86

5 Is the Fractional Reserve System 'Neutral'? ... 90
5.1 Groundwork for the Analysis ... 91
5.1.1 Operationalisation and scope ... 91
5.1.2 Accounting definitions ... 95
5.2 The General Dynamic: The GDP Growth Imperative ... 97
5.2.1 H.C. Binswanger's growth spiral ... 98
5.2.2 M. Binswanger's growth imperative ... 101
5.3 The Built-in Debt Machinery ... 103
5.3.1 Growing money supply and the central bank's indebtedness ... 104
5.3.2 Growing money supply and the commercial bank sector's indebtedness ... 106
5.3.3 Growing money supply and the non-bank sector's indebtedness ... 110
5.4 The Built-in Redistribution Machinery ... 116
5.4.1 Distributive effects caused by asset price changes ... 116
5.4.2 Distributive effects caused by seigniorage profits ... 123
5.5 No, the Fractional Reserve System Is Not 'Neutral'. ... 128
6 Achievements, Limitations, and Further Research Needs ... 130
6.1 Achievements: Research Results ... 130
6.2 Reflection on the Study Design: Limits ... 134
6.3 Outlook: Research Desiderata ... 137
Sources ... 143
Curriculum Vitae ... 162

Figures

Figure 1: The two-dimensional character of socio-economic rationality 14
Figure 2: Approaches to economic ethics 25
Figure 3: The functions of money 64
Figure 4: Functions of money and today's manifestations 66
Figure 5: Monetary supply of Switzerland 71
Figure 6: The payment system 72
Figure 7: The money creation process and monetary aggregates 74
Figure 8: Money creation via bank credit: T-accounts 76
Figure 9: The payment system: T-accounts 77
Figure 10: Money creation: transactions among banking subject categories 78
Figure 11: Base money creation via repo credit: T-accounts 79
Figure 12: Money creation via bank credit: T-accounts 81
Figure 13: Money creation via central bank credit: T-accounts 82
Figure 14: Money creation: Transactions among banking subject categories 83
Figure 15: Cash creation via swap of reserves to cash: T-accounts 84
Figure 16: The money creation process and monetary aggregates 86
Figure 17: Economic object categories 95
Figure 18: The macroeconomy's equity: T-accounts 97
Figure 19: H.C. Binswanger's growth spiral 99
Figure 20: H.C. Binswanger's growth imperative 100
Figure 21: M. Binswanger's growth imperative 102
Figure 22: Base money creation and the central bank's indebtedness: T-accounts .. 105
Figure 23: Money creation and the commercial banks' indebtedness: T-accounts 107
Figure 24: Money creation: Usage for consumption: T-accounts 111
Figure 25: Money creation: Usage for investment: T-accounts 112
Figure 26: Money creation: Usage for already existing assets: T-accounts 113
Figure 27: Money injections and their effects on the non-bank sector 120
Figure 28: Cumulative seigniorage in the UK economy from 1998 to 2015 126
Figure 29: Classification of central banks by ownership 127

Abbreviations and Acronyms

A_f	Financial assets
API	Asset price inflation
API_f	Asset price inflation of financial assets
API_r	Asset price inflation of real assets
A_r	Real assets
B	Borrowing
BASEL III	Third Basel Accord
BCBS	Basel Committee on Banking Supervision
BIS	Bank for International Settlements
BoE	Bank of England
BoJ	Bank of Japan
BTC	Bitcoin
C	Consumption (flow of consumer goods)
CB	Central bank
CPI	Consumer price index
CU	Currency (cash)
D	Bank deposits
E	Equity
FED	Federal Reserve System
GFC	Great Financial Crisis
I	Net Investment (flow of capital goods)
ICT	Information and communication technology
IFRS	International Financial Reporting Standards
IOU	I owe you
K	Capital stock (stock capital goods, real capital)
L	Leverage ratio
MMT	Modern monetary theory
NYSE	New York Stock Exchange
OR	Obligationenrecht (Code of Obligations)
P2P	Peer to peer
R	Central bank reserves
SFC	Stock-flow consistent models
SNB	Swiss National Bank
US GAAP	United States Generally Accepted Accounting Principles

Summary

‘Neutrality of money’ is an economic shorthand expression of the idea that changes in the money supply only affect the price level of the economy and nothing else. Neither economics nor political philosophy has up-to-date answers to the question of what a proper notion of ‘neutral money’ is and whether our contemporary monetary system is ‘neutral’ or not. Nevertheless, most neoclassical economic models today are built on the axiom that money is indeed ‘neutral’. Based on those models, policy considerations are made, and young people graduate convinced that money is ‘neutral’. This study aims to provide orientation in this regard. The aim of this study is twofold: first, to understand the normative core of ‘neutral money’, and second, to analyse whether the current fractional reserve system can meet the attributes of such ‘neutral money’.

Based on Peter Ulrich’s integrative economic ethics and his idea of exploring “the inherent normativity of economic rationality itself”, the thesis explores the inherent normativity of ‘neutrality of money’. The thesis shows that ‘monetary neutrality’ must be ‘neutrality’ in regard to the good life. This would mean that ‘neutral money’ must be an equally and unconditionally accessible, secure societal tool for everybody to pursue her or his individual life plan. Operationalised in quantitative terms, this means that money should not have any inherent effects on (1) GDP growth, (2) indebtedness, and (3) income and wealth distribution.

However, the thesis shows that the fractional reserve system inherently violates those requirements. Based on the credit theory of money and post-Keynesianism, this thesis will prove that although there is no indication that the fractional reserve system itself has inherent effects on GDP growth, a growth imperative is induced by the general structure of capitalist economies. Yet, the fractional reserve system does have inherent effects on indebtedness and distribution. Money creation is always debt creation at the same time. This affects and destabilises the banking system in particular. Furthermore, the fractional reserve system inherently redistributes income and wealth within the economy. If indeed a ‘neutral money’ should be our monetary policy aim, that new aim requires a great effort to realise it.

Zusammenfassung

‘Neutralität des Geldes’ ist ein ökonomischer Begriff dafür, dass Geldmengenänderungen nur das Preisniveau einer Volkswirtschaft beeinflussen. Weder Volkswirtschaft noch politische Philosophie haben überzeugende Antworten auf die Frage, was unter dem Begriff ‘neutrales Geld’ zu verstehen ist und ob unser heutiges Geld tatsächlich ‘neutral’ ist. Trotzdem basieren die meisten neoklassischen Modelle heute auf dem Axiom, dass Geld tatsächlich ‘neutral’ sei. Aufgrund dieser Modelle werden politische Empfehlungen formuliert und Studierende verlassen ihre Universitäten im Glauben, dass Geld ‘neutral’ sei. Die vorliegende Untersuchung will hier Orientierung schaffen. Das Ziel dieser Studie ist: erstens, den normativen Kern von ‘neutralem Geld’ zu verstehen, und zweitens, zu analysieren, ob das gegenwärtige Geldsystem, das Teilreservesystem, tatsächlich ‘neutral’ ist.

Basierend auf Peter Ulrichs integrativer Wirtschaftsethik und der Idee, “das Normative zuallererst in der ökonomischen Sachlogik selbst” aufzudecken, untersucht diese Studie die inhärente Normativität der ‘Neutralität des Geldes’. Sie zeigt, dass ‘neutrales Geld’ ‘neutral’ in Bezug auf das gute Leben sein muss. Dies bedeutet, dass ‘neutrales Geld’ ein für jeden gleichermassen, bedingungslos zugängliches, sicheres Instrument sein soll, um seinen Lebensentwurf zu verfolgen. Quantitativ operationalisiert bedeutet dies, dass Geld keine inhärenten Auswirkungen auf (1) das BIP-Wachstum, (2) die Verschuldung und (3) die Einkommens- und Vermögensverteilung haben darf.

Das heutige Teilreservesystem verletzt diese Anforderungen. Basierend auf der Kredittheorie des Geldes und dem Postkeynesianismus wird gezeigt, dass es zwar keinen Hinweis gibt, dass dieses System direkte Auswirkungen auf das BIP-Wachstum hat, aber die allgemeine Struktur kapitalistischer Systeme einen Wachstumszwang verursacht. Das Teilreservesystem hat jedoch inhärente Verschuldungs- und Verteilungs-Effekte. Geldschöpfung generiert immer Schulden. Dies betrifft und destabilisiert im Besonderen das Bankensystem. Zudem führt das Teilreservesystem zu einer Umverteilung von Einkommen und Vermögen. Wenn also tatsächlich ‘neutrales Geld’ unser geldpolitisches Ziel sein soll, dann liegt ein weiter Weg vor uns, dieses zu verwirklichen.

1 Introduction

'Neutrality of money' is an economic shorthand expression of the idea that changes in the quantity of money only affect the price level of economy and nothing else. Yet, it is an economic concept far from being unambiguous or undisputed. It is not only unclear what 'neutrality of money' exactly means, but also whether nowadays money is indeed 'neutral' or not. Despite all those uncertainties, today most neoclassical economic models are built on the axiom that money is indeed 'neutral'. This means that it is not only a crucial economic concept for model building, but also crucial in practice—it is performative as policies are formed based on those models. As it is a very popular economic concept, it is even taught in undergraduate courses. So, many young business graduates leave college convinced that money is indeed 'neutral'. This study aims to provide orientation in this regard. Thus, the question guiding is whether the contemporary monetary system, the fractional reserve system, is 'neutral' or not. This introductory chapter first outlines the problem (1.1), and then hones it to fit the specific aims of the thesis (1.2). The aim of this study is twofold: first, to understand the normative core of 'neutral money', and second, to analyse whether our current 'fractional reserve system' can meet the attributes of such 'neutral money'. After that, I will substantiate the relevance of those two aims by demonstrating that both the focus on 'neutrality of money' as well as the explicit normative approach are beneficial for the current state of research (1.3). After that, I will argue why the thesis' aims can best be met by drawing on integrative economic ethics as an explicit normative point of view (1.4), as well as by drawing on post-Keynesianism as a specific economic point of view (1.5). Finally, I shall outline the thesis' epistemic perspective (1.6) as well as the overall structure of the thesis (1.7).

1.1 The Problem

Although in the second half of the 20th century money played only a minor role in mainstream economics, it has recently gained new attention. According to Martin (2014) and Werner (2005, p. 162), during the last decades, economic theory and models hardly considered money, banks, and the financial sector. Two well-known economists' comments about incorporating money in their models prove this fact. In one of the most popular textbooks for master programmes in economics, the author David

Romer stated that "[i]ncorporating money in models of growth would only obscure the analysis" (Romer, 2006, p. 3). With this statement, he explained that he hardly incorporates money into his book. Another example concerns the practice of central banks. Donald Kohn (2009), former Vice Chairman of the U.S. Federal Reserve, described the role of banks in the central banks' models as follows:

> *"[T]he core macroeconomic modelling framework used at the Federal Reserve and other central banks around the world has included, at best, only a limited role for the balance sheets of households and firms, credit provision, and financial intermediation."* (Kohn, 2009)

But what is the reason for standard economics omitting money and its balance sheet effects in its models? One plausible reason could be the strict separation of disciplines in macroeconomics and finance. During the last decades, most orthodox economics professors did not incorporate finance into their models, while their counterparts in finance did not consider macroeconomic effects on the banking system (Werner, 2012, p. 2). Another reason for the omission of the above factors is that mainstream macroeconomic theory is based mainly on neoclassical theory, which proposes a dichotomy between real and nominal variables and does not mention money[1] in a special way. A final explanation for the lacking interest in money may be found in the central banks' practice of monetary policy concentrating on interest rate policy rather than money supply policy[2]. According to Friedman (2019, p. 2), nowadays most central banks implement their monetary policy by setting interest rates, and not by focussing on money supply growth. As a result, as he argues, "[i]nterest in how money is supplied has sharply diminished among economists, and the details of the money supply process are now often omitted from the standard economics curriculum." Consequently, scholars have underestimated the role of money (Dietz, 2015) and there are simply too few answers to questions about the link between finance and the real economy (Dembinski,

[1] Binswanger (2009a) assumes that neoclassical theory hardly takes money into account because neoclassical theory is the successor of classical theory, which also neglected the importance of money. According to him, classical theory stood in opposition to mercantilist theory, which stressed the importance of money (p. 162). By rejecting the mercantilist theory, the classical theorist also rejected the importance of money (p. 165). Moreover, a core concept of classical and neo-classical theory is Walras' "general equilibrium theory". Not surprisingly, this theory does not incorporate money as a special factor either. Walras treated it in the same way as all other goods (Binswanger, 2009a, p. 26; Niehans, 1990, p. 217).

[2] Another more theoretical possible reason is the confusion about the term "capital" in economics. Capital can mean "a sum of money" or "a collection of machinery" (Keen, 2011, p. 142). Many economists assume that they can use those two meanings interchangeably (p. 142). So, it seems plausible that this confusion contributed to disregarding finance in macroeconomics.

2009, p. 99). However, with the financial crises starting in fall 2007[3], all that changed dramatically.

At least since the Great Financial Crisis, finance, money and monetary systems, as well as monetary policy and its economic effects, have garnered new attention. Triggered by the Great Financial Crisis and the following unorthodox monetary policy (e.g. quantitative easing and negative interest rates) thereafter, monetary policy and money in general, as well as its economic effects, attracted new attention in academia as well as in public discussions. There are a number of studies analysing the rich history of banking crises (e.g. Leaven & Valencia, 2012, 2008[4]; Reinhart & Rogoff, 2009[5]), or the effect of financialisation on economic volatility (Easterly, Islam & Stiglitz, 2001[6]) or economic growth (e.g. Arcand, Berkes & Panizza, 2012; Cecchetti & Kharroubi, 2012; Hoeller, Fournier, Fall & Bloch, 2015[7]). The financial crisis also brought academic reform proposals and even some political advances. Most orthodox economists discussed some structural reforms but did not question the basic mechanisms of, or the basic assumptions on, money. Some scholars argued that the crisis was a run, and that Western societies should take measures to avoid future runs. Some experts, such as Rajan (2010, pp. 154-182), called for a moderate change in banking regulation. Others, like Admati and Hellwig (2013), argued for much higher capital requirements (p. 179). As a contrasting example, Acharya (2008) promoted the idea of safe banks[8]. Some neoclassical scholars even called for structural reforms—i.e. for some type of narrow banking (Kay, 2015) or limited-purpose banking (Kottlikoff, 2010)[9]. Hetero-

[3] The financial crisis of 2007-2009 (also referred to as the 'Global Financial Crisis') began with the so-called 'sub-prime crisis', widened to a crisis of financial institutions (e.g. the collapse of Lehman Brothers in September 2008), and finally turned into a global recession, known as the 'Great Recession' (for details, see, e.g., Bootle, 2011; Kotlikoff, 2010).

[4] Leaven and Valencia (2012, 2008) showed that history is full of financial crises. In their systemic banking crises database, they count 124 single systemic banking crises alone from 1970 to 2007.

[5] Reinhart and Rogoff (2009) point out that it was always the same pattern: excessive debt accumulation by the government, banks, corporations, and/or consumers led to an economic boom and most of those then ended badly (p. xxv).

[6] Easterly, Islam, and Stiglitz (2001) analysed the impact of financial depth to economic volatility. Financial depth was measured as a ratio of private credit to GDP (p. 11). The authors found that more financial depth reduces volatility to some point, but that too much depth can increase volatility (p. 11).

[7] Those studies (e.g. Arcand, Berkes & Panizza, 2012; Cecchetti & Kharroubi, 2012; Hoeller, Fournier, Fall & Bloch, 2015) showed a similar relation. Financial development is good for economic growth up to some point; beyond that, it hampers growth.

[8] According to Acharya (2008), the government should create a sufficient number of safe banks which "invest exclusively in government securities, accept no more deposits than liquidation value of assets, and issue no liabilities (like debt) except common stock and preferred stock". All other banks would operate without regulation. In the case of a run, Acharya explained, the safe banks would serve panic-prone depositors.

[9] The basic idea is, according to Kotlikoff, to limit banking to its function of intermediating between borrowers and lenders (Kotlikoff, 2010, pp. 123). Kay described it as ring-fencing the deposit channel and reducing complexity by returning to smaller, specialised financial organisations (Kay, 2015, pp. 270-276). Coc-

dox scholars[10] also came up with reform ideas. Heterodox economists seem to be divided into two main groups concerning the field of money. Both investigate and question the basic mechanisms of money but come up with different outcomes. Post-Keynesian scholars seem to favour Fisher's (1935/2007) 100% money or Huber's (2011) positive money[11]. By contrast, Austrian scholars tend to favour Hayek's (1976/1990) free banking or commodity money[12]. Although business ethics does not have a rich body of literature on money, recently—even in this field—debates on fractional reserve banking, cryptocurrencies, and the proper role of central banks have been evolving[13]. Apart from the scholarly debate, even politicians have discussed whether there is a problem with the contemporary monetary system. For example, the

chrane (2014) too promotes the idea of narrow banking. He argues that with modern financial technology, narrow banking is a viable solution for runs. He therefore suggests Pigouvian taxes for controlling debt issue and that banks should be 100% backed by equity. Another, less radical, idea was promoted by Acharya (2008). According to him, the government should create so-called safe banks, which would "invest exclusively in government securities, accept no more deposits than liquidation value of assets, and issue no liabilities (like debt) except common stock and preferred stock". All other banks would operate without regulation. In the case of a run, Acharya explained, the safe banks would serve panic-prone depositors. However, hardly anyone of those orthodox scholars discussed the basic mechanisms of or the basic assumption about, money and its implications for society.

[10] According to Lee (2016, p. 1), "Heterodox economics refers to a body of economic theories that holds an alternative position vis-à-vis mainstream economics". He further argues that "[m]ainstream economics is a clearly defined theoretical story about how the economy works. […] It is comprised of a core set of propositions – such as scarcity, equilibrium, rationality, preferences, and methodological individualism […]" (p. 4). Its opponent, heterodox economics, thus includes Austrian economics, feminist economics, institutional evolutionary economics, Marxian-radical economics, post Keynesian and Sraffian economics, and social economics (p. 2). Lee argues that "terms such as 'non-traditional', 'non-orthodox', 'non-neoclassical' and 'non-mainstream' […] do not have the right intellectual feel or a positive ring" (p. 2). Therefore, 'heterodox' became used to describe those "various approaches in a positive light" (p. 2).

[11] In contrast to orthodox economists, the post-Keynesian school of thought explicitly incorporates finance in its models. Several post-Keynesians expected the crisis of 2007 (Keen, 2011, p. 326; Bezemer, 2010). They based their warnings on Hyman Minsky's financial instability hypothesis (see, for example, Minsky, 1992) and accounting models (Bezemer, 2010). Considering that school's ideas therefore seems a promising endeavour. Some post-Keynesians see money as a key driver of demand and economic growth (e.g. Binswanger, 2009a; Werner, 1997) or think that finance today is inherently unstable (e.g. Minsky, 1992; Keen, 2011). As a solution, some of them support Irving Fisher's idea of 100% money (Fisher, 1935/2007) or Joseph Huber's positive money (Huber, 2011). Benes and Kumhof (2012) used a DSGE model to demonstrate that Fisher's idea may indeed be worth considering.

[12] Austrian economics scholars too explicitly consider money in their theories. Many of this school's experts also anticipated the crisis (Keen, 2011, p. 326). They based their warnings on Hayek's argument of overly low interest rates caused by government policy (p. 13). In contrast to the post-Keynesians, Austrian school experts do not see money playing a vital role in demand and economic growth. They argue that the necessary growth of purchasing power can be achieved with a stable amount of money combined with declining prices (e.g. Huerta de Soto, 2006; Hülsmann, 2013). Thus, they criticise the current monetary regime, with some arguing for Hayek's free banking (Polleit & von Prollius, 2014; Hülsmann, 2008; Hayek, 1976/1990) or commodity money (e.g. Mayer, 2015; Schlichter, 2014).

[13] Business ethics analyses of money can hardly be found. Fortunately, things seem to be changing. In the *Journal of Business Ethics*, a debate is ensuing on the legitimacy of fractional reserve banking (see Bagus, Gabriel & Howden, 2018; Evans, 2015). In the same journal, some scholars investigate alternative currencies (e.g. cryptocurrencies) from a business ethics point of view (e.g. Dierksmeier & Seele, 2018; Meyer & Hudon, 2018). Other publications even highlight the role of central banks concerning equality (Fontan, Claveau & Dietsch, 2016) and point out the normative dimension of monetary policy (Dietsch, 2017).

U.S. Congress, the Icelandic parliament, the British parliament, and the Dutch parliament have discussed the current monetary order and its alternatives (KPMG Iceland, 2016, p. 16). In June 2018, Swiss citizens even had to vote on a constitutional amendment to implement positive money—which they rejected (Schweizerische Eidgenossenschaft, 2018, 2016). In addition to that, also new forms of money spawned by technological innovations have led to new interest in money[14]. How should states deal with Bitcoin (BTC)[15]? Should states forbid rival currencies, as the US government did with e-gold (see Grinberg, 2012, p. 161)? Or should states take action to protect their users from technology failures and theft? And what about Facebook's recent announcement to introduce its own global currency 'Libra' (Weber, 2019, p. 2)? Although the above-mentioned ideas about how to regulate money are all interesting and important, this thesis focuses solely on analysing the current monetary system, drawing on the popular economic concept 'neutrality of money'.

This thesis focuses on whether the current monetary system is compatible with the idea of 'neutral money' or not. As I shall explore the term 'neutrality of money' in depth in section 3.1, it suffices here to mention the core features of the concept necessary to understanding the importance of returning this concept to the research agenda. As previously stated, 'neutrality of money'[16] is an economic shorthand expression of the idea that changes in the quantity of money supply only affect the price level of the economy and nothing else. Yet, this is an economic concept that is anything but

[14] However, recent years have brought not only new financial assets, but also new forms of digitalisation, new business models and new market players, which have generated not only a new interest in the regulation of money but also in the regulation of finance in general. One example is robo-advisory. Here, wealth management firms offer automated investment advice (Lopez, Babcic, & De La Ossa, 2015, p. 157). Such services offer a simplified client experience at lower fees and thus may drastically change the financial industry (p. 157). Digitalisation has also led to new business models and market players. Examples are digital wallets (e.g. PayPal, Apple Pay), equity-based crowdfunding or peer-to-peer (P2P) lending (Zhang, Wardrop, Rau & Gray, 2015, p. 61). Such products are often offered by online companies, which are non-banks and non-insurance entities (Gulamhuseinwala, Bull & Lewis, 2015, p. 17). According to Treleaven (2015, p. 115), "Effective financial regulation is clearly crucial to innovation and the future success of the financial services industry and, in specific, FinTech." Yet, he sees not only new regulatory fields but also new regulatory instruments like RegTech. RegTech means the use of digitalisation and big data in regulation of FinTech (p. 115).

[15] BTC is a digital currency, which is based on the blockchain technology, is not backed by any government and is not redeemable for gold or any other commodity (Grinberg, 2012, p. 160). Transactions in Bitcoin can be carried out via a computer program (a BTC client) or via a website that runs Bitcoin for its users (Grinberg, 2012, p. 163). Bitcoin's volatility is much higher than those of the widely used currencies and it has achieved only a scant consumer transaction volume (Yermack, 2014, pp. 9-12). Thus, according to Yermack, Bitcoin fails to satisfy the criteria of a currency and seems to be more like a speculative investment (pp. 16-18).

[16] The term 'neutrality of money' is closely related to economic terms like the 'veil of money', 'quantity equation' or 'classical dichotomy'. However, I shall focus here solely on 'neutrality of money', as it is only this explicit term which is of interest in the scope of this paper.

unambiguous or undisputed. In section 3.1, I explain that it is not only unclear what exactly 'neutrality of money' means, but also whether nowadays money is indeed 'neutral' or not. Despite all these uncertainties, most neoclassical economic models today are built on the axiom that money is indeed 'neutral'. This axiom means that changes in the money supply are not meant to have any impact on real variables. Thus, it is not only an economic concept crucial to model building, but also an important performative[17] economic concept, as policy considerations are made based on those models. However, when economic models are built on such an axiom which might well be fallacious, what then is the value of the policy considerations? Beyond that, 'neutrality of money' is a performative concept in another way as well. Due to the concept's popularity, it is even taught in undergraduate-level courses. This results in many young students graduating with the conviction that money is indeed 'neutral'. Another lamentable aspect, apart from this implicit usage as an axiom in today's neoclassical models, is that there is scarcely any explicit recent research on 'neutrality of money'[18]. Thus, instead of exhaustively analysing all aspects of the current system or even attempting to propose a new and better monetary system, it appears much more important to reinstate the popular but unquestioned concept of 'neutrality of money' on the research agenda. These are the reasons why this thesis investigates 'neutrality of money' and whether the current monetary system is 'neutral' or not. The focus of this work is not only highly relevant but also well suited for investigation in a PhD thesis.

[17] Performativity means that economic terms (e.g. neutrality of money), concepts (e.g. accounting principles) or models (e.g. Black-Scholes-Morten model) do not only have descriptive character but also a performative one. So, for instance Graeber (2011) and Anderson (2004) show that 'debt' is not a value-free economic term. According to Anderson, it can make a great difference whether or in what way an economic term like debt is associated with moral value judgements. For instance, when during the Middle Ages debt was associated with sin, this most likely had influence on whether a businessman used credit or not. The performativity thesis claims "that economic theory does not just observe and explain a reality, but rather shapes, formats and performs reality" (Vosselman, 2014). Another example may be the Black–Scholes–Merton model. The Black–Scholes–Merton model is a financial model for evaluating derivative investment instruments. As an academically derived product in the discipline of economics, it is meant to be descriptive tool. However, MacKenzie (2006, p. 259) argues that "It is to assert that the model was a theoretical innovation, not simply an empirical observation; that the model's relation to the market was not always passive, but sometimes active; that its role was not always descriptive, but sometimes performative, […]. An engine, not a camera." Similar to that, Vosselman (2014) investigated the performativity thesis allied to the case of accounting. He summarised his findings as follows (p. 197): "The reviewed studies in accounting and accountability reveal that accounting not simply represents (for) something, is not simply a mirror, but is created as a re-presentation. Moreover, it re-presents and intervenes at the same time; representation and intervention are entangled. Accounting proves to be performative. All of the reviewed studies support this claim." Following Roscoe (2016), one may well conclude that such performativity means that every invention (or adaption) of a new way of economic description may transform social arrangements and relations.

[18] The only exception to that seems to be the paper by Moreira, Mendonça and Sachsida (2016). They examined the 'neutrality of money' in what they call a 'non-traditional sense', which means that a change in the money supply should leave the relative prices untouched. However, they found that in the US economy (1959 to 2013), this is not the case.

It is a popular economic concept with broad relevance for scholars, undergraduate students, and even monetary policymakers. Furthermore, it allows for this research to zone in on a defined set of issues: the current monetary system and its effects with respect to 'neutrality'. As such, this paper does not further investigate specific reform proposals, technological changes, and/or specific monetary policy instruments or goals apart from the idea of 'monetary neutrality'. Hence, this narrower scope enables proper topical investigation in the context of a doctoral dissertation. The topic of 'neutrality of money' is, nonetheless, broad enough to contain many aspects, rather than constituting a very distinct specialised issue concerning money, that lend it relevance to, for instance, monetary policy. As today most of our monetary systems are designed as fractional reserve systems (for details see chapter 4), the thesis focuses on this distinct system. Hence, the guiding question of this thesis of whether such fractional reserve systems are 'neutral' or not was chosen.

1.2 The Aims of this Thesis

As stated above, the guiding question of this thesis is whether the prevalent monetary system, the 'fractional reserve system', is 'neutral' or not. However, analysing that question first requires proper understanding of the notion of 'neutral money'. The aim of this study is thus twofold: first, to unearth the normative core of 'neutral money', and second, to analyse whether the current 'fractional reserve system' can meet the attributes of such 'neutral money'. I will explain below what this twofold approach exactly means and why it is necessary. I will start with the first research goal.

(1) Understanding the normative core of 'neutrality of money', based on an integrative economic ethics view.

In this thesis' endeavour to answer whether fractional reserve systems[19] are 'neutral' or not, the notion of the term 'neutrality' as well as the current practice of the fractional reserve system are equally crucial elements. As I will further demonstrate (subsection 3.1.1), today, 'neutrality of money' is used as an axiomatic statement: neoclassical models are built on the axiom that money is indeed 'neutral'. In those economic applications, the truth of the axiom itself or whether that notion is good—a normative ideal

[19] By 'fractional reserve system', I only refer to the general practice of determining what is predominantly used as money and putting it into circulation, hence, the practice of the central bank and the commercial banks within a fractional reserve system. I am not concerned with what the specific goals of monetary policy are, what instruments are used to achieve those goals, whether there is international cooperation among the central banks (e.g. the Bretton woods system) or not, or whether there are fixed or floating exchange rates. My analysis is limited to a closed economy as I am only interested in its general workings (see section 5.1).

to strive for—are barely discussed. However, historically, there is a normative core. In fact, the first usage of the term 'neutrality of money' was meant as a normative statement (see subsection 3.1.1). Therefore, as half of the question I have posed is found in the notion of 'neutral money', it is crucial to properly understand this normative core. To do so, this thesis is based on the leitmotiv of integrative economic ethics, summed up by Ulrich (2008a) as follows:

> *"The integrative approach endeavours [...] to throw light upon the inherent normativity of economic rationality itself and to develop a comprehensive idea of ethically integrated economic rationality." (p. ix)*

This thesis will thus shed light upon the inherent normativity of the economic notion of 'neutrality of money'. I will subsequently show why following the integrative economic ethics approach, especially in the case of this thesis (see section 1.4), is well suited to the task. On the basis of those insights and on integrative economic ethics' normativity idea, this thesis continues the normative debate on 'neutrality of money', advancing it into the 21st century. As I have thus far laid out the first of the thesis' aims, I now turn to the second one.

(2) Analysing whether the fractional reserve system is 'neutral' or not, based on the credit theory of money and post-Keynesianism.

Based on that revisited normative notion of 'neutrality of money', this thesis aims then to analyse whether our contemporary fractional reserve systems are neutral or not. Yet, what money is, how it emerged[20], and even how money creation within the banking sector works is still a matter of dispute in economics (Werner, 2016, p. 362). Particularly in the economic mainstream (neoclassical economics), money and finance were not explicitly considered for decades (as previously mentioned in section 1.1). For this

[20] According to Zelmanovitz (2016, pp. 9-29), there are two competing schools of thought about money's origin: the chartalists and the catallactics. The chartalists think that money is a creature of the state. The catallactics however see money as a spontaneous social invention. Chartalists are also known as nominalists and one can say that their ideas are more or less congruent with what we call orthodox economics (Zelmanovitz, 2016, pp. 12-13). Catallactics has its roots in the Austrian school of thought. Yet, the well-known sociologist Georg Simmel fits into that category too (p. 9). Chartalists see money as a creature of the state: a piece of merchandise that was stamped to be money (pp. 9-11). In their view, money is defined as what the state defines as a unit of account (pp. 11, 26) and its main purpose is to serve the state's purpose, e.g. to settle taxes (p. 11). According to the chartalists, its value too is defined by the state, for which reason this school is also called nominalist (p. 26). In contrast to that, catallactics see money as having spontaneously developed within society (p. 9). They think that progressing division of labour increased the need to facilitate indirect exchange, which first was met by goods like cattle, salt, and metals (p. 11). Hence, they define money as the generally accepted means of exchange (p. 10) and see its purpose as enhancing the division of labour. Eventually, in that view, the value of money has been determined to result from the function it has as a means of exchange (p. 10).

reason, deliberately and carefully taking a position within this field is essential. As I later explain (see section 1.5), I base my understanding of money and its working primarily on the credit theory of money and post-Keynesianism. As early as more than one hundred years ago, Howe (1915, p. 24) succinctly stated the credit theory of money's essence, as follows:

> *"Banks do not loan money. They loan credit. They create this credit and charge interest for the use of it. It is universally admitted that the old State Banks that created credit in the form of bank notes, created currency—and our modern system of creating credit in the form of 'Deposits' which circulate in the form of bank checks, is doing exactly the same thing—creating currency."*

It is important to note that the credit theory of money and post-Keynesianism are two separate things. The credit theory of money focuses solely on money creation whereas post-Keynesianism is a more or less homogeneous economic school of thought with the principle of 'effective demand' at its heart, "according to which output and employment are generally demand-constrained rather than supply-constrained" (King, 2019, p. 2). Some opponents within the post-Keynesian school, do not consider finance and money at all (e.g. Kalecki), some explicitly focus on finance (e.g. Minsky, 1986/2008), and some even adopt the credit theory of money (e.g. Binswanger, 2015a; Keen, 2011). However, since most post-Keynesians see money as endogenous rather than exogenous (King, 2019, p. 10), post-Keynesianism and the credit theory of money are compatible theoretical points of view. Therefore, this analytical framework, the credit theory of money and post-Keynesianism together, will determine the understanding of money and its impact on economic activity in this thesis. Again, in a subsequent section (see 1.5), I explore those points in more detail. Yet, before that, the next section will substantiate the relevance of the thesis' aims.

1.3 The Relevance of the Thesis' Aims

Money is a crucial prerequisite for the economy and society as we know it today. Thus, whether it is 'neutral' or not is a highly important question. Every day, we pay and calculate with money. The same is even more true for financial transactions. Financial contracts (e.g. loans and insurance policies) are almost unthinkable without having the means of calculating and paying with money. Money is the universal social institution that enables labour division and facilitates trade (Tobin, 2019, p. 1; Zelma-

novitz, 2016, p. 18) and in that plays a key role in our complex[21] societies (Zelmanovitz, 2016, p. 38). Brodbeck (2012, p. 336) goes even further and argues that money is an a priori element of economics. Yet, money is not only a crucial element for our economies, but also crucial for society in general too. From a sociological point of view, Simmel (1907/2009, pp. 429-464) perceived money as a social category for individual freedom. It can even be argued that money is an institution or a communication form like language, which promotes or even enables socialisation in the first place (e.g. Dietz, 2016, p. 111-119; Brodbeck, 2012, p. 1135). If all that applies to the social category of money in general, it then also applies to our prevalent 'fractional reserve system' too. Therefore, the endeavour of investigating what 'neutral money' in a normative way looks like and whether the current monetary system meets those normative requirements undoubtedly poses a highly relevant question for every society's quest for a good and just monetary and economic order.

Despite the above, there is barely any discussion observable in economics on the term 'neutrality of money' itself or whether such 'neutrality' is desirable or not. As a review of the state of research appears in section 3.1, I will only summarise at this point the most important reasons why 'monetary neutrality' demands further research. As section 3.1 will show, and as already mentioned, 'neutrality of money' at present is mostly used as an axiomatic statement, on which economic models are implicitly based. However, the term seems to have appeared in the interwar period of the 20th century and became increasingly popular among economists. Initially, in its first deliberate usages by Hayek (1931) and other scholars of that time, the term seems to have been meant as a normative not a positive or axiomatic statement, a requirement of money to correspond to the ideal market economy. Later, based on that idea, scholars investigated whether money is actually neutral or not. Until today, no clear consensus on whether money is indeed neutral or not has been achieved. From a theoretical perspective, some economic schools argue that money is neutral (e.g. the neoclassical school) whereas others (e.g. Keynesians, post-Keynesians) argue that it is non-neutral. There are empirical studies that generally indicate that money seems to be non-neutral in the short run but neutral in the long run. However, the meaningfulness of all those studies heavily depends on the notion of the term 'neutrality of money' underlying those studies. Yet, the bulk of that literature does not make a deliberate attempt to re-

[21] Money and labour division lead to highly complex forms of society in which the individual and society cannot be separated: people are highly individualised but also highly socialised (Dietz, 2016, p. 113-114). This means that people were never that individualised while so dependent on society. This, in turn, means that having access to money was never so important to the pursuit of individual life goals.

flect on the concept's notion. The confusion goes even further. In more recent times, the term, or at least its basic idea has only been used as an analytical tool, an axiomatic statement affirming that money indeed is neutral. So, during the last decades, 'neutrality of money' was only used as an 'as if' assumption. In other words, neoclassical scholars took 'monetary neutrality' for granted despite the fact that it remained an economic concept far from being unambiguous or undisputed. To the knowledge of the author, there is only one recent study that explicitly investigated 'neutrality of money' and in so doing did not only treat it as a mere axiom. Moreira, Tabak, Mendonça and Sachsida (2016) investigated whether a change in the money supply would affect relative prices. Their research found that money is indeed non-neutral in that respect. Apart from that study, there have hardly been any deliberate investigations observable that explore what 'neutral money' is or whether money is 'neutral' or not. The lack of discussion on the notion and normative force of the term 'neutrality of money' seems to be a fundamental weakness in economic research in that area. It also seems to indicate a dearth of awareness that such analytical tools (axioms) might well have a normative impact on reality (i.e. performativity).

Political philosophy too did not and still does not consider 'neutrality of money' although there is a related normative discussion on 'state neutrality' that focuses on the 'neutrality' of a country's constitution, its laws, and deliberate state actions. As the literature of political philosophy proves, a normative discussion on the notion of 'neutrality' exists, but without considering a relation of that concept to money or the monetary system. In political philosophy, 'neutrality' is often explicitly discussed as 'state neutrality'. According to Kis (2012, p. 2), the term '(state) neutrality' emerged from the liberal tradition of political philosophy. According to De Marneffe (2006, p. 17), particularly Dworkin "identified liberalism with the principle that government ought to remain as neutral as possible toward different conceptions of a good life" (see Dworkin, 1985, pp. 181-204). Since then, critics of Dworkin and of liberalism have generally questioned whether such 'neutrality' is possible or desirable (p. 17). The debate on 'neutrality' had its peak particularly in the 1970s and 1980s (Patten, 2012, p. 249; Kis, 2012, p. 2). In recent times, there were some attempts to revive the discussion on 'neutrality' (see e.g. Tahzib, 2018; Lovett & Whitfield, 2016; Patten, 2012). However, 'neutrality' is not normally the heart of a political philosophical theory, but more the by-product of one. Hence, the notion of 'neutrality' largely seems to depend on the notion of freedom or state responsibility that one has. In all those writings, 'state neutrality' is applied to specific practical questions of politics

and state actions[22] but never to questions concerning money or the monetary order. Thus, there is no explicit normative notion of 'neutrality of money' in political philosophy either. And, despite the similarity in their names, the two concepts ('state neutrality' and 'monetary neutrality') are very distinct from each other. To the knowledge of the author, there are no writings on political philosophy that deliberately consider money or the monetary system as relevant to the idea of 'state neutrality'. Hence, there is no way to simply apply 'state neutrality' to money[23]. The political-philosophical discussion on 'state neutrality' is, of course, a crucial context for a discussion on 'monetary neutrality'. Yet, its debate is not specific enough to gain direct insight into 'monetary neutrality' other than establishing that a political-philosophical basis is needed from which to derive the notion of 'neutral money'. Such basis is necessary as any 'neutrality' concept (like 'state neutrality') must fit into and be consistent with a larger, comprehensive idea of justice and the good. The same applies to 'neutrality of money'. As mentioned above, for this thesis, this idea of the good and just life is based on Ulrich's integrative economic ethics. Consequently, the notion of 'monetary neutrality' will be based on that too. Therefore, the next section explains why the thesis is based on integrative economic ethics as its explicit normative point of view.

[22] One fundamental question concerning 'state neutrality' is: Who or what should be neutral? For instance, even within those discussions, the level of neutrality is unclear: Shall neutrality apply to a constitution only, or to politics in general (Gaus, 2009, p. 93; Raz, 1986, p. 112)? Between whom or what should the state be neutral? This uncertainty arises from the concept's relational essence. Neutrality always exists between different things. Yet, what those things are is unclear. For instance, Dworkin (as stated above) speaks of neutrality between different conceptions of 'the good life'. Gaus (2009, p. 83) and Kis (2012, pp. 4-5), however, argue that neutrality means neutrality between persons—neutrality as a principle of non-discrimination. 'Neutral money' would mean then in the first place that money should be equally neutral towards all citizens. This contrasts with the fact that 'neutral money' is considered neutral towards the market (see subsection 3.1.2).

[23] Because of that, this thesis does not take 'state neutrality' as its starting point but follows the integrative economic ethics approach to 'monetary neutrality'.

1.4 The Normative Foundation: Integrative Economic Ethics

"The book Integrative Wirtschaftsethik was published in the summer of 1997 after a developmental phase lasting ten years. In the intensive German-language debate on this young but highly topical discipline it met with a lively response. The integrative approach quickly established itself as one of the leading conceptions in its field. Interest in the book has also steadily grown outside the German-speaking world. That is why enquiries about an English edition have become more and more frequent. The reason, as far as I can see, is that no comparable overall conception exists to date in the Anglo-Saxon literature." (Ulrich, 2008a, p. ix)

The distinct feature of integrative economic ethics that makes it so appealing for application to this thesis is its leitmotiv of unearthing the normative core in economics. In his own words, Ulrich describes the leitmotif of integrative economic ethics as "to throw light upon the inherent normativity of economic rationality itself and to develop a comprehensive idea of ethically integrated economic rationality" (Ulrich, 2008a, p. ix). In other words, Ulrich's aim is to reveal the normative basis of economics by enlightening the pretended value-free and ethically 'neutral' economics profession (p. 101). Hence, as economic theory has a normative core, the economic concept of 'neutral money' does as well. As early economists (e.g. Adam Smith) knew this was true for the economic approach in general, the initiators of the term 'neutrality of money' (e.g. Friedrich August von Hayek) too were aware of this. Therefore, to understand the notion of 'neutral money' requires a similar exploration of this normative core of the concept. Ulrich's integrative economic ethics is clearly the proper theoretical basis for that endeavour.

Furthermore, Ulrich's approach avoids reducing morality to economic rationality by strictly adhering to the idea that ethics (policy) always ought to have normative primacy over economics (market). As a core element of that, Ulrich (2008a, p. 107) formulates his regulative idea of socio-economic rationality as follows:

> *"Every action or institution can be regarded as socio-economically rational which free and responsible citizens (could) have—by deliberation among all concerned—consensually determined to be a legitimate way of creating value."*

This regulative idea should overcome what Ulrich calls the "fictive notion of general efficiency for everybody" which is "[t]he fallacy inherent to the neoclassical idea of economic rationality". Ulrich's argument is best understood by **Figure 1**, below.

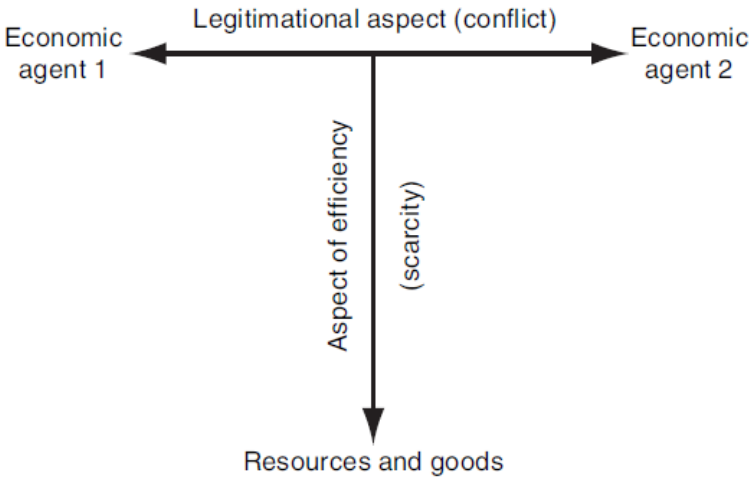

Figure 1: The two-dimensional character of socio-economic rationality
Notes: Ulrich, 2008a, p. 107

According to Ulrich, the legitimational aspect of a socio-economic situation always takes precedence over the aspect of scarcity. In other words: ethics (policy) always has higher priority than economics (market). Therefore, according to Ulrich, the mistake neoclassical or 'pure' economics makes is to misguidedly reduce the socio-economic situation to the dimension of scarcity. This normative prioritisation is of particular relevance for this thesis as it not only applies to markets in general but also to money and monetary policy. Hence, when ethics and policy must always take normative primacy over economics and the market, then this must apply to the question of money, monetary policy, and 'neutrality of money' too. Accordingly, the ideal of 'neutrality of money' is necessarily always an ethical concept, which can never be reduced to purely economic considerations (like efficiency). The same then applies to monetary policy. Monetary policy must first and foremost be discussed in ethical terms before it can be considered in terms of economic aspects. 'Neutrality of money' and monetary policy must thus obey ethical considerations before serving the market.

Based on those considerations, the overall approach of this thesis shall be that of Ulrich's integrative economic ethics[24]. This particular economic ethics approach is well-

[24] According to Ulrich, his approach to integrative economic ethics is superior to its competing approaches. By that he refers to two competing approaches, which he calls 'applied ethics' and 'normative economics'. Ulrich criticises 'applied ethics' for not reflecting the inherent normative elements in economics itself (Ulrich, 2008a, p. 80). So, for example, such 'applied ethics could forget to critically reflect the normative notion of 'neutral money' as a problem of the monetary order itself. Then, Ulrich further criticises the second competing approach, 'normative economics', for making the category mistake to reduce morality to economic rationality (p. 89). In the case of 'neutral money', normative economics could come to conclude the only requirement of money to be efficiency. Based on those considerations, he argues that it is only "rational ethics of economic activity" that remains. Hence, the claim of this thesis shall be to meet the requirements of such 'rational ethics' that Ulrich has in mind.

known in the German-speaking world but less popular in the Anglo-Saxon world. However, as already mentioned, there is also a deliberate theoretical point of view concerning money and its functioning required. In the next section, I shall therefore proceed by arguing that the thesis' economic point of view is based on post-Keynesianism and the credit theory of money rather than on the economic mainstream's view.

1.5 The Economic Foundation: Post-Keynesianism

> *"It proved extraordinarily difficult for economists to recognise that bank loans and bank investments do create deposits."* (Schumpeter, 1954, p. 1114)

As the working of the current monetary system is key to this investigation, the thesis must be based on a sound economic understanding of that system. As revealed in section 1.2, the guiding question of this thesis is whether the prevalent monetary system is compatible with the ideal of 'neutral money' or not. Therefore, the aim of this study is twofold: first, to unearth the proper normative notion of 'neutral money', and second, to analyse whether our current fractional reserve system can claim the attributes of such 'neutral money'. Achieving the first aim requires solid normative reasoning, which will be based on integrative economic ethics (see section 1.4). Achieving the second aim, however, requires a solid (empirically proved) understanding of (a) the current working of the monetary system and (b) how the working of the monetary system affects the overall economy and society.

To the knowledge of the author, the most solid understanding of how the monetary system works is given by the credit theory of money. Therefore, the thesis is based on this particular view. During the last decades, money played only a minor role in the economic mainstream. Yet, according to Werner (2016), even when mainstream dealt with money it did it wrongly. Werner distinguishes between three theories of how banking affects the money supply:

> *"(1) The currently prevalent financial intermediation theory of banking says that banks collect deposits and then lend these out, just like other non-bank financial intermediaries. (2) The older fractional reserve theory of banking says that each individual bank is a financial intermediary without the power to create money, but the banking system collectively is able to create money through the process of 'multiple deposit expansion' (the 'money multiplier'). (3) The credit creation theory of banking, predominant a century ago, does not consider banks as finan-*

cial intermediaries that gather deposits to lend out, but instead argues that each individual bank creates credit and money newly when granting a bank loan."

Werner noted that, despite the importance of that issue, no empirical tests had been undertaken to prove those three theories. He thus carried out two empirical tests (2016, 2014), which both found that the third hypothesis, the credit theory of money, seems to be true[25]. Deleidi and Fontana (2019) recently came to the same conclusion by testing the money creation process in the Eurozone for 1999-2016 using an econometric analysis[26]. Hence, there are three empirical tests demonstrating that the credit theory of money seems to adequately describe how money creation works today. Because of that sound empirical evidence, this view on money[27] has been adopted for the thesis at hand. The credit theory of money offers a solid understanding of how the monetary system today works. However, to judge whether the current monetary system is 'neutral' requires not only an understanding of how that system works but also an understanding of how the working of that system affects the rest of the economy.

Given that post-Keynesianism has a long tradition of explicitly incorporating money in its macroeconomic models and as it is even fully compatible with the credit theory of money, it shall serve as a perspective on how the monetary system interacts with and affects the rest of the economy. As already mentioned in section 1.1, in the second half of the 20th century, money played only a minor role in

[25] In his first test, Werner (2014) monitored the internal accounting records of a cooperating bank whilst the process of making a loan was carried out. The study empirically showed that banks can create money 'out of thin air'. In his second similar test (2016) with an alternative methodology, he controlled all factors. Again, the 'financial intermediation' and 'fractional reserve' theories were rejected; the test clearly indicated the 'credit creation' theory to be true.

[26] Deleidi and Fontana (2019) tested money creation in the Eurozone for 1999-2016 by means of an econometric analysis using VAR and VECM methodologies. They found that the money supply is endogenous: "(i) bank loans determine bank deposits, and (ii) bank deposits in turn determine monetary reserves." This conclusion means that this empirical study supports horizontalism. Horizontalism is a post-Keynesian approach to money creation which argues that reserves (R) are not managed by a central bank but are provided on demand by the central bank. Hence, this approach inverts the standard textbook's money multiplier relationship between the central bank and the commercial banks.

[27] Another recent theory of how money works is modern monetary theory (MMT). According to Wray (2019, p. 2), MMT is built upon the insight of, e.g., Knapp, Keynes, Schumpeter, Lerner, Minsky, and Godley. It is a distinct and coherent macroeconomic theory drawing on different approaches to money, like the credit or endogenous approach to money. According to Wray, the most important conclusion is that nations that issue their own currency "do not face financial or solvency constraints". Concerning the relation between post-Keynesianism and MMT, the well-known post-Keynesian scholar Lavoie (2019, p. 97) states that "MMT, to me, is just part of post-Keynesian economics. I would classify MMT advocates as institutionalist post-Keynesians, because they are very much concerned with monetary and financial institutions, and in particular the institutional links between the government and the central bank." So, as this thesis is based on a post-Keynesian approach, MMT seems to be compatible with this thesis, too.

mainstream economics[28]. Post-Keynesianism, however, always explicitly incorporated money and the financial sector in its analyses. As Chick and Dow (2013) showed, the post-Keynesian school of thought has comprised a rich body of explicit research on money. Because of this long tradition of incorporating money, post-Keynesianism is an appealing approach for this thesis. Another reason for preferring post-Keynesianism over the economic mainstream is the strong empirical evidence that post-Keynesianism is more realistic concerning money by seeing and modelling money as endogenous rather than exogenous. For decades, even if economic mainstream considered money, it built its models on the assumption that money is exogenous. Yet, there are now three empirical tests (as mentioned above) showing that money works like the credit theory of money, which also means that money is, in actual fact, endogenous, not exogenous. Thus, it seems that the economic mainstream modelled money incorrectly for decades. Most post-Keynesians, however, already viewed money as endogenous for decades (King, 2019, p. 10). Of course, there are different approaches to money even within post-Keynesianism. Yet they all assume money to be endogenous rather than exogenous, and they all agree on the causality that loans create deposits (Chick & Dow, 2013), which is evidently compatible with Werner's[29] credit theory of money, too. That the already discussed credit theory of money is highly compatible with post-Keynesianism is a strong reason for taking this post-Keynesian perspective

[28] Yet, apart from the questions of incorporating or modelling money or not, there are an increasing number of scholars who even criticise that the neoclassical world view is unrealistic (e.g. Dirskmeier, 2016, p. 11; Drakopoulus, 2016; Dietz, 2015; Colander, et. al., 2008; Watson, 2014). So, it is not only that neoclassical theory did not consider money and finance; even when it did, it perceived it as a nature-like phenomena. Sinclair (2009) described this neoclassical view of finance and money as follows: "The first, the exogenous approach, sees finance itself as a natural phenomenon, a smoothly-oiled machine that every now and then gets messed up by the government, or events that nobody can anticipate, like war or famine." He then immediately adds what he perceives as the opposite approach: "The other perspective, the endogenous, argues that the machine-like view of finance is mythic. Like all other human institutions, finance is a social world made by people, in which collective understandings, norms, and assumptions give rise periodically to manias, panics, and crashes. On this account, financial crises are normal." In Lawson's words (2009, p. 774), finance and money need "to be understood rather than modelled" (Lawson, 2009, p. 774). Here again, post-Keynesianism comes into play: post-Keynesians perceive the reality as "being complex and evolving […] and give an important role to institutions and to social structures and behavior [sic] (Dow, 2013, p. 2; King, 2019, pp. 3-4). This is in contrast to neoclassical economics where isolated individuals operate within fixed structures (Dow, 2013, p. 2). Further, neoclassical economics is rigidly based on the microfoundation of rational choice theory whereas in post-Keynesianism, "[m]ethods are chosen with the nature of particular problems in mind, rather than as an internal methodological prerogative" (Dow, 2013, p. 2; similarly King, 2019, pp. 3-4). However, the choice of post-Keynesianism is not a choice against neoclassical economics but only one for the most beneficial approach for my purposes. It seems that post-Keynesianism has a lot to add to that debate on money. In this sense, the choice of post-Keynesianism follows the idea of overcoming the division between economic orthodoxy and heterodoxy, as Watson (2014, p. 70) argues for.

[29] To the author's knowledge, Werner neither explicitly calls himself a member of nor is he explicitly referred to as belonging to the post-Keynesian school. However, since most post-Keynesians see money as endogenous rather than exogenous (King, 2019, p. 10), post-Keynesianism and Werner's credit theory of money are highly compatible.

as the overall economic basis for this thesis. Another argument for using post-Keynesianism is that it seems to be closer to a realistic understanding of monetary macroeconomics than neoclassical theory. For instance, whereas neoclassical economics ignores the relevance of accounting mechanisms[30] and temporal processes in production, post-Keynesianism explicitly models them[31]. What is more, Bezemer (2010, p. 1) found empirical evidence that post-Keynesian accounting models were superior to orthodox models in anticipating the crisis of 2007. The term balance sheet recession (Koo, 2011) gained much popularity in this context. Balance sheet recessions show that accounting is performative and that to acknowledge accounting identities in economic modelling is very useful in terms of results. This is exactly what post-Keynesianism does. It basically recognises money as accounting figures enforced by

[30] This may still be used as another argument for taking a post-Keynesian approach, as post-Keynesianism considers the accounting reality of money. As the approaches to money of the neoclassical, Austrian, and post-Keynesian schools or even within post-Keynesianism are still a matter of dispute, it is—according to Schmidt (2012, p. 62)—beneficial to consider accounting methods in money as those methods might avoid some of the disputes between these competing schools. So, once again we have an argument for post-Keynesianism. Yet, unfortunately, as for decades there was hardly any connection between economics and accounting, the accounting literature on money is rather scant (Bosson, Costa, Cuccia, Valenza, 2018, p. 3).

[31] In mainstream economics, money as well as accounting mechanisms are not considered as of importance. The same is true for temporal processes in production: neoclassical models deductively theorise, without considering how production processes work, from a chronological perspective. In contrast to that, post-Keynesian models give more importance to real production circumstances. According to Binswanger (2009b, p. 712), there are three common assumptions in post-Keynesian approaches to macroeconomics: "1. An increase in firms aggregate spending must be financed by credit expansion of banks (an increase in the money supply) and cannot be financed by additional savings, because in this case the increase in aggregate demand by investment spending is offset by a corresponding decrease in consumption spending. […] 2. Production takes time. The output of goods produced in the current period is not available for sale until the next period. 3. The aggregate business sector must be able to realize profits, meaning that the sum of profits (after interest) of successful firms must exceed the sum of losses of non-successful firms. If this were not the case, aggregate spending of the business sector would start to decline causing profits to become even smaller and forcing the whole economy into a downward spiral with negative growth rates." Another, more realistic feature of post-Keynesianism is its use of accounting methods not only for monetary theory but also for macroeconomics in general. As already mentioned (see section 1.1), the concept of 'performativity' claims that economic theory (e.g. concepts like accounting) "not just observes and explains a reality, but rather shapes, formats and performs reality" (Vosselman, 2014). Particularly, the simple mechanics of accounting principles may even affect the success of entire firms or economies, as accounting figures decide whether a business goes bankrupt or not. Bezemer (2010, p. 1) showed empirical evidence that post-Keynesian accounting models were superior to orthodox models in anticipating the crisis of 2007. In this context, the term balance sheet recession (Koo, 2011) gained much popularity. Balance sheet recessions show that accounting is performative and that to acknowledge accounting identities in economic modelling is a fruitful perspective. That is exactly what post-Keynesianism does. It recognises money basically as accounting figures enforced by law. I have argued thus far why, for this purpose, post-Keynesianism is preferable to economic orthodoxy. I also outlined most of post-Keynesianism's features. Yet, there is one feature left which is crucial to this thesis: the principle of effective demand. King states (2019, p. 2) that this is a core feature of post-Keynesianism "according to which output and employment are generally demand constrained rather than supply-constrained". As the principle applies in the short and the long run, post-Keynesianism stresses the role of demand for economic growth, rather than that of resources (e.g. labour) as neoclassical economics does (p. 3-4). In other words, rather than the economic mainstream approach, which gives nearly no importance to first-round effects, this approach stresses the importance of effective demand (Friedman, 2019, p. 14).

law. Hence, even empirical data seems to prove that post-Keynesianism is, in this regard, superior to neoclassical economics. So far, I have argued that a distinct economic perspective based on post-Keynesianism and the credit theory of money should be applied in this thesis.

1.6 The Epistemic Perspective

> "We bet notable macroeconomists, Alan Blinder and Charles Wyplosz, never heard of the 'performativity of economics' when they stated that 'the main purpose of central bank talk is to help markets think like the central bank'. (Blinder & Wyplosz, 2004, 7, cited in Boldyrev & Svetlova, 2016, p.1)". (Boldyrev & Svetlova, 2016, p.1)

This section aims to clarify the basic epistemic assumptions and thus what the thesis can and cannot achieve. This concerns both the descriptive (economic) as well as the normative part of this thesis. As the thesis focuses on a genuine economic concept, that epistemic perspective will be depicted in contrast to the epistemic foundation of standard economics (the neoclassical school). There are two main differences to the neoclassic school: (1) the inductive method, and (2) the performativity thesis.

According to Dembinski (2009, p. 3), "[t]oday the choice is between a comforting loyalty to the dominant but self-referential paradigm, and openness to reality." This thesis follows the second option. The first option, the neoclassical school of thought is based on the deductive approach (Dembinski, 2009, p. 4; Werner, 2005, p. 17; Ingham, 2004, p. 16). It starts with axioms that are not derived from empirical evidence, adds theoretical assumptions, and then uses logical tools (mathematics) to prove theoretical results (Werner, 2005, p. 17). The core concept of it is to deductively model the decision making of rational utility-maximising individuals (Ingham, 2004, p. 16). So, for instance, the idea of "homo oeconomicus" being a rational utility-maximizer is not supported by empirical facts, it is only such an axiom. Yet, there are an increasing number of scholars who criticise that this neoclassical world view is unrealistic (e.g. Dirskmeier, 2016, p. 11; Drakopoulus, 2016; Dietz, 2015; Colander, et. al., 2008; Watson, 2014). According to Dembinski, the neoclassical school treats "direct evidence of reality as irrelevant, and stays locked in a world of abstract models" (2009, pp. 3-4). In contrast to that, this thesis follows the alternative path, which focuses on "relevance rather than blind loyalty to established ideas" (p. 4). Following this idea, this thesis aims to inductively examine reality and to identify "important facts and patterns" to explain them, as Werner (2005, p. 17) suggests. Hence, what is

needed is a "realist ontology of the underlying social institutions relevant/necessary to the conduct of economic activity", as Smithin put it nicely (2013, p. 19). According to Ingham (2004) and Smithin (2013, p. 19) for such a realist approach on money, to fully understand money (and thus economics in general), an interdisciplinary social sciences approach is indispensable. Here again, post-Keynesianism comes into play: post-Keynesians perceive the reality as "being complex and evolving […] and give an important role to institutions and to social structures and behavior [sic] (Dow, 2013, p. 2; King, 2019, pp. 3-4). This is in contrast to neoclassical economics where isolated individuals operate within fixed structures (Dow, 2013, p. 2). Further, neoclassical economics is rigidly based on the microfoundation of rational choice theory whereas in post-Keynesianism, "[m]ethods are chosen with the nature of particular problems in mind, rather than as an internal methodological prerogative" (Dow, 2013, p. 2; similarly King, 2019, pp. 3-4). Besides this orientation on reality, the inductive method, and the idea to choose the methods that pragmatically fit best to the problem, there is a second epistemic difference to the neoclassic school.

This thesis is based on the idea that economic models and concepts are performative, rather than only functionalist (representative). Neoclassic economics are generally in line with a functionalist view on economic concepts, models, and accounting tools (Vosselman, 2014, p.182). According to that view, economic concepts and accounting are only tools for the "re-presentation of something" and the "re-presentation for someone" (Rheinberger, 1997). In that case, economic tools and concepts are only "considered to provide a reflection of reality 'out there' that is prior to" those concepts (Vosselmann, 2014, p. 182). However, the performativity perspective challenges this view (Boldyrev & Svetlova, 2016, pp. 8-9). The performativity thesis argues that economic terms (e.g. 'neutrality of money'), concepts (e.g. accounting principles) or models (e.g. Black-Scholes-Morten model) do not only have descriptive character but also a performative one. The performativity thesis claims "that economic theory does not just observe and explain a reality, but rather shapes, formats and performs reality" (Vosselman, 2014). An example may be the Black–Scholes–Merton model. The Black–Scholes–Merton model is a financial model for evaluating derivative investment instruments. As an academically derived product in the discipline of economics, it is meant to be descriptive tool. However, MacKenzie (2006, p. 259) argues that "[i]t is to assert that the model was a theoretical innovation, not simply an empirical observation; that the model's relation to the market was not always passive, but sometimes active; that its role was not always descriptive, but sometimes performative, […]. An

engine, not a camera." Similar to that, Vosselman (2014) investigated the performativity thesis allied to the case of accounting. He summarised his findings as follows (p. 197): "The reviewed studies in accounting and accountability reveal that accounting not simply represents (for) something, is not simply a mirror, but is created as a representation. Moreover, it re-presents and intervenes at the same time; representation and intervention are entangled. Accounting proves to be performative[32]. All of the reviewed studies support this claim." Following Roscoe (2016), one may well conclude that such performativity means that every invention (or adaption) of a new way of economic description may transform social arrangements and relations. According to Boldyrev and Svetlova (2016, pp. 8-9), this ontologically new perspective on economics "takes a form of epistemological scandal, for many generations of scholars were and still are socialized with the idea of emancipated science for which a reference to an independent 'reality' at least does not complicate further inquiry and most often is not very problematic at all". Yet, according to Roscoe (2016, p. 146), the scandal is even more fare-reaching. He argues that "[e]conomic descriptions […] are not detached scientific facts, but active performatives, laden with normative force and moral consequence."[33]

Based on those afore-mentioned considerations, the thesis is therefore based as far as possible on inductive facts and acknowledges that economic concepts and tools are performative and do even have normative impact on reality. Particularly, the performativity thesis highlights again the importance of an explicit normative approach on economics and money (e.g. the integrative economic ethics approach). Having laid all the groundwork, I proceed to describe the thesis' overall structure.

[32] Particularly, the simple mechanics of accounting principles may even affect the success of entire firms or economies, as accounting figures decide whether a business goes bankrupt or not. In this context, the term balance sheet recession (Koo, 2011) gained much popularity. Balance sheet recessions show that accounting is performative and that to acknowledge accounting identities in economic modelling is a fruitful perspective.

[33] So, for instance, Graeber (2011) and Anderson (2004) show that 'debt' is not a value-free economic term. According to Anderson, it can make a great difference whether or in what way an economic term like debt is associated with moral value judgements. For instance, when during the Middle Ages debt was associated with sin, this most likely had influence on whether a businessman used credit or not.

1.7 The Structure of the Thesis

Based on the above considerations, I would now like to outline the overall structure of my thesis. As a reminder, the question to be answered is whether the fractional reserve system is 'neutral' or not. This first chapter has laid the foundation for that by showing the relevance of that question, and that integrative economic ethics as well as post-Keynesianism are the proper perspectives for addressing that question. Another essential point for mention here is that answering this question requires breaking down the investigation into two parts:

(1) Understanding the normative core of 'neutrality of money', based on an integrative economic ethics view.
(2) Analysing whether the 'fractional reserve system' is neutral or not, based on the credit theory of money and post-Keynesian thought.

The first research part is addressed in chapters 2 and 3. Chapter 2 provides the foundations for reflecting on the 'neutrality of money', i.e., it will provide the relevant foundation given by Ulrich's integrative economic ethics. Based on that, chapter 3 then explores the term 'neutrality of money', which particularly entails understanding the normative core of that term. Those two chapters will then offer an explicit normative understanding of 'neutral money'.

The second research part is addressed in chapters 4 and 5. Chapter 4 provides a basic understanding of money and the fractional reserve system, drawing on the credit theory of money and post-Keynesianism. On the same foundation, chapter 5 then analyses whether the fractional reserve system is indeed able to meet the requirements of being 'neutral' or not.

The concluding chapter 6 then summarises the research achievements and discusses the limitations and implications of this thesis.

2 Foundations for Reflecting on 'Neutrality of Money'

This chapter aims to outline the basic arguments of Ulrich's integrative economic ethics, on the one hand, and in so doing, on the other hand, to establish a solid foundation for a critical normative reflection on the term 'neutrality of money' in chapter 3. The chapter is divided into four sections. First, section 2.1 introduces Peter Ulrich's integrative economic ethics and how it is embedded in the field of business ethics and economic ethics. Second, as an anchor for all further discussions, section 2.2 identifies the highest purpose of economic activity. I will argue, based on Ulrich's integrative economic ethics, that the ultimate purpose of all economic activity is to serve all individual human lives, which includes serving human subsistence, abundance of human life, and particularly individual self-determination. Sections 2.3 and 2.4 continue that argument logic and focus on the term 'neutrality'. Section 2.3 will show that from an integrative economic ethics perspective, markets are inherently non-neutral. This is because the market mechanism, as soon as it is unbridled, structurally favours all those who wish to compete on the markets and forces all others to do so equally. Hence, the market mechanism is non-neutral in that it exhibits partiality by favouring some purposes and life plans over others. After that, section 2.4 explores the 'non-neutrality' of economic theory. Here, it will be shown that the prevailing economic mainstream theory advocates—consciously or unconsciously—the market mechanism "as the best 'guarantor' that everything is in the best of order from an ethical point of view" (Ulrich, 2008a, p. 147). These three points, (2.2) the purpose of economic activity, (2.3) the 'non-neutrality' of markets, and (2.4) the 'non-neutrality' of economic theory will serve as the basis for rethinking the 'neutrality of money' in chapter 3. The purpose of economic activity to further the 'good life' means that 'neutral money' too must serve that end. That markets are inherently non-neutral means that the ideal of 'neutrality' cannot be delegated to the market mechanism. Lastly, the insight that all economic theory is non-neutral will serve in chapter 3 to reveal in what way the economic concept of 'neutrality of money' itself—consciously or unconsciously—is also non-neutral. Below, I will start by an introduction of Peter Ulrich's integrative economic ethics.

2.1 Ulrich's Integrative Economic Ethics

Peter Ulrich's integrative economic ethics must be understood as a distinct approach in the tradition of the German-speaking debate on economic ethics whose main aim is to to reveal the normative basis of economics. Internationally more influential is US business ethics, which is characterised by a pragmatic approach to theory-building, a strong orientation towards application, as well as an individual ethical focus[34] (Palazzo & Palazzo, 2011, p. 132). Yet, according to Aßländer (2011a, p. 71), the systematic debate on morality in business is older in the German-speaking world than in the American. Germann business ethics (or economic ethics) originally was conceived as part of an overall concept of order theory and focused primarily on the morality of the economic order[35] (Aßländer, 2011a, p. 71). The German-speaking debate about corporate responsibility and corporate ethics was correspondingly cautious (p. 72). According to Aßländer, characteristic of this debate is the systematic separation between business and economic ethics. While the former is concerned with the macro perspective and deals with questions of a just economic order (e.g. Homann & Bloome-Drees, 1992 and Ulrich, 2008a), the latter is concerned with the corporate perspective and addresses both the relationship of the company with its environment and with its employees (e.g. Steinmann and Löhr, 1991) (Aßländer, 2011a, p. 74). For the purpose of this thesis, particularly the macro perspective is relevant. Within the field of that macro perspective, it is possible to delineate three economic ethics perspectives (Ulrich, 2008a, p. 109; Thielemann, 1999): (1) applied ethics, (2) normative economics, and (3) rational ethics of economic activity (see **Figure 2**). The following three paragraphs will describe those three perspectives—whereby the third perspective at the same time is nothing else than Ulrich's idea of economic ethics.

[34] In addition to that, US business ethics research can be roughly divided into two main directions: Positivist and normative research. While positivist business ethics describes how actors in the market economy behave and why they behave that way, normative business ethics attempts to clarify how they should act with the help of philosophical theories. (Palazzo & Palazzo, 2011, p. 132)

[35] The starting point for these considerations was the conviction that neither pure economic liberalism nor a purely centrally administered economy has so far succeeded in creating an economic order that is acceptable on humanitarian grounds. Based on these considerations, the social market economy as a 'third way' should provide a remedy here—not only as an economic concept but as the design of an overall life order. (Aßländer, 2011a, p. 71)

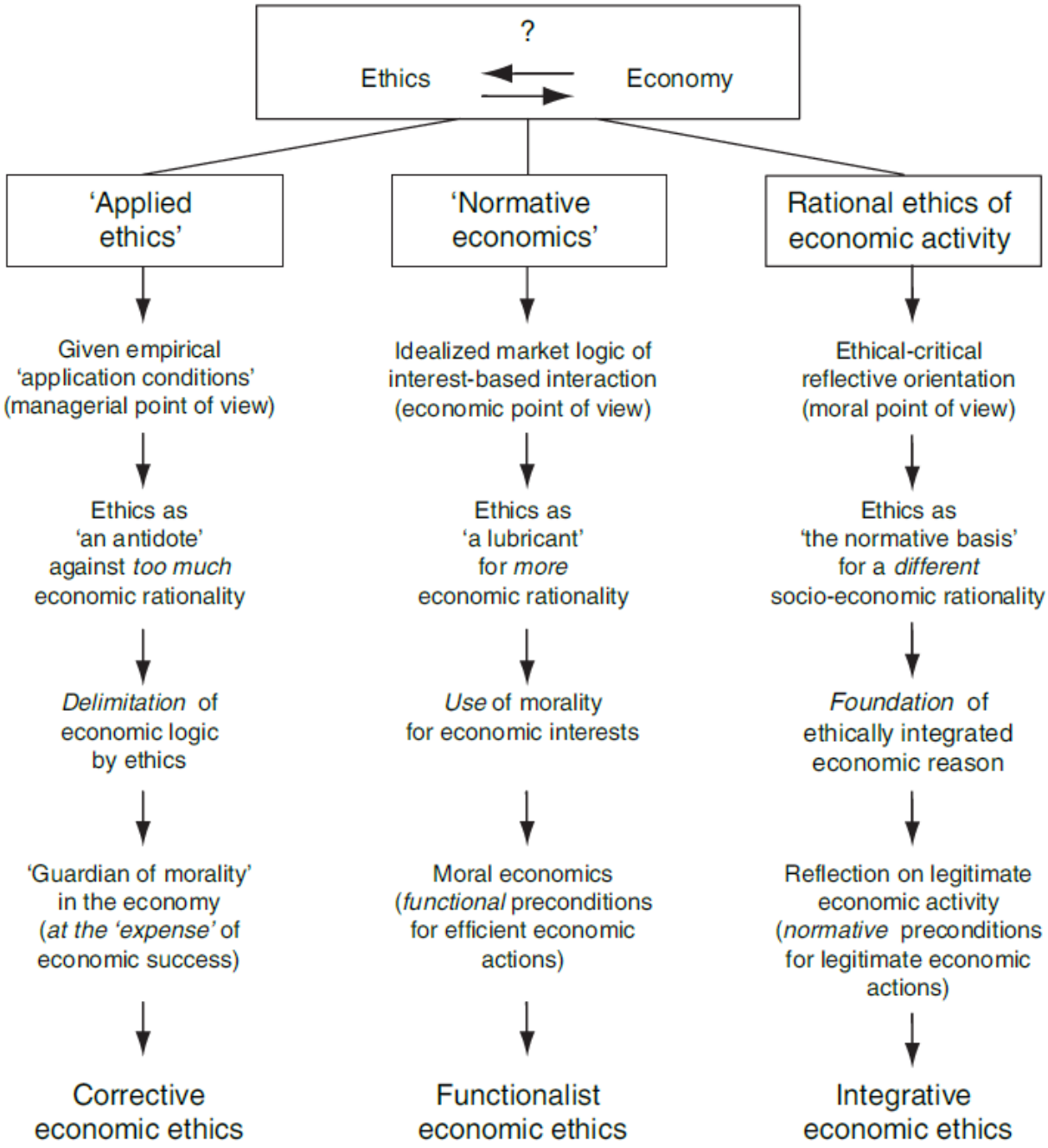

Figure 2: Approaches to economic ethics
Notes: Ulrich, 2008a, p. 109

Economic ethics as applied ethics. Based on questions of technology assessment and stimulated in particular by the debate on 'applied ethics' in the field of engineering sciences, ethicists also began to approach the field of business ethics (e.g. Hans Lenk, Matthias Maring, Walther Ch. Zimmerli and others) (Aßländer, 2011a, p. 72). Here, questions of business ethics were dealt with from the perspective of practical philosophy. Similar to medical ethics, ethics of technology or bioethics, business ethics was assigned to the field of 'applied ethics' and understood as a kind of bridging discipline

that should mediate between economic and ethical requirements (p. 72). Central topics of this discussion are, for instance, the responsibility for the consequences of economic action, the question of the addressees of moral norms in companies or the development of suitable ethical norms to guide moral behaviour in an economic context (p. 72). According to Thielemann (1999), the Erlangen school led by Horst Steinmann has presented an ambitious and comprehensively elaborated concept of this type of applied ethics. According to this view (Steinmann & Löhr, 1992, p. 246), it is sufficient to allow the pursuit of the profit objective under certain ancillary conditions. In their conception, the principle of profit maximisation is seen as generally necessary and thus legitimate. Accordingly, for them, the purpose of business ethics is only to contribute to the peaceful resolution of conflicts in corporate problems inside and outside the company (Aßländer, 2011b, p. 108). As Ulrich (2008b, p. 63) argues, in such a perspective on economic ethics, "[t]he 'market economy conditions' simply define the 'field of application'. Ulrich further argues that by misunderstanding this as a hitherto 'ethics-free' and amoral domain into which normative points of view are to be introduced in the first place, a business ethics approach in this way fails to reflect the normative structure of economic rationality itself (p. 63). Approaches that assume this are content with the selective containment or correction of problematic consequences of the prevailing economic rationality, instead of first asking about the normative conditions of well-understood economic rationality (p. 63). The result is a merely corrective economic ethics, which tends to stop reflecting the background assumption of markets and economics (Ulrich, 2008b, p. 63; Ulrich, 2000). Hence, put briefly, Ulrich criticises such 'applied ethics' for not reflecting the inherent normative elements in economics itself (Ulrich, 2008a, p. 80). Then, turning to the second approach in economic ethics.

Economic ethics as normative Economics. Here, morality is reduced to economic rationality (Ulrich, 2008a, p. 89), or as Thieleman (1999) put it, this approach is about an 'economic' theory of practical reason in general (methodological economism). In the German-speaking world, Karl Homann's conception is an example of this approach. Aßländer (2011c, p. 116) argues that for Karl Homann, the starting point of any discussion on economic ethics is the supposed or actual clash of interests between ethics and economics. For him, the question is not how a balance of interests between economics and ethics can take place, or which of the two disciplines should be given priority in the case of conflict, but which moral norms and ideals can be implemented by the actors of the economy under the conditions of a modern economy and society

(Homann & Blome-Drees 1992, 14). So according to Homann, economic ethics must be an integral part of economics and not merely developed as a sub-discipline of economics (Aßländer, 2011c, p. 116). In this conception, competition, as an essential element of the market economy, must not be called into question. According to Homann and Pies (1994, p. 54), anyone who appeals to morality of individuals in problem structures characterised by competition endangers morality. Morality can and should therefore not be enforced against the economy, but only through the economy. Hence, in order to bring economic ethics to prevail, it is necessary to translate the moral objectives of society into the functional conditions of the modern economy (Homan & Blome-Drees 1992, 33). Ulrich (2008a) criticises this second approach, 'normative economics', for making the category mistake to reduce morality to economic rationality (p. 89). Based on those considerations, Ulrich argues that it is only third approach, "rational ethics of economic activity" that remains as a well-understood approach on economic ethics, which shall be described below.

Economic ethics as rational ethics of economic activity. According to Thielemann (1999), this approach is ethics 'of the economy' or ethics 'towards the economy'. It is the integrative approach as inaugurated by Peter Ulrich, which is primarily a critique of non-integrative views, and less an attempt for 'better' design recommendations, as Thielemann argues. The aim of Peter Ulrich's approach to economic ethics is to clarify the questionable relationship between economic logic and ethical reason from the basis and to redefine it in a sustainable, life-serving way (Büscher, 2011, S. 100). Integrative economic ethics aims to unearth the normative first and foremost in the economic logic and to bring it to an unbiased ethical-critical fundamental reflection, without stopping to reflect on the circumstances of the actually existing market economy (as e.g. applied economics does) (Ulrich 2008a, pp. 4-5). Thus, integrative economic ethics stands for an expanded economic way of thinking that strives to enable the understanding and shaping of supposedly autonomous factual laws through the integration of lifeworld, cultural, social, ecological or political contexts (Büscher 2011, p. 101). According to that approach, the efficiency-oriented way of thinking (economics) must be embedded in a comprehensive concept of reason (Büscher, 2011, p. 101), because what is economically reasonable cannot be determined purely from the logic of (market) economics but presupposes practical points of orientation in life. According to Ulrich (2008a), his approach to integrative economic ethics is superior to its two competing approaches: 'Applied ethics' fails to reflect the inherent normative elements in economics itself (p. 80) and 'normative economics' makes the category mistake to reduce

morality to economic rationality (p. 89). Hence, the claim of this thesis shall be to meet the requirements of such 'rational ethics' that Ulrich has in mind. However, the downside of taking Ulrich's integrative economic ethics as normative foundation is its lacking embeddedness in the current international discourse in business ethics and economic ethics. The next section shall now explore, based on Ulrich's integrative economic ethics, the purpose of economic activity.

2.2 An Anchor for 'Neutrality': The Purpose of Economic Activity

All economic activity is only a means in the service of the higher end of a good life. According to Ulrich (2008a, p. 189):

> *"Man is a being in search of meaning, and what is more, he possesses a 'will to meaning' founded on his essential freedom of action and the consequent possibility and necessity of intentional (deliberate) self-determination. We can, therefore, speak of an 'a priori of meaning orientation on the basis of the teleological nature of man' as a part of the universal conditio humana. Without a meaning context human life is impossible. Meaning fills human existence with significance by directing our existence towards what is essential in life, namely what we wish for in life as a whole."*

Ulrich concludes by stating that when we speak "about the meaning of an action we mean the ultimate or holistic purpose, which itself can no longer be interpreted functionally or instrumentally as a means to a further, higher end, i.e. the human intrinsic value of the good life." (p. 189). Accordingly, the ultimate or holistic purpose of all economic activity can never be anything else than "the human intrinsic value of the good life" (p. 189). Thus, "the economy is always only a means in the service of higher and literally more vital ends" (p. 190).

However, the question of purpose, the issue of searching and pursuing an individual meaningful life plan is neither "capable of nor in need for generalization" (Ulrich, 2008a, p. 190). According to Ulrich (p. 190), those questions of purpose depend on value standards of the personality, life form, and culture in question. What is more, as "each and every human life is unique and irreplaceable", "the search and discovery of meaning" should be a "private affair" (p. 190). Not only should everybody thus have the right to choose his own meaningful life plan, but everybody "can indeed be expected to work out and pursue" such a "life plan of its own" (p. 190). Ulrich therefore concludes that those questions of purpose are "neither capable of nor in need for generalization" (p. 190). "Consequently modern economic ethics, as a universalis-

tic rational ethics, cannot and will not claim the competence to make generally valid statements about the 'right' blueprint for life" (p. 190). To fully understand this point, one must recognise that according to Ulrich, only deontological questions (and never teleological ones) can be generalised[36] (2008a, p. 62; 148, 175). This will become more evident in chapter 3, in the discussion of the purpose (3.2.1) and legitimation (3.2.2) of 'neutral money'.

The only constant and legitimate purposes that the economy can be geared towards are (1) to secure "the means of human subsistence" and (2) to further "the abundance of human life" (Ulrich, 2008a, pp. 191-206). As mentioned, establishing an individual life plan is not only an individual endeavour, but also dependent on anthropological circumstances. However, is there a common ground to strive for that promotes this very general idea of the good life? According to Ulrich (2008a), yes: there are two general but distinct ends that purposeful economic activity must serve. First, "securing the means of human subsistence" (p. 191), for which he argues as follows:

> *"Man is subject to the absolute physical and psychological necessities of his nature as a creature of needs, whose satisfaction is indispensable for the maintenance of life at the most elementary level. Having enough to eat (food), being warm (clothing), enjoying good health (medical provision), having a 'home' to live in (housing) are undoubtedly basic needs of every human being; they are universal and indisputable, even though the possibilities and forms of their satisfaction are culture-specific, and consequently a long-standing subject of international endeavours to arrive at ethical-political, culture independent norms." (Ulrich, 2008a, p. 192)*

Yet, this "securing the means of human subsistence" must be accomplished by a second element, which he calls "furthering the abundance of human life" (p. 191). This second matter needs more explanation. Here, Ulrich argues negatively as well as positively:

> *"It is not the never-ending increase in the quantity of available goods, but the emancipation of man from the need to concentrate all his energy on the provision*

[36] By that, Ulrich on the one hand follows the Kantian tradition, and, on the other, strictly rejects the idea of consequentialist ethics (Ulrich, 2008a, p. 62). He rejects any attempt to generalise (and reduce) the telos of economic activity to the 'common good' (p. 148), and instead argues that the only legitimate generalisations are those based on the deontological idea of "unconditional (categorial) reciprocal respect for all men as beings of equal worth with equal rights" (p. 175).

> *of the bare necessities of life which makes cultural sense. […] Social variety and the abundance of opportunities for the free cultural development of the individual would then be the guiding idea which imparts meaning at an advanced and 'mature' economic level. (Ulrich, 2008a, p. 196)*

Hence, according to Ulrich, recent economic development points in the wrong direction[37]. Ulrich does not have an ever-growing economy (as is the case today), but a deliberately life-serving economy, in mind. Reduced to its very essence, Ulrich criticises here the inversion of means and ends. Today, according to him, economic activity seems to be more an end in itself (where human beings are degraded to means) instead of a means to an end. For instance, it seems that capital markets dominate democratic states rather than democratic states taking precedence over capital markets. And, it seems that GDP growth is actually the purpose that all people must serve rather than GDP being of service for the good life. However, according to Ulrich's considerations, it must clearly be the other way around: human beings must be the end, and markets and economic activities must be means to that end. For that to happen, Ulrich (2008a) argues that individuals need to be emancipated from market pressure, for instance by setting market boundary norms (p. 357) or by giving everyone backing in the form of an unconditional basic income (p. 255) to relieve individuals from the burden of being a means to business as the end. Accordingly, this must also apply to the case of money. The purpose of all economic activity and thus of the monetary system must be to enhance securing the means of human subsistence and to further the abundance of human life. All reduction or generalisation to particular ends (for example, to economic competitiveness or GDP growth) is always in danger of undermining this 'vital' end of 'the good life'. Hence, the reference point of all economic ethic reasoning must be this highest purpose of economic activity: the individual (not generalisable) idea of a good life. Thus, when the next section explores whether markets are neutral or not, the reference point of 'neutrality' is exactly that: the highest purpose of the good life. From that perspective, the next section will show that markets are inherently non-neutral.

[37] The following statement by Ulrich may make this clearer: "The use of the irrealis […] is justified, as the reality of the economically most advanced societies looks rather different today. They are by no means characterized by a general triumph over the lack of the necessities of life or the scarcity of essential goods, but—in analogy to the 'modernization of poverty'—by the persistent modernization of scarcity. The excessive production of goods which are inessential or completely superfluous is accompanied by a growing scarcity of resources and 'means of life' which are really essential for the quality of life. Wherever one looks, one can observe the remarkable fact that with the growth of the economy the feeling of scarcity increases rather than diminishes, even in regard to the essentials of life" (Ulrich, 2008a, p. 202).

2.3 The 'Non-Neutrality' of Markets

As soon as one unbridles the market mechanism it forces all market participants to obey the rule of the market. In other words, it systematically favours all those who—by their own will[38]—wish to compete on the markets and forces all others—who do not have such a will—to do so equally. As previously mentioned, people at least theoretically always have free will. Yet, since the beginning of the 19th century, markets have been opened geographically (globalisation) as well as in terms of the spheres of their influence in everyday life (Ulrich, 2008a, p. 121). This means that more and more traditional norms and regulations have become replaced by market coordination (p. 121). "Whether they like it or not, economic agents now have to orientate themselves to the necessity of self-assertion in competition between suppliers of goods or factors of production (including their own labour) for buyers (i.e. in the case of the labour market: employers)" (p. 121). Ulrich concisely describes the effects of such market coordination:

> *"Although every participant in the market is interested only in his private gain and his competitive position, he inevitably exerts a degree of coercion over his competitors, without any kind of personal interaction. This may be scarcely noticeable and merely marginal. Yet, as every participant in the market exerts this constraining pressure on every other and the process continues without limitation in the open markets, the reciprocal effects cumulate and ultimately acquire the character of an impersonal functional mechanism. No individual can be personally blamed for the constraints of competition; it is rather the ever-changing constellation of all the participants in the market, suppliers and buyers, which makes the behaviour we have sketched 'inevitable'. What economic liberalism has proclaimed as the 'free' market and has largely established in all modern societies—to differing degrees dependent on the cultural environment and the political relations of power—turns out to be an anonymous straitjacket for the economic agents under its sway. The system of the modern market economy is thus characterized by the compulsion to be competitive." (p. 122)*

Such unbridled market force then may even lead to the fact that individuals perceive the market mechanisms as inherent necessities for their lives—hence, to perceive them

[38] For his investigation of 'economic determinism', Ulrich (2008a, pp. 116-120) also explored "the Calvinistic ethos as a context of motivation". In doing so, he refers heavily to Max Weber's monograph *Die protestantische Ethik und der Geist des Kapitalismus* (Weber, 1904/2009).

as under the law of nature. With such mechanisms, markets structurally favour those who "strive to maximize their private success without consideration of the side-effects in the lifeworld" (p. 123). The market favours those who can and want to participate over those who cannot and do not want to. This coercive market economy always justifies the entrepreneurial way of life and action (p.132). Only income and capital utilisation interests conform to this system, whereas morally justified claims, in particular, are alien to it (p. 132). So, markets are partial rather than neutral. In a complete market economy, there is not really the freedom to unconditionally choose an individual life plan. Or as Ulrich puts it:

> *"There are people who have no wish to participate unconditionally in the rat race for the maximization of success. The 'selflimiters', who consciously refrain from going beyond a certain degree of economic success because they would like to devote a substantial part of their time and energy to other ends outside competition, are then [in a market society] doomed from the start to be among the losers." (Ulrich, 2008a, p. 209)*

And:

> *All of this once [...] demonstrates that competition is not a value-neutral instrument for the efficient realization of all and any kinds of life scripts; on the contrary, it favours structurally a competitively and acquisitively oriented life form and as a result itself promotes the corresponding acquisitive mentality. (Ulrich, 2008a, p. 210)*

It is clear at this point that markets are non-neutral, as they favour specific life plans over others. Unbridled market forces thus violate the idea that the purpose of economic activity cannot and should not be generalised in any way. However, what is the way out of this coercive context? What can be done when sometimes those market mechanisms already freed exert force on individuals as if they were natural forces?

First, it is important to recognise that there is no 'natural order' that forces people to obey the rules of the markets. It is rather a human decision—not a natural force—to set free the market forces. Hence, it is not only essential to recognise the 'non-neutrality' of markets but also to recognise that market mechanisms do not fall under the law of nature. They are subject to the law of men. As previously mentioned, the force of the markets can even lead to the individual perception of markets as con-

straints and necessities with no alternatives[39]. However, this idea blurs the line between the categorial differences of empirical facts of nature (a cause leading to an effect) and inter-subjective relations (a reason given to substantiate an action). Only the former, the law of nature, leads to inherent and unavoidable necessities. In the latter case, in inter-subjective relations, all involved individuals possess a free will, and can always refuse to act in a certain way. Thus, "[r]easons can never be compulsive, precisely because they are addressed to the reason of free and autonomous subjects. They only formulate why an action is meaningful or desirable for the person who intends to carry it out and thus justify the desired decision" (p. 115). Bearing this categorial difference in mind, no further substantiation is needed. Markets are not creatures of nature but creatures of men. Thus, there is never a law of the market that inherently 'forces' people to act in a certain way, without the choice to refuse to do so.

Thus, the second step out of the coercive context of market constraint is to decide where and to what degree market mechanisms should prevail and where not. Market mechanisms are not under the law of nature, as they are designed by people and thus under the law of men. There is no law that forces all individuals to obey the law of market since the unleashing of the market is in the hands of people. Ulrich (2008a) therefore neatly concludes:

> *"Whether the inherent necessities of the market economy system as a social order (market society) are dominant or whether, on the contrary, they are subject to a dominant and controlling social order (primacy of politics over the logic of the market) must be understood as a practical question of political will: an economic (systemic) determinism exists only in as far as it is socially and politically permitted."* (p. 130)

Yet in reality, things are not so simple. The way out of this coercive context is, according to Ulrich, only possible by relieving that economic determinism, giving individuals "room to manoeuvre". This is because under competition, "individuals, groups or even an entire culture cannot emancipate themselves from the competitive constraints on their preferred ways of life by own efforts without at the same time being entirely eliminated from the market" (p. 212). Therefore, "it inevitably requires collective political decisions"[40] (p. 191) "so that each can enjoy a partial emancipation from the

[39] Ulrich calls this mistaken perception 'economic determinism' (Ulrich, 2008a, pp. 115-116).

[40] With "political decisions", Ulrich (2008a, p. 213) refers to three necessary elements: (1) "partial liberation of life time through a general reduction of the length of working life"; (2) "continuous reduction of the generally possible and necessary work load in accordance with the progress of productivity [rather than tradi-

constraints of competition" (p. 212). A regulatory policy is therefore needed that limits market pressure. Such a regulatory policy should be a constraint policy: individual self-limitation (of profit-seeking in favour of moral behaviour) is only reasonable if the competitive pressure is limited (pp. 142-146). Regulatory policy thus carefully needs to deliberate where markets should prevail, to what degree, and where not. Only with such deliberative policy, is it possible to ensure that the economy always remains only a subsystem of the world, as Ulrich (p. 128) demands. So far, one can conclude that markets are in all fact non-neutral. Well-understood 'neutrality' means understanding and respecting that the purpose of economic activity is always an individual choice and that it is neither in need nor capable of generalisation. Yet, the market mechanism violates exactly that idea, by structurally favouring some life plans over others. Regulatory policy, striving for well-understood 'neutrality', must therefore regulate where and to what degree markets should prevail. Having now dealt with the 'non-neutrality' of markets, the next section will explore the 'non-neutrality' of economic theory. That section will show that economic mainstream theory clearly advocates the market mechanism. And in that—as the market mechanism itself—also economic mainstream theory is non-neutral in regard to the purpose of economic activity.

2.4 The 'Non-Neutrality' of Economic Theory

> *"Theory is always for someone and for some purpose. All theories have a perspective. […] There is, accordingly, no such thing as theory in itself, divorced from a standpoint in time and space. […] When any theory so represents itself, it is the more important to examine it as ideology, and to lay bare its concealed perspective."* (Cox, 1981, p. 128)

This section will argue that not only the market mechanism, but also economic theory is non-neutral. It will show that, historically, economic theory has been dressed in three different garments: as normative, positive, or axiomatic theory. Further, it will show that economic theory is always (at least implicitly) based on a normative foundation. In chapter 3, those insights will be crucial to elaborating a well-understood notion of 'neutral money'. Below, I will now explore the three historical

tional full employment]"; and (3) "basic economic security for all during life phases without gainful employment (childhood, education, illness, social service, involuntary unemployment, old age), and on the other hand a structural approach to social policy that does not merely react to symptoms by compensating for the consequences of the failure of individuals to assert themselves economically, but tackles the causes".

stages of 'non-neutrality' of economic theory mentioned, starting with the presently prevailing mainstream theory, or 'pure' economics.

Today's economic mainstream theory—also known as the 'later neoclassical school'—is an axiomatic theory that believes that markets are inherently just. This theory does not have an image of man. The popular term 'homo oeconomicus' is not an image of man in this case but only a mere axiomatic statement on which models are then constructed (Ulrich, 2008a, p. 169). Models and theories are built here 'as if' people would behave like a 'homo oeconomicus', but without assuming that this is indeed the case in reality. According to Ulrich, such 'as if' theory "lacks both a well-grounded normative orientational force in regard to practical implementation and an empirical explanatory force" (p. 170). Despite that, it implies a normative view of markets. From a moral point of view, this economic mainstream view of markets reduces "freedom to barter, justice to Pareto efficiency, right to might, legitimacy to acceptance or morality to interest" (Ulrich, 2008a, p. 184). Because of these facts, it is fair to say that this contemporary mainstream theory seems to have little guidance to offer us about how to organise markets. Things may have been different in earlier times. In order to explore that, the next three paragraphs will summarise the three historical development stages of economic theory from (1) the 'classical period', to (2) the 'early neoclassical period', to (3) the contemporary 'later neoclassic period'. I shall start with the earliest period, which Ulrich analysed.

In the classical period, scholars perceived markets to be the natural God-given order and thus to be inherently good. According to Niehans (1990, p. 12), the classical period ran from about 1680 to 1830. In this era, normative and positive thinking were not strictly separated (Ulrich, 2008a, p. 150). Rather, as mentioned earlier, most scholars of the time were trained moral philosophers (e.g. David Hume, Adam Smith) as well as economic theorists. Yet, according to Ulrich (2008a, p. 150), the worldview of those moral philosophers was completely different to that of today: Christian theology played an important role in their thinking. Free markets were perceived as the natural economic order[41] given by the creator, markets were at the same time meant to

[41] For instance, Smith interpreted his observation that people have a tendency to judge their actions mainly in terms of their success as an expression of God's wisdom (Ulrich, 2008a, pp. 150-151). With that in mind, Smith's trust in the 'invisible hand' of the market, as stated by Ulrich, must be seen as an expression of the theology of creation (p. 150). According to that world view, the world was created by God's wisdom, and, by that, it must have been created in a meaningful and ethically oriented way (p. 150). The markets' impersonality and anonymity was perceived as a sign that "the great plans of the creator direct the personal interest of his instrument [human beings]" (p. 151).

ensure that all human subjects participating in the markets do good (p. 151). As this was the case, the market and not the moral behaviour of people was interpreted as the site of morality (p. 152). In this worldview, there was no need to interfere in markets, as they were inherently good. In Adam Smith's own words:

> *"The administration of the great system of the universe, however, the care of the universal happiness of all rational and sensible beings, is the business of God and not of man."*(Smith, 1759/2012, p. 237, cited in Ulrich, 2008a, p. 157)

So, according to Smith, the unintended purpose of market actions was guided by the higher hand of God to advance the common good (p. 153). Moreover, it was perceived as not being any business of man to interfere in that natural order. Hence, the world was perceived as ruled according to the creator's planned purposes, although those purposes may sometimes have been unfathomable to the limited mind of man (p. 150) [42].

Later, during the early neoclassical period, utilitarian ethics with the normative leitmotif of "social maximization of utility for the wellbeing of all [common good]" entered the economics discipline (Ulrich, 2008a, p. 161). The early neoclassical period—more commonly referred to as marginalism—lasted from around 1830 to 1930 (Niehans, 1990, p. 159). In this period, economics as well as cultural modernisation brought crucial changes that fundamentally altered the economics profession (Ulrich, 2008a, p. 159). Until about 1870, political economy was still seen as a value-oriented economic philosophy (p. 159). This meant, however, that, it was no longer able to meet the requirements of the new methodological ideal of a value-free science[43]. The aim then was to establish a scientific reputation for economics, which according to Ulrich was accomplished by "a process of mathematical formalization" and "the elimination of the socio-political problem of the distribution of wealth, as this could not be solved without value judgements" (p. 160). According to Ulrich, through that process of "rationalization", the "old assumptions deriving from metaphysics and natural law" were not really removed but rather replaced by new assumptions stemming from "utilitarian ethics" (p. 160). In consequence, those new assumptions called

[42] Transferred to the question of money, this trust in the invisible hand would lead one to conclude that the natural order of the market would be the best way to organise money, too. This may be exactly what Hayek concluded by arguing in favour of his idea of free banking. Indeed, although he was not actually a scholar of the classical period, Friedrich August von Hayek clearly expressed in his writings the same trust in the morality of the market as the classical economists did (Ulrich, 2008a, p. 156).

[43] Those ideals stemmed from natural sciences and particularly entailed positivism and scientism (Ulrich, 2008a, p. 159).

for the "social maximization of utility for the wellbeing of all" (Ulrich, 2008a, p. 161)[44]. According to Ulrich, it was this turn that allowed that, until today, this "diffuse fiction of the common good" leads to the sometimes "all-embracing growth ideology" of "vulgar economics of practical economic policy" (p. 163). Or, in other words:

> *"Prosperity through growth for all was the well-meant but essentially ideological slogan of the 1950s and 1960s, which even today still by and large constitutes de facto the highest aim of economic policy."* (Ulrich, 2008a, p. 163)

Furthermore, it was "possible to exclude the value and interest related social problem of distribution substantially and 'sustainably' from economic theory and policy" (p. 163). The last element of the early neoclassical period is (3) the market-economic maximum theorem, which Ulrich (2008a) described as follows:

> *"The core statement of this ideal theory of the perfect market is that in a frictionless market (i.e. without transaction costs) with perfect competition a tendency towards a balance between supply and demand within and between all partial markets always exists and that the equilibrium price ('the natural price') is also the price which—independently of the distribution of purchasing power—brings about the economic optimum and hence the common good (maximum theorem). With the equilibrium theory the 'belief in the optimality' of an ideal market was dressed up in a highly formalized manner which created the impression of a 'social physics' close in nature to the theoretical ideal of the natural sciences, but which in the final analysis served only as a cloak for a mathematized metaphysics. In the standard normative application of the maximum theorem any consideration of welfare theory then remains superfluous. It is apparently enough to orient practical economic policy consistently on the 'market principle': from an economic point of view more market is always good!"* (pp. p. 165-166)

However, as this early neoclassic theory is based neither on justified normative premises nor on empirical evidence, it has neither normative force nor empirical substance

[44] Ulrich (2008a) describes those new assumptions as (1) ethical hedonism, (2) the utilitarian principle, and (3) the market-economic maximum theorem (p. 160). According to 'ethical hedonism' early neoclassical economics asserted that "the highest aim of the individual is the maximization of pleasure or utility" and even concluded that "a greater degree of need satisfaction (by means of the available goods) is better than a lesser degree (ethical hedonism)" (p. 160). In other words, ethical hedonism leads to the demand for maximising "the subjective satisfaction of needs (p. 160). Yet, the second element (2) the utilitarian principle goes even a step further than that. Utilitarianism does not advocate the private utility maximisation of the individual. Rather, it calls for the "social maximization of utility for the wellbeing of all" (p. 161).

(p. 166). However, the difference to the classic period lies not so much in the trust in or the preference for the market mechanism but rather in methodical questions. Early neoclassical scholars tended to more formalisation, which meant reducing economic circumstances to variables (e.g. Y for national income, M for money supply, and P for price level), and they tried to establish a scientific reputation of economics as a value-free science. Another important difference is what Ulrich (2008a, p. 163) calls the "utilitarian fiction of the common good", which reduces—as mentioned—the aim of economic policy to economic growth (Y)[45].

Then, with the later neoclassical period of 'pure economics', which has lasted until today, markets were and still are perceived as inherently Pareto-efficient and therefore inherently just. A further feature of that period is that from then economic models have been built in the form of 'as if' models. The later neoclassical period, or as Niehans (1990, p. 313) calls it, 'the model-building era' started about 1930 and has continued until now. According to Ulrich (2008a, p. 166), the biggest changes from early to later neoclassical theory took place mainly in the 1970s. According to Ulrich, it was the philosophical-ethical discussion of that time—particularly triggered by John Rawls—that spawned those changes in the philosophical foundations of neoclassical economics (p. 166)[46]. This theoretical turn of the neoclassical school—which now regarded itself as 'pure economics'—again led to a replacement of its normative grounds (p. 168)[47].

One significant element of the shift is that so-called 'pure' economics no longer has an image of man (p. 169). The popular term 'homo oeconomicus' is no longer an image

[45] In monetary economics, the corresponding variable to Y could be identified as P. Because for many decades and even today, for most central banks and scholars it is self-evident that the central bank's main task is to avoid inflation—almost as a dogma, as Dembinski put it (2009, p. 52). Thus, the "utilitarian fiction of the common good" not only involves increasing Y but also stabilising P—howsoever those variables may be defined and measured. All other questions, those concerning the distribution of income, or those concerning changes in prices relative to each other were erased from the field of economic analysis by the "utilitarian fiction". Exactly this economic reductionism, to reduce the aim of economic policy to GDP growth, for instance, is what will be of interest concerning the 'neutrality of money' too.

[46] Rawls aimed towards a 'contract theoretical turn' in social philosophy—away from its utilitarian grounds (p. 167). Inspired by that, according to Ulrich (2008a), it was economist James Buchanan "who took up and radicalized Rawls' approach" which means that [w]hereas in Rawls' conception the Kantian idea of the universal equal basic rights of all individuals still plays a part, Buchanan […] does not impose any moral claims on the subjects, simply assuming that they will pursue their rational self-interest" (p. 168).

[47] The three above-mentioned assumptions of the early neoclassical period were replaced by (1) methodological and normative individualism, (2) the Pareto criterion, and (3) the contract theory (p. 169). I shall start with the first assumption: methodological and normative individualism. A crucial element of the shift from psychological hedonism (early neoclassical period) to methodical and normative individualism (recent neoclassical period) is that economics no longer has an image of man (p. 169). This shift was made in order to avoid potentially ideological circular arguments (p. 169). The popular term 'homo oeconomicus' in this case is no longer an image of man but a mere axiomatic statement on which models are then built.

of man but a mere axiomatic statement on which models are then built. Models and theories are simply built 'as if' people would behave like 'homo oeconomicus'. Yet, according to Ulrich, such an 'as if' theory "lacks both a well-grounded normative orientational force in regard to practical implementation and an empirical explanatory force" (p. 170). Stated in other words: such 'as if' theory neither says that men behave like 'homo oeconomicus' nor says that they should do so. Another new aspect of that theory is the Pareto criterion, which replaced the "utilitarian fiction of the common good". Ulrich explains that under the Pareto criterion "only those social changes should be recognized as a collective (economic) welfare improvement through which the (subjectively evaluated) situation of at least one individual is improved without the situation of any other individual being worsened" (p. 173). Ulrich (2008a, p. 175) describes the problem[48] with the Pareto criterion as follows:

> *"Thus Pareto efficiency as the criterion for the rational shaping of the social life of man implicitly replaces good reasons (moral principle) by factual power, by the right of the mightier to dictate the terms of trade to the weaker."*

The last change of recent neoclassical theory was the 'two-stage contract theory', which replaced the earlier neoclassical 'market-economic maximum theorem'. This last turn was simple but nasty. Contract theory goes back to the market process and asks: under what conditions are business contracts concluded in free markets (p. 177)? The conclusion is nicely summed up by Ulrich:

> *"As all the exchange deals concluded in a 'free' market are formally voluntary and each individual hence acts to his own advantage, the market is by definition, and independently of the initial distribution of resources, efficient for all participants and consequently also Pareto efficient"* (2008a, p. 177).

And with this last change, Ulrich further concludes that the prevailing economic mainstream theory reduces "freedom to barter, justice to Pareto efficiency, right to might, legitimacy to acceptance or morality to interest" (2008a, p. 184).

In conclusion, economic theory always has been and is still today non-neutral. In all its developmental stages, it advocates the market mechanism and, in that manner, structurally favours some life plans over others. Although so called 'pure' economic theory is perceived as pure in the sense of being value-free and neutral, it is

[48] The problem with the Pareto criterion is that it does not consider inviolable moral rights of individuals, that it, does not consider the initial position of involved persons, and that therefore "ethical legitimacy (justifiability) is reduced to strategic acceptance (assertability)" (Ulrich, 2008a, p. 175).

not. In all three developmental stages, there was always an inherent normative element. Economic theory always has the ideal of freedom in mind (which is a good starting point indeed). Yet, the crucial question is how to realise that freedom. According to all stages of economic theory, the market mechanism is able to grant the realisation of freedom. Hence, they all conclude that the more the markets are unbridled, the more freedom is realised. Thus: more market is always good. However, this is not the case. As section 2.3 explained, the market is only the guarantor of freedom for some particular groups with their particular economic life plans. The market favours some life plans over others. Hence, when economic theory always argues for more market it implicitly also argues for greater favouring of those preferred life plans. Seen in that light, economic theory is non-neutral in two ways. First, it is non-neutral as it is inherently normative. Second, it is non-neutral as it advocates more market coordination and thus favours competitive life plans over others.

This section has, consequently, explained how historically, economic theory went through three stages. In the classical era, explicit normative reasoning was part of economic theory—even though it was rooted in Christian theology. Then, in the early neoclassical era, economics abandoned explicit normative reasoning, striving to be a positive science. And lastly, the recent neoclassical era has been marked by axiomatic models, founded on neither a sound normative foundation nor on empirical data. All these details will be important for further work. The following chapter 3 explores the history of the term 'neutrality of money' in a similar way, passing through three historical stages: from normative, to positive, to axiomatic. Additionally, as having a value-free (neutral) economic theory is not possible, I shall elaborate on an explicit well-understood normative notion of 'neutrality of money' there.

3 Exploring the Term 'Neutrality of Money'

Chapter 2 demonstrated that neither economic theory nor markets themselves are 'neutral'. Markets structurally favour competitive life plans and in that discriminate against what Ulrich calls the self-limiters (see section 2.3). Despite that, the economic mainstream theory perceives itself as 'neutral' and the markets as the best guarantor for a good and just society. Economic mainstream theory is thus non-neutral, in fact, as it promotes the market mechanism. In other words, the economic mainstream also favours competitive and market-conform life plans (see section 2.4). Based on those insights, this chapter will explore the economic concept of 'neutral money'. Like Ulrich stated for the economic theory in general, the aim is, in this instance too, to unearth the normative core of the specific economic concept of 'neutral money' and to identify a normative notion of it in line with Ulrich's integrative economic ethics. To that end, I will proceed in three steps. In section 3.1 (Economics on 'Neutrality of Money'), I will explore the economic roots and history of the term 'neutrality of money'. There I will demonstrate that the idea of 'neutral money' evolved in a similar manner as the economic theory in general did (as evidenced in section 2.4). Then, in section 3.2 (Integrative Economic Ethics on 'Neutrality of Money'), I will fully assume the integrative economic ethics point of view to critically re-examine the notion of 'neutral money'. The reference point for that exercise will be the purpose of economic activity: the service of the good life (see section 2.2). On that basis, I will combine all those elements and posit the argument that well-understood 'neutral money' must be neutral towards and among individuals and their personal conception of the good life. Below, I will start by investigating the economic perspective on 'neutrality of money'.

3.1 Economics on 'Neutrality of Money'

Section 2.4 showed that economic theory passed through different developmental stages: classical theory, early neoclassical theory, and finally recent neoclassical theory. The first part of this section (3.1.1) will show that the term 'neutrality of money'[49] experienced a similar change process. Thereafter, the second part of

[49] The term 'neutrality of money' is not isolated in economics. Rather, the term is closely related to other economic terms like the 'veil of money', 'quantity equation' and 'classical dichotomy'. However, I shall focus in this thesis solely on the 'neutrality of money', as it is only this explicit term that is of interest for my purposes. According to Patinkin and Steiger (1989, p. 131), neutrality of money means that a change in the

this section (3.1.2) critically analyses those economic usages of the term from an integrative economics perspective.

3.1.1 The term's history and its usage in three different statement categories

Today, or at least until the Great Financial Crisis, 'neutrality of money' was used as merely an axiomatic statement which—consciously or unconsciously—was simply perceived as true. Now 'neutrality of money' is a shorthand expression of the idea that changes in the quantity of money only affect the price level of economy and nothing else. Such 'neutrality of money' means that in contemporary mainstream economics, money and monetary policy are perceived as neutral towards the market processes. Thus, many undergraduate textbooks state that money and expansive monetary policy only have an impact on real variables in the short run, but not in the long run[50]. As already mentioned, even in one of the most popular textbooks for master programmes in economics, author David Romer states that "[i]ncorporating money in models of growth would only obscure the analysis" (Romer, 2006, p. 3). The same seems to be true for research and the practice of central banks. Central banks use economic models to forecast inflation and on that basis determine their monetary policy.

quantity of money only affects the absolute price level but leaves everything else unchanged (i.e. relative prices, interest rate, real outputs). If one takes that for granted, then money is only a veil that blurs one's sight of the real variables. Thus, 'veil of money' is a synonymous expression, as Patinkin and Steiger state. If one assumes that it is possible to lift 'the veil of money', this leads to the idea that it is possible to directly and solely investigate the real variables, apart from any nominal variables. This idea is called 'classical dichotomy' (see e.g. Patinkin, 1949; Cas, 2016). Apart from that, in the *New Palgrave Dictionary of Economics*, Patinkin (2019) defines 'neutrality of money' more succinctly as "the basic quantity-theory proposition that it is only the level of prices in an economy, and not the level of its real outputs, that is affected by the quantity of money which circulates in it." Thus, 'quantity theory' as well as its formalised version known as 'quantity equation' are similar concepts, too. The quantity equation has a long history. Milton Friedman (1987, pp. 4-5; 1970, p. 196) coined the currently most popular form, which is: MV = PY. M stands for the quantity of money, V for the velocity of its circulation within the economy, P for the price level, and Y for the real income. Monetarists often argued based on the quantity equation as follows: If P is stable and we assume that V is stable, then M must grow at the same rate as Y. However, expressing 'neutrality of money' based on the quantity equation, as Patinkin does in his short version, means to reduce its meaning to exactly those four variables. 'Neutral money' (M) is then money that does not affect real income (Y). Hence, with this in mind, the idea that all other real variables (i.e. interest rate and relative prices) remain untouched drops out of the notion of the term. Thus, it is important to note that even from an economic point of view, neutrality of money cannot be solely expressed in terms of the quantity equation. The other lesson from that short exploration is that 'veil of money' and 'classical dichotomy' are in fact very closely related concepts to the 'neutrality of money'. However, my focus remains solely on 'neutrality of money', as only this explicit term is of interest in the scope of this thesis.

[50] One example is the German translation of Olivier Blanchard's textbook, where the chapter on "Expansive Geldpolitik" concludes with the following statement: "Volkswirte sprechen von der Neutralität des Geldes auf mittlere Frist. Damit meinen Sie, dass Änderungen der nominalen Geldmenge auf mittlere Frist weder Produktion noch Zinssatz, sondern nur das Preisniveau beeinflussen" (Blanchard & Illing, 2014, p. 228) (Economists speak of the neutrality of money in the medium term. By this they mean that changes in the nominal money supply in the medium term influence neither production nor the interest rate, but only the price level.) Similarly, Mankiw states in his textbook that particularly for the long-term analysis, the assumption of 'monetary neutrality' is adequate (2011, p. 140).

Donald Kohn (2009), former Vice-Chairman of the U.S. Federal Reserve, described the role of money and money creation in those models as follows:

> *"It is fair to say […] that the core macroeconomic modelling framework used at the Federal Reserve and other central banks around the world has included, at best, only a limited role for the balance sheets of households and firms, credit provision, and financial intermediation. […] The various mechanisms that have tended to amplify asset price movements and the feedback among those movements, credit supply, and economic activity were not well captured by the models used at most central banks"* (Kohn, 2009).

Thus, in recent years, in textbooks as well as in economic models, 'neutrality of money' was either mentioned as being approximately true or even implicitly taken for granted. This went along with the fact that, during the last decades, economic theory and models hardly considered money, banks, and the financial sector at all (Martin, 2014; Werner, 2005, p. 162). Thus, it is fair to say that 'neutrality of money' today is mainly used in an axiomatic way, although the term has only rarely been used in an explicit way in recent times. In earlier times, usage was different.

In the first deliberate usages of the term, 'neutrality of money' was meant as a normative statement for money to be neutral towards the market process, as to not interfere in the market's allocation process. According to Patinkin and Steiger (1989, p. 131), the term is a relatively recent one. Whereas the notion goes back to an early version of the quantity theory by Hume (1952, cited in Patinkin & Steiger, 1989, p. 131), the term itself did not come into use until the interwar period of the 20th century (p. 132). The first to explicitly mention the term 'neutrality of money' was likely Bortkiewicz, who, nevertheless, did not define it (Patinkin & Steiger, 1989, p. 134). Yet, it is clear that he meant the term in a normative way, as he labelled it an 'ideal' and a 'postulate' (p. 134). Bortkiewicz did not describe money as 'neutral' but rather 'postulated' that money should be designed according to 'ideal' money, which is 'neutral money'. Another early usage of the term was made by Wicksell, who also made a policy proposal for achieving 'neutral money' (p. 132). Yet, according to Hayek, Wicksell's first usage of the term was more accidental than a deliberate act to introduce a new technical term (Hayek, 1935, p. 129, cited in Patinkin & Steiger, 1989, p. 133). According to Patinkin and Steiger, however, those early usages of the term differed in their notion of the term, and it was only with Hayek and Koopmans in the interwar period that the term's generally accepted notion was established (1989,

p. 137). So, for instance, Koopmans, an economist from Holland, defined 'neutral money' as follows:

> "In our terminology, money is neutral if, and only if, the *properties of a monetary economy correspond to the ideal type of a pure exchange economy, according to the laws of equilibrium theory* [italics in original]" (Koopmans, 1933, p. 288, cited in Patinkin & Steiger, 1989, p. 134).

Aside from that, it was Hayek (1931) who introduced the term into the English-speaking world in his lectures at the London School of Economics. He used the term as follows:

> *"Not a money which is stable in value but a neutral money must therefore form the starting point for the theoretical analysis of monetary influences on production, and the first object of monetary theory should be to clear up the conditions under which money might be considered to be neutral in this sense [italics in original]"* (Hayek, 1931, pp. 27-28).

From here, the term was then further established by Leontief and Robertson (Patinkin & Steiger, 1989, p. 132). Thus far, it seems evident that when first coined the term 'neutrality of money' was a normative ideal. Particularly with Hayek and Koopmans, a deliberate notion of 'neutral money' was established. They both meant the term as a normative statement for money to correspond to the ideal market economy. As mentioned in section 2.4, in this economic world view, the market mechanism was the natural (or God-given) guarantor for freedom and justice. According to this world view, it was first and foremost necessary to unbridle the market, which then would grant a free and just society. In order not to disturb this ideal market society, it was then necessary to design money as 'neutral', i.e. not interfering with this good and just market mechanism. Thus, according to that view, it was imperative that the money supply be 'neutral' towards that inherently good market process. Otherwise, if money were non-neutral, it would disturb the ideal outcome of that allocation process. The ideal money was consequently perceived as 'neutral', as to not interfere in the inherently good and just market allocation process. One could therefore argue that initially 'neutrality of money' was a term corresponding to the 'classical period' of economic thinking (see section 2.4) [51].

[51] It is an interesting coincidence that it was indeed Hayek who explicitly discussed 'neutrality' in a normative way. As mentioned in section 2.4, it was the classical period in which economic scholars perceived their discipline explicitly in a normative way. Hence, classical scholars would obviously have expressed it that

Later, particularly in the period spanning the 1960s up to and including the 1980s, the term 'neutrality of money' was no longer primarily used as a normative statement but more as a positive statement one tried to prove or refute through theoretical models or empirical tests. Yet both theoretical as well as empirical verification proved difficult. In the second half of the 20th century, macroeconomics scholars seem to have slowly shifted their focus from the normative statement to the positive statement, which means investigating under what conditions money might be 'neutral' and whether money actually is 'neutral' or not. For instance, Patinkin (1965) showed that if people are free of money illusion, capital stock is stable, and one disregards distribution effects, it is possible to build a theoretical model in which an increased quantity of money does not affect the real variables. Lucas (1980) may serve as an example of empirical tests on 'neutrality of money'. As he himself stated, he presented "empirical illustrations" that "a given change in the rate of change in the quantity of money induces (i) an equal change in the rate of price inflation; and (ii) an equal change in nominal rates of interest". At that time, the debate was then further advanced by two elements: by distinguishing between 'short-run neutrality' and 'long-run neutrality' and by distinguishing between 'neutrality' and 'superneutrality'. According to renowned monetarist Milton Friedman, the distinction is therefore as follows:

> *In the short run, which may be as much as five or ten years, monetary changes affect primarily output. Over decades, on the other hand, the rate of monetary growth affects primarily prices"* (Friedman, 1970, pp. 23-24)[52].

Thus, most scholars today agree that if money is 'neutral', then it is 'neutral' at best in the long run. Yet, this point leads to the aforementioned concept of 'superneutrality'. According to Danthine (2008), "[m]oney is said to be superneutral—or long-run-neutral—if changes in the steady-state rate of growth of the money supply do not affect the value of real economic variables". From a theoretical point of view, Tobin, for

way. And, in fact, although Friedrich August von Hayek was not actually a scholar of the classical period, he clearly expressed in his writings the same trust in the morality of the market as classical economists did (Ulrich, 2008a, p. 156). Hence, in the way he expressed his trust in the markets as well as in the way he perceived the economic problem as a normative one, Hayek is clearly related to classical thinkers.

[52] As shown thus far, Milton Friedman did not perceive 'neutrality of money' primarily as normative but more as a positive term. This is of particular interest as Friedman was not an economist who avoided taking up a normative position. Rather, he is famous for his monograph *Capitalism and Freedom* (1962/2002), in which he clearly argues that markets are inherently good and thus "there is one and only one social responsibility of business—to use its resources and engage in activities designed to increase its profits so long as it stays within the rules of the game, which is to say, engages in open and free competition without deception or fraud".

instance, (1965) showed that money does not meet the requirements of ‘superneutrality’. Sidrauski (1967), on the other hand, was able to build a model where money was superneutral. Yet, according to Danthine (2008, p. 2), this “result is fragile to changes in the hypotheses or structure of the model”. In that regard, Howitt (2019, p. 2) stated that “the absence of money illusion is the main assumption underlying the long-run neutrality proposition […]”. This means thus far from an empirical and theoretical point of view, there is both: data that supports the idea of ‘superneutrality’ (see e.g. Serletis, & Koustas, 2019; Bullard, & Keating, 1995) and data that refutes that idea (e.g. Moreira, Tabak, Mendonça, & Sachsida, 2016; Duczynski, 2008). Either way, it is important to stress that most of those studies primarily focus on aggregated data (as in the quantity equation) and do not specifically consider effects on relative prices, as the original idea of ‘neutral money’ (by Hayek and Koopmans) suggested. Hence, this second stage—in which ‘neutrality’ is used mainly as a positive statement and where it was reduced to the quantity equation variables—coincides with the period of early neoclassical school (see section 2.4). So, whereas ‘neutrality of money’ was initially meant as a normative idea, it was later increasingly perceived and in use as a positive statement.

In more recent times, at least until the Great Financial Crisis, economic mainstream no longer concentrated on testing the positive statement of ‘neutral money’. Instead, it turned ‘neutrality of money’ into an axiomatic statement. According to Martin (2014) and Werner (2005, p. 162), economic theory and models hardly considered money, banks, and the financial sector during the last decades. The situation is similar in economic research. Most recent economic mainstream models are built on the assumption that money is neutral (at least until the Great Financial Crisis). This point seems to apply to the neoclassical mainstream concerning both theoretical models as well as empirical policy analysis. Concerning model building, Galbács (2015, p. 149) concluded that “[t]he existence of an equilibrium depends on strong presumptions”. By those presumptions, he refers particularly to the “theorem of neutrality of money”, which he calls an “axiom […] in the system”. The same seems to be true for the empirical work in mainstream macroeconomics. McCallum (2004), who labels himself a ‘monetary economist’, described how contemporary monetary policy analysis works and, in doing so, stated “[…] it is evidently the case that the [quantity theory of money] pertains to the modelled economy” (p. 14). So according to McCallum, the most popularly used economic models for policy analysis were built on the (‘as if’) assumption of ‘neutral money’. Having cited all those statements from

contemporary macroeconomic research—or at least macroeconomic work until the Great Financial Crisis—it seems fair to say that the original (normative) idea of neutral money here has been transformed into a pure axiomatic statement. In other words, starting as a normative idea (as in the classical period), 'neutrality of money' gradually became a positive statement (as in the early neoclassical period) and finally emerged as a pure axiomatic statement in the present (as in the later neoclassical period). Thus, the term 'neutrality of money' passed through similar stages of change to those of the economic theory in general (see section 2.4). Given that historical background of the term, I will now critically examine the term from an integrative economic ethics perspective.

3.1.2 A critical reflection from an integrative economic ethics point of view

The term 'neutrality of money' must always be understood as a normative statement, similarly as was initially intended in its first usages. As determined in the previous section, 'neutrality of money' was originally meant as a normative statement. Nevertheless, 'neutrality of money' as well as economic theory in general, went through a process of purification (see section 2.4). Both ended up in their now predominant usage as axiomatic statements. Those purification processes—purification of the discipline and purification of the notion of 'neutrality of money', although not identical, are remarkably similar. Therefore, I shall briefly compare those two developments, referring to the three development stages Ulrich identified (2008a, pp. 150-184). In the classical period of economics, as normative thinking was not separated from economics, economics was originally considered normative reasoning. The same is true of the reasoning on 'neutral money', which was originally meant as a normative statement. Thereafter, economics progressed to the early neoclassical period, which was marked by mathematical formalisation, the idea behind which was to free economics from normative issues (pp. 159-160), and to treat it as a value-free (positive) science. The idea of 'neutral money' underwent a similar transformation. Formalisation in this case may be identified as the move from the quantity theory to the quantity equation, which reduced the idea to four variables: $MV = PY$[53]. Renunciation of normative issues may be viewed as the shift away from the argument that money ought to be neutral. Lastly, representing economics as a value-free positive science may be seen in the history of 'monetary neutrality' as the idea of empirically testing whether money

[53] M stands for the quantity of money, V for the velocity of its circulation within the economy, P for the price level, and Y for the real income.

was in fact neutral or under what conditions it would be. Economic mainstream theorists at the time no longer discussed whether or in what way money should be neutral. This was already a (perhaps subconscious) normative presumption. Ulrich (2008a) calls the third and last stage ‘pure economics’. A key feature of that form of economics is its usage of ‘as if’ models (p. 169-171). So, for instance, the popular term ‘homo oeconomicus’ is no longer an image of man but a mere axiomatic statement on which models are built. Again, the term ‘neutrality of money’ also became a pure axiomatic statement. However, why would it be useful or legitimate to use ‘neutrality of money’ as an axiom for model building when there is doubt about whether money is in fact neutral in the real world? The very task of integrative economic ethics is to reveal such hidden value judgements. As previously mentioned, the term ‘neutrality of money’ has served in all three statement categories: as a normative, as a positive, and even as an axiomatic statement. The danger of this ‘flexibility’ of meaning is twofold. The first danger is that it blurs the lines among those three categories, and one risks intermingling those notions. In relation to that, the second danger is of carrying on implicit and unconscious value judgments. Once again, the core idea of this thesis is to perform the same tasks with the ‘neutrality of money’ that Ulrich did with the discipline of economics in general: revisiting its original normative roots and rethinking them. As Ulrich’s leitmotif was to unearth and rethink the forgotten normative foundation of economics in general, the objective of this thesis is also to unearth and rethink the normative core of ‘neutrality of money’, which must then always be understood as a normative term. In the second place, when the normative core has been thoroughly investigated, then there is of course no problem in empirically testing whether or not money is really ‘neutral’ (as a positive statement). Not only is the statement’s category important but also its relational aspect, as the next paragraph explains.

‘Neutrality of money’ cannot legitimately be ‘neutrality’ towards the market in the first place. Rather, it must be ‘neutrality’ towards and among persons. Although Hayek and other scholars of his time were right that ‘monetary neutrality’ must be seen as a normative term, they were wrong about the relational aspect of such ‘neutrality’. In their original normative notion, ‘neutrality of money’ meant that money should be ‘neutral’ towards the market allocation process. For them then, the only thing that had to be ensured was that money did not disturb the market mechanism. Given that, in their view, the market would work perfectly, and that is all that was

needed[54]. From an integrative economic ethics perspective, this reduction is not surprising. Advocates of free markets like Milton Friedman or Friedrich August von Hayek perceived the market allocation process as the guarantor for a good and just world. In their view, to set the market free automatically ensures that the outcome of those processes would be good and just (the ideology of the 'pure' economic theory explained in section 2.4). Given this, one can comprehend Hayek's argument that money should be 'neutral' towards the market. In his view, the danger was not that the market would be non-neutral, but that non-neutral money would render the inherently good and just market bad. He perceived danger not in that the market would be non-neutral by favouring competitive life plans over those of the self-limiters but that non-neutral money injections would lead to 'wrong' market allocation processes. However, as propounded in section 2.3, markets cannot plausibly be seen as such guarantors of the good and just order. Instead, the market mechanism itself is non-neutral towards persons and their conception of the good. In other words, if money were required to be 'neutral' towards such (non-neutral) markets, this would at the same time mean that money would be required to be non-neutral towards persons and their conception of the good. According to Ulrich, ethics ought to always have normative primacy over market considerations (2008, p. 107). He considers that the legitimational aspect (conflict, ethics) always takes precedence over the efficiency aspect (scarcity, economics). In the case of 'neutral money', this means that money must, first of all, be 'neutral' towards and among persons (legitimational aspect) and their conception of the good.

[54] Apart from that, it is crucial not to limit 'neutrality of money' to the quantity equation variables. As shown above, in contemporary economics, 'neutrality of money' is not only deprived of its normative character, it is also normally reduced to the quantity equation variables (price level, aggregated income, money supply). However, according to Hayek and Koopmans, 'neutral money' was meant to not disturb the whole market allocation process. Hence, in their view, 'neutral money' was money that served the markets by reducing transaction costs but—apart from that—did not inherently alter the market allocation process. This clearly means that such money should have no impact on relative prices and distributive effect. Yet, a quantity equation version of 'neutral money' reduces the notion of 'neutral money' solely to aggregated macroeconomic variables (price level, aggregated income, money supply). Exactly those two elements are then lost: relative prices, and income distribution. However, from an integrative economic ethics point of view, such a reduction of 'neutral money' is not surprising. This reduction could have two origins. First, the aforementioned formalisation of economics and the second may lie in the "fiction of the common good" ('Gemeinwohlfiktion' in the German original) (see section 2.4). According to Ulrich, in the early neoclassical era, the normative principle was the "social maximization of utility for the wellbeing of all" (Ulrich, 2008a, p. 161). Put briefly: in this version of economics, free markets automatically assure the "social maximization of utility for the wellbeing of all" (p. 163), which can then be measured as aggregate income (Y). Because of that, reducing the goal of economic activity to the aggregate variable Y is legitimate in that version of economic theory. However, as shown in section 2.2, such a generalisation of the purpose of economic activity is neither necessary nor legitimate. This view neglects the idea that the primary purpose of economic activity is to ensure that all people can pursue their individual life plans, and that this cannot be approximated by maximising aggregate income. Therefore, even from a standard economic point of view, as I maintain, 'neutral money' would have to be neutral concerning at least the real outputs (GDP), relative prices, and income distribution.

'Neutral money' in that sense must be 'neutral' among individuals and in regard to their different life plans. Therefore, I argue here that well-understood 'neutrality of money' means that money should be 'neutral' towards and among persons, not towards the market allocation process. This section has made it clear that determining a proper notion of 'neutral money' starts with re-examining the initial normative meaning of the term. Yet, it must go beyond that original meaning. It must be freed from its market belief. It must be refocused on the purpose of economic activity, which is the good life (see section 2.2). Section 3.2 deals with exactly what is involved in this task.

3.2 Integrative Economic Ethics on 'Neutrality of Money'

Section 3.1 explored the economic roots and history of the term 'neutrality of money'. In the following section 3.2, I will now fully assume the integrative economic ethics point of view to critically re-examine the notion of 'neutral money'. According to integrative economic ethics, the foundation of rational economic activity rests on two elements: the question of purpose and the question of legitimation. Accordingly, I also base my considerations on those two elements. Hence, the section is divided into those two parts with a concluding part at the end. First, and similarly to section 2.2, subsection 3.2.1 (the question of purpose) explores the purpose of economic action in reassessing the idea of 'neutral money'. In the second subsection, 3.2.2 (the question of legitimation), I then propose that money must meet three requirements to be 'neutral'. Finally, subsection 3.2.3 will then put all the pieces together in order to elaborate a well-understood notion of 'neutrality of money'. I commence with the exploration of the question of purpose.

3.2.1 'Neutral money' and the question of purpose

Drawing on the idea of the purpose of economic activities as already established in section 2.2, I maintain that money is always a means to the higher end of the specific individual intrinsic value of a good life. According to Ulrich (2008a, p. 189), "questions of meaning always deal in essence with the fundamental intentions and highest value ideas which guide the human search for a fulfilled life for its own sake." Hence, thinking about the meaning of an action means identifying "the ultimate or holistic purpose, which itself can no longer be interpreted functionally or instrumentally". This also applies to the question of money. When Ulrich (2008a, p. 190) argues that "the economy is always only a means in the service of higher and literally more vital ends", then this includes money, too. This means that money is necessarily always a means to the higher end of a good life. Ascribing this absolute purpose to mon-

ey then permits no attempt by economic theorists to argue that the function of money is solely to serve markets (as Hayek would have argued). It is essential to note that such purpose of money and any economic activity constitute a specifically individual concept (p. 190), which is "neither capable of nor in need of generalisation". Thus, it is neither possible nor desirable to generalise a purpose of money other than that serving the intrinsic value of a good life and vital ends.

As stressed above, the idea of a good life, which 'neutral money' should serve is not generalisable. Nevertheless, a good life always comprises two elements: (1) human subsistence, and (2) abundance of human life. According to Ulrich (2008a, p. 191), the purpose of economic activity is not arbitrary or without any constant reference point. Rather, there is a "universal anthropologically constant reference to life" which "permits a distinction between two elementary levels of meaningful economic activity in regard to the good life of individuals". This is, first, "ensuring the bare means of universal human subsistence regardless of the cultural superstructure". This first level stems from the fact, as Ulrich argues, that there are human necessities (like food, clothing, medical services, and housing) which are universal and thus indisputable (p. 192). At a second level, a good life means "the broadening of the abundance of human life" (p. 191). Yet, according Ulrich, this second level should not be reduced to a "never-ending increase in the quantity of available goods, but [should promote] the emancipation of man from the need to concentrate all his energy on the provision of the bare necessities of life which makes cultural sense (p. 196)". Restated, it is not merely the acquisition of material goods and social success that make up a good life, but rather self-determined, meaningful activities which are "essential for our self-understanding" (p. 199). Thus, the economy in general, and money in particular should serve such self-determined, meaningful activities. This leads to a very specific ideal of 'neutral money'.

Properly understood, 'neutral money' must ensure that both, self-limiters as well as people who wish to compete on markets have the same ability to pursue their idea of a good life. According to Ulrich (2008a, p. 209), today's economies, based on the process of competition, are not value-neutral towards any kind of life scripts. Rather, they favour "a competitively and acquisitively oriented life form" (p. 209). The market process itself is inherently non-neutral in this regard (see section 2.3). As soon as one unbridles the market force the market mechanism employs force on all market participants to obey the rule of the market. In that case, the market mechanism favours all those who wish to compete on the markets and forces all others to do so equally.

Yet, there are self-limiters who wish to "devote a substantial part of their time and energy to other ends outside competition" without being "doomed from the start to be among the losers" (p. 209). According to that, the most significant question of regulatory policy is to decide where market mechanisms should prevail and where not. Returning to the purpose of this thesis, this means that money too, must eventually be in service for both people who wish to live a competitive life in accordance with the markets as well as for the self-limiters. Consequently, properly understood, 'neutral money' must ensure that both people who wish to live in accordance with the markets (e.g. entrepreneurs, bankers, etc.) as well as self-limiters (e.g. spiritually-minded people, artists, etc.) have the same opportunity to pursue their idea of a good life.

This well-understood notion of 'neutral money' requires that individuals are (partially) emancipated from market constraints and that 'monetary neutrality' not be delegated to the market mechanism. As argued, 'neutral money' must serve the good life for all, including self-limiters. The solution to this problem is either for those individuals in question to emancipate themselves from competition, or if that is not possible, then it is necessary that all "[…] work together so that each can enjoy a partial emancipation from the constraints of competition" (p. 212). Such emancipation may require reorganising the structure of society (e.g. reducing working life and/or, the necessary workload, or adopting emancipatory social policies) (p. 213). In other words: limiting market forces. This idea also applies to the 'neutrality of money'. As mentioned in section 3.1, in its original normative notion, 'neutrality of money' meant that money should be 'neutral' towards the market allocation process. Yet, the market allocation process inherently favours all those who wish to compete on the markets. 'Neutrality' towards the market (as Hayek had in mind) therefore inherently produces 'non-neutrality' towards the individuals and their personal life plans. Because of that, well-understood 'neutrality of money' requires that money must be 'neutral' towards and among individuals. Such 'neutral money' requires that markets only be unbridled where and to the degree that the system allows all individuals to strive for their individual idea of a good life. But, as already discussed, the idea of a good life is not generalisable. It is not possible and ethically not legitimate to, for example, pare the idea of a good life down to GDP growth (as mainstream economics inherently does). However, is it then even possible to generalise the idea of 'neutrality' in any way at all? Yes, generalisation is possible. However, such a generalisation is not possible in terms of purpose. Rather, it must be based on the question of legitimation. This is the focus

in the next subsection. Money must not only be 'neutral' with regard to the question of purpose, but it must also be 'neutral' with regard to the question of legitimation.

3.2.2 'Neutral money' and the question of legitimation

The essential basis of a monetary system's legitimation is respect of the fundamental moral rights of all citizens. In Ulrich's integrative economic ethics (2008a, p. 216), the question of justice is discussed based on the idea of legitimation[55]. In this view, actions are legitimate if they do not violate the moral rights of any affected person. Hence, to act legitimately means to take into account all discernible consequences, none of which should violate the moral rights of affected persons (p. 216). This means that a legitimate monetary system would not violate any moral rights of any person of the economy in question. To fill such legitimation requirements with content, it is necessary to once again consider the goal of all economic activity. According to integrative economic ethics, a well-ordered society, and that includes money too, should be a tool to enable the greatest possible equal freedom for all persons. Integrative economic ethics does not advocate an "arbitrary freedom which would mean […] merely the right of the stronger to an undisturbed and unlimited assertion of their own private interests without consideration of the equally legitimate claims to freedom of others" but a general notion of freedom "as the greatest possible equal freedom of all persons" (Ulrich, 2008a, p. 228). Hence, if one accepts that aim, then money, as a crucial part of the well-ordered society, is also a part of such a societal constitution enabling "the greatest possible equal freedom of all persons"[56]. Ulrich therefore sees

[55] According to Ulrich's view, there are two preconditions to discuss for such legitimacy. According to Ulrich (2008a), these are (1) "the existence of moral persons who possess a 'sense of justice' in the environment of (2) 'a well-ordered society'" (pp. 216-217). Hence, justice or legitimation requires persons with "the ability to understand the justified claims of others and the good will to make justice the guideline for their own actions". In the case of money, this includes in particular all people working for the central bank, commercial banks, and all other individuals in the non-bank sector. Yet, the ability and the good will of all those people may be not enough if the conditions (societal order) they live in are not ordered in a way that promotes or even allows legitimate behaviour. Because of that, as Ulrich argues, the second precondition for legitimate action is a well-ordered society (using that term in following Rawls). In such a well-ordered society, "the norms of justice are valid for everyone and they are both morally and legally binding" (p. 217). Concerning this second requirement, the monetary system is a special case. This system requires both moral persons and a well-ordered society to be legitimate. Moreover, as a precondition of all economic actions, the monetary system is essential for the legitimacy of all such actions, too. Therefore, the monetary system's legitimacy may be considered a second order precondition for the legitimation of all economic actions. Only a well-ordered monetary system allows and enables citizens to legitimately engage in economic actions. Given that, it becomes even clearer how basic a just and legitimate monetary system for a well-ordered society is. Yet, although the legitimation of that system requires both elements, moral persons and the well-ordering of the society, this thesis focuses solely on the latter.

[56] As mentioned, the monetary system is a precondition for most economic activities and as such is part of the precondition of those actions' legitimacy. I argue that, because of its status as precondition for economic activities, the monetary system is part of an economic basis consensus as a democratic constitution is in

legitimation as ensuring the realisation of the „greatest possible freedom of all persons". And exactly this idea, in his opinion, must be protected by moral rights. Thus, legitimation is based on individuals respecting the fundamental rights of all other citizens (Ulrich, 2008a, p. 225). According to Ulrich, there are three groups of basic human rights (2008s, p. 225):

> *(a) basic rights of inviolable personal freedom (of opinion, belief and action) and the corresponding equal protection of rights without respect of persons (negative rights of freedom and defence, rights of personality);*
>
> *(b) basic rights of participation in the formation of the democratic political will (rights of political participation and citizenship);*
>
> *(c) basic rights to a minimal degree of protection from existential need and social disadvantage, to conditions of life worthy of human beings and to adequate social welfare (rights to social protection and economic citizenship rights).*

I similarly propound based on those rights[57] that there are three rights that 'neutral money' must respect to be legitimate in the aforementioned sense.

First, 'neutral money' must in no regard discriminate concerning life plans (not favour some life plans over others). Rather, money must be part of the impartial societal and economic infrastructure that allows people to pursue their individual life plans. 'Neutrality of money' in respect of this idea of the good life is not generalisable. If one aims for quantitative figures, then from an economic standpoint, it is only the non-influence of money on GDP and GDP distribution, which may only approximately

most Western states. As the political order (constitution) must be under democratic control (see Ulrich, 2008a, pp. 229-231), the monetary constitution should be under democratic control as well. And, as "the political order […] must be justifiable as impartial and just before all citizens [bold in the original]", so must the monetary constitution.

[57] Apart from that, the right to private property is obviously an important one in the case of money. Although, my further considerations will not be based on the private right to property, it is at least interesting to note that which, according to Ulrich, can be said on the right to property in the case of money. According to Ulrich, the right to property is not an unlimited one. Generally, the right to private property must be granted in the case of money, too. However, if the private property of money of one citizen violates the socioeconomic citizens' rights of another person, then private property may need to be limited. In the case of money, obviously the right to private property is a crucial one. Yet, as the right to private property is not an unlimited right, the right to private property of money is not an unlimited right either. According to Ulrich (2008a, pp. 252-253), this is so because if such real rights "are to be granted and guaranteed equally to all economic citizens, they must be conceived of as limited rights." As he sees it, the demand to guarantee such rights 'equally' to all economic citizens leads to their limitation, because, as he argues, "the right to private property is a basic right only to a limited extent, namely in as far as it is restricted to a generalizable degree of private property." Thus, all claims to property that exceed such a generalisable degree can "only be justified as special rights deriving from particular social performances or merit". Furthermore, such claims are only legitimate if they do not violate general socioeconomic civil rights of other citizens (p. 254). This general idea of private property holds too for the special case of private property of money.

measure whether such 'neutrality' is guaranteed or not. Once again, this point can best be explained in Ulrich's own words:

> *"[O]n the one hand all people must be entitled to and be capable of integrating themselves into the processes of production and consumption in the market economy on the basis of equality of opportunity and, on the other hand, their entitlement and capability in regard to a (partial) emancipation from the functional constraints of the economic system must also be ensured."* (Ulrich, 2008a, p. 250)

Ulrich stresses here the two sides of freedom: the ability to join the market on the one hand, and on the other the ability to (partially) remain outside of it (in the case of self-limiters). This applies to money, too. The monetary system should enable citizens to join the market. Yet, on the other hand, the monetary system must be an instrument that allows economic citizens to spend a reasonable time of their life outside of the market. Or stated negatively: the monetary system must not force individuals into the markets and by that produce a mere market society. So, once again, 'monetary neutrality' means that money is 'neutral' in respect of the good life, and as already discussed in subsection 3.2.1, the idea of a good life is not generalisable. It is not possible and ethically not legitimate to reduce the idea of a good life to GDP growth, because 'neutral money' must ensure that both people who wish to live in accordance with markets (e.g. entrepreneurs, bankers, etc.) as well as self-limiters (e.g. spiritually-oriented people, non-materialistically minded people, artists, etc.) have the same opportunity to pursue their respective idea of a good life. Translated into economic terms, it is particularly GDP that is at stake here. The main point is that GDP cannot be a plausible and legitimate goal for economic activity—for three reasons. First, GDP is an aggregated variable, and as such does not take into account that a good life is necessarily an individual, non-generalisable end. Second, "GDP figures are almost useless as measures" for "human well-being" (Turner, 2012, p. 77). GDP hardly matters to an individual. What matters to individuals, for instance, are individual employment and individual income from that labour. Third, as widely discussed, GDP concentrates on material goods and neglects other aspects of the good life[58]. Moreover, as previously mentioned, the legitimational aspect of 'neutrality' means that money should never favour particular life plans or force them on others. Again, put in economic terms, this means

[58] According to Layard (2011, p. 135), a reduction of human well-being to GDP not only neglects those distributional questions (inequality) but also external effects, or the human loss aversion.

that money should never favour or force GDP growth or decline nor should it favour any distributional outcomes relating to GDP. 'Neutral money' must be 'neutral' towards individual life plans and by that also towards GDP growth and its distribution. Hence, a minimal generalisation of 'neutrality' towards individuals' life plans requires societal order as well as monetary order to be inherently 'neutral' in regard to GDP changes as well as changes in GDP distribution (see subsection 5.1.1 for a more in-depth treatment). Assuming this view, GDP does not constitute a goal for economic activity, but is instead a non-goal, as 'neutral money' must be 'neutral' in the sense that it must not discriminate in any way against life plans (favour some over others). There are, moreover, additional aspects of such 'neutrality'.

Second, 'neutral money' must be equally and conditionally accessible for all individuals to ensure their ability to participate in society. As mentioned, individual self-determined freedom is a crucial element of integrative economic ethics. For Ulrich (2008a, p. 245),

> *"freedom of the economic citizen not only includes negative freedom in the sense of the absence of external constraints, but also the positive freedom to perceive and take advantage of real options in the choice of economic actions."*

This notion of freedom comprises two important dimensions. First, it distinguishes between negative freedom (freedom *from*) and positive freedom (freedom *to*). The dimension of negative freedom was already discussed above: 'neutral money' must not favour some life plans over others. This means that all individuals deserve to be protected from such constraints (by the monetary system, for example) that restrict or hinder them in pursuing their life plans. Yet, it is not only this negative dimension of freedom but also the positive freedom that Ulrich demands. Economic citizenship rights, to him, must ensure that all people "must be entitled to and be capable of integrating themselves into the processes of production and consumption […] on the basis of equality of opportunity" (Ulrich, 2008a, p. 250). What Ulrich thus has in mind is the actual realisation of individual life plans. As mentioned, this comprises two important dimensions. First, it is a positive not only a negative freedom. Second, it is real freedom (actually realisable) and not only formal freedom (e.g. only written into the constitution). Concerning the monetary system, such realisation of positive freedom means that 'neutral money' must ensure that all individuals are equally and unconditionally able to participate in society and the economic system. The basic requirement of 'neutral money' must therefore be that all individuals are unconditionally and equally entitled and able to participate in the payment system, which then allows them to

participate in the economic system. 'Equally' refers here to the idea of equality of opportunity that must be granted. More explanation is needed for the notion of 'unconditional'. Unconditional means that no conditions (e.g. income, wealth, formal education, criminal record, etc.) must be met to gain access to the payment system. A good example of that is the case of cash: there are barely any conditions that must be met to use cash. This must be the general requirement for 'neutral money', too. This may even involve an educational right, which allows everybody the ability to use the payment system. 'Neutral money' must be impartial in granting access. So, according to integrative economic ethics, 'monetary neutrality' means that the monetary system must be equally and unconditionally accessible for all individuals (non-discriminatory).

Third and last, 'neutral money' must be equally and unconditionally secure for every individual (no partiality concerning security in pursuing life plans). The above-mentioned human rights not only require that 'neutral money' be 'neutral' in regard to individual life scripts, and emancipatory by granting access to the payment system. According to Ulrich (2008a), those rights must guarantee "moral equality in the sense of private autonomy […] and social equality of opportunity and security" (p. 226). The new aspect under discussion here is that Ulrich not only demands equality of opportunity but also equality of security. This is crucial, as—according to Ulrich— "[t]he less 'competitive' persons […] suffer objectively and subjectively from a growing loss of security in regard to the economic basis of their existence" (2008a, p. 241). The idea that real freedom must be based on the foundation of stability and security comes as no surprise, as without security and stability, freedom would remain an empty concept (see also Gygi, 1970, pp. 291). All these considerations must accordingly apply to 'neutral money'. Thus, a general requirement of 'neutral money' concerning its legitimation is that it too must meet this security and stability requirement. 'Neutral money' should not endanger people pursuing their idea of a good life. 'Neutral money' must be secure. Hence, 'neutral money' must not only be unconditionally and equally accessible for everybody, but also unconditionally and equally secure for everybody. As already stated, actions are only legitimate if they do not violate the moral rights of any affected person. Concerning the monetary system, the right in question is the right to property in the form of money (i.e. cash, bank deposits) and other financial and real assets. Applying this perspective, 'neutral money' must be 'neutral' in regard to the security of those assets. It is not legitimate if the monetary system inherently endangers the property of all participating individuals in general, or

even endangers some individuals' property more than that of others. Thus, today's common GDP growth goal may be plausibly replaced by a security goal. Indeed, according to Turner, it is the "economic stability—avoiding severe recessions—[that] matters a lot" (2012, p. 75). According to him, this is particularly the case for the financial infrastructure (p. 76). Therefore, if one strives to have some macro variables that 'neutral money' should serve, then such macro variables should concentrate on 'security' rather than 'growth'. Yet, if 'neutral money' is secure money, what could a measure of that be? In economics, security is often measured in terms of indebtedness. Thus, indebtedness may serve as a possible indicator for the security of the economic and the monetary system, and, in that, of its 'neutrality'. Measured in quantitative terms, 'neutral money' in that sense should have no inherent effects on the indebtedness of economic actors. This last statement completes my considerations on 'neutral money'. In the following subsection 3.2.3, all the pieces from sections 3.1 and 3.2 will be put together.

3.2.3 Well-understood 'Neutrality of Money'

Section 3.1 (Economics on 'Neutrality of Money') explained economic theory's view of the term 'neutral money', and critically examined it from an integrative economic ethics point of view. That section yielded three main insights. First, as argued, it is necessary to see 'neutrality of money' as an explicit normative term. Today in the economic mainstream, the idea of 'neutral money' is mostly used as an axiomatic assumption for model-building. However, throughout history, the term was used in different statement categories: originally it was meant as a normative statement, then shifted to become a positive statement, and lastly turned into a mere axiomatic statement for model-building. However, it is crucial to recognise the term as a normative one as it was initially meant by Hayek and Koopmans, among others. When these economists introduced the term, they used it to argue for a monetary order that does not distort the market allocation process. Yet, simply reconsidering the term's initial normative notion is insufficient. This initial normative notion of an economics perspective on 'neutral money' reduces 'neutrality of money' to 'neutrality solely towards the market'. This is an unjustifiable reduction of meaning. From an integrative economic ethics perspective, 'neutrality' towards the market (as meant in its initial usage) is economism that reduces "right to might, legitimacy to acceptance or morality to interest", as Ulrich (2008a, p. 184) stated. To avoid such economism, 'neutral money' must be 'neutral' towards and among persons in the first place. Hence, being 'neutral' regarding economic variables (e.g. real outputs, relative prices, interest rates) may

be a possible aspect of 'neutrality', but it cannot be the first and only legitimate ethical reference point. Thus, 'neutral money' must be 'neutral' not in regard to those economic variables, but in regard to individuals or higher ends (the good life). Thus, 'neutrality of money' cannot be reduced or approximated by 'neutrality' towards the market mechanism. Rather, 'neutrality' must always be 'neutrality' towards individuals.

Section 3.2 (Integrative Economic Ethics on 'Neutrality of Money') explored the notion of 'neutrality of money' based on the question of purpose as well as the question of legitimation of economic activities. That section offered three main insights. I would like to start by discussing the first insight, which is based on the considerations concerning the question of purpose as well as the questions of legitimation. As I mentioned there, money is always a means to the higher end of the specific individual intrinsic value of a good life. This means that money must be 'neutral' concerning the question of the good life. As 'neutral money' must be impartial between individuals and their individual life plans, the purpose of money can hardly be described generally in economic terms as to ensure GDP growth. Thus, 'neutrality'—properly understood—is 'neutrality' regarding the purpose. Money should instead be part of the societal and economic infrastructure that securely allows people to pursue their individual life plans. Yet, if one aims for quantitative figures, then from an economic standpoint, it is the non-influence on GDP and GDP distribution which may approximately measure whether such 'neutrality' is guaranteed or not. I now proceed to the second point, which focuses on the question of legitimation. Actions are legitimate if those actions do not violate the moral rights of any affected person. Based on the idea that money must be legitimate, one can argue that 'monetary neutrality' not only involves being 'neutral' among individuals and their life plans, but that money also needs to be non-discriminating by unconditionally granting everybody access to the monetary system. There is a third requirement. 'Neutral money' must be equally and unconditionally secure for every individual (no partiality concerning security in pursuing life plans). As argued in subsection 3.2.2, actions are only legitimate if those actions do not violate the moral rights of any affected person. Concerning the security aspect, it is not legitimate for the monetary system to inherently endanger the property of all participating individuals in general, or even of some individuals' property (i.e. money, financial assets, real assets) more than that of others. So according to this perspective, 'neutral money' must be 'neutral' in regard to the security of those assets, which allow and support the individuals pursuing their life plans. Hence, 'monetary

neutrality' also means that money needs to be a secure tool for everybody. Whereas the idea of a good life plan is not generalisable, the idea of security and unconditional accessibility is indeed—at least to some degree—generalisable.

On the basis of all the arguments presented above, the conclusion to be drawn is that 'neutral money' must be 'neutral' among all individuals pursuing their individual life plans (teleological aspect of 'neutrality'). This requires that a 'neutral' monetary system respect the following moral rights of those individuals (deontological aspect of 'neutrality'):

(1) Non-interference (no favouring or hindering) in regard to individuals' life plans.
(2) Equal unconditional access to the monetary system (as in the case of coins).
(3) Equal unconditional security of the monetary system (as in the case of coins).

Although this notion of 'monetary neutrality' commenced with the original normative meaning of 'neutral money' that Hayek, for instance, had in mind, it goes beyond that. Here, 'neutral money' is money that is 'neutral' in all aspects, offering all citizens equal opportunities to determine and realise their individual life plans. This definition refocuses 'neutrality' in its relational aspect from 'neutrality' towards the market to 'neutrality' towards and among individuals and their life plans. It broadens neutrality's scope from direct effects on (quantitative) economic variables to direct and indirect (quantitative and qualitative) economic effects as well as effects on social aspect of life. It also frees 'monetary neutrality' from its economistic corset and extends its scope to cover the vital purpose of life. In so doing, it goes beyond the boundaries of things that are measurable in quantitative terms. Thus, it also requires measurement in qualitative terms. Hence, to investigate 'monetary neutrality' in this sense is no longer a question of theoretical economic models or econometrics but a matter of quantitative as well as qualitative social sciences (which may even involve investigating whether money has inherent effects on the structure and dynamics of a society, the choice of life plans, the accessibility of the payment system, people's perception of the world, and many other societal aspects).

I will now recapitulate what has been discussed thus far. Chapters 2 and 3 dealt with the first research question:

(1) Understanding the normative core of 'neutrality of money', based on an integrative economic ethics view.

Chapter 2 provided a basis for reflecting on ‘neutrality of money’, and chapter 3 explored the term ‘neutrality of money’, which resulted in an explicit normative understanding of ‘neutrality of money’, based on integrative economic ethics.

Chapters 4 and 5 shall address the second research question:

(2) Analysing whether the fractional reserve system is ‘neutral’ or not, based on the credit theory of money and post-Keynesianism.

In the following, chapter 4 lays out a basic understanding of money and the fractional reserve system drawing on the credit theory of money and post-Keynesianism. On the same foundation, chapter 5 will then analyse whether the fractional reserve system is able to meet the requirements of being ‘neutral’ or not.

4 Money and the Fractional Reserve System

"*Money is perhaps the clearest expression and demonstration of the fact that man is a 'toolmaking' animal, which, however, is itself connected with the fact that man is a 'purposive' animal."* (Simmel, 1907/2004, p. 211)

The aim of this chapter is to understand what money is and how it currently works. Thorough comprehension thereof will be necessary for the further investigation of 'neutrality of money' in chapter 5. There I examine whether and to what degree the normative ideal of 'neutral money' (elaborated in the previous chapter) is realised today. This chapter shall provide the necessary economic foundation, including some basic definitions, to this end. Section 4.1 briefly defines money and its economic functions. Then, section 4.2 provides an overview of monetary systems, particularly of the contemporary fractional reserve system, which I assess in this thesis. After that, section 4.3 delves into the details of the fractional reserve system by presenting the participants (economic sectors) and the monies they use. Section 4.4 then shows how money creation in such a system works[59], which will be the core of the analysis in chapter 5.

4.1 Money Defined by its Functions

"Among the conventions of almost every human society of historical record has been the use of money, that is, particular commodities or tokens as measures of value and media of exchange in economic transactions. Somehow the members of a society agree on what will be acceptable tender in making payments and settling debts among themselves. General agreement to the convention, not the particular media agreed upon, is the source of money's immense value to the society. In this respect money is similar to language, standard time, or the convention designating the side of the road for passing." (Tobin, 2019, p. 1)

History shows that money has had many different manifestation forms. As Tobin's quote above states, human societies always tended to use something as money. The reason for that, he further argues, is that money facilitates trade (2019, p. 1). According to current historical knowledge, money appeared in ancient times in varied forms: as commodity as well as debt originated (Graeber, 2011, pp. 28-30). Already in

[59] Sections 4.1 and 4.2 are based on economic mainstream theory, whereas the understanding of the fractional reserve system in sections 4.3 and 4.4 is based on the post-Keynesian view of economics in particular (as already mentioned in section 1.5).

archaic tribes, people carried out transactions by settling liabilities (Martin, 2014, pp. 1-31). People did not use metal coins as means of exchange until in ancient and medieval times. Meanwhile, people also used privately issued promissory notes as means of payment (Ryan-Collins et.al, 2014, p. 38). Nevertheless, most economists in the past focussed their theories only on money as a means of exchange (e.g. Smith, 1776/2012, pp. 9-12). During the 17th century, the goldsmiths of England invented paper money by issuing goldsmith notes (Binswanger, 2015a, p. 57). This was the basis for the future banknotes and the Bank of England's banknotes monopoly in 1742 (p. 67). Related to that is also the invention of today's dominant form of money: bank deposits. Another well-known kind of money was the cigarettes currency in Germany after World War II. Moreover, today, Bitcoin (BTC) has proven that money not only appears as a liability or a commodity—it can also appear in a purely virtual form. This very brief historical overview makes clear that any definition of money based on its physical appearance is useless because the appearance changes and any new form of money fulfils the same purpose as before. This problem of defining money by its appearance is known as Goodhart's law (Goodhart, 1989). Nevertheless, although history showed diverse manifestation forms, it is possible to properly define money.

Money is best defined via its function. To define a social institution like money, one could refer to its appearance form or to its function for society. As exemplified in the previous paragraph, only the latter might be adequate. The reason for that is nicely stated by Simmel (1907/2004, p. 151):

> *"If […] in Abyssinia specifically cut pieces of rock salt circulate as coins, they are money precisely because they are not used as salt."*

Thus, money is best defined by its function. **Figure 3** shows a comprehensive overview concerning the functions of money.

Three functions of money	Seven functions of money according to Anderson
(1) Means of exchange	Medium of exchange Legal tender for debts
(2) Means of account	Common measure of value Standard of deferred payments
(3) Store of value (pretense)	Store of value Reserve for credit instruments, including reserve for government paper money Bearer of options

Figure 3: The functions of money
Notes: Own figure based on Tobin (2019, p. 3), Zelmanovitz (2016, p. 20), Ryan-Collins et al. (2014, p. 29), and Anderson (1917, p. 374, cited in Zelmanovitz, 2016, p. 20)

Most economists refer to only three functions of money (left column) whereas Anderson (1917, p. 374, cited in Zelmanovitz, 2016, p. 20) mentions seven (right column). Yet, what Anderson mentions is only a more detailed version of the classical list of three functions (Zelmanovitz, 2016, p. 20). Although the classical list seems to still be valid (p. 21), there seems to be no proper consensus about the order of these three functions. Many scholars (e.g. Zelmanovitz, 2016, p. 10; Polleit and Prollius, 2014, p. 24; Mises, 1924/2005; and Simmel, 1907/2009, p. 263-264, 268, 279) argue that money's function as a means of exchange is its core function, because only if there is a generally accepted means of exchange is it possible to develop this further to a means of account. Of course, such a means of payment then might be used as a store of value as well. Another substantiation for this view on money may be found in Tobin (2019, p. 4) arguing that "[m]oney is the principal means of payment of a society, but it is only one of many stores of value—and quantitatively a minor one at that."[60] Hence, this (Austrian) view on money is that the core function of money is as a means of exchange and any other functions seem to be derived from that function. This definition was first developed by Austrian economist Carl Menger (1923), then became widely accepted (see Eucken, 1959, p. 113; Zelmanovitz, 2016, pp. 23-24). However, there is another group of scholars (e.g. Hicks, 1989; and Keynes, 1936/2010) who consider money "uniquely specified as a *measure of abstract value* (money of account)" (Ingham, 2005, p. 70). This group further maintains that all other functions may be

[60] His argument then continues as follows: "Through most of human history land has been the major form of wealth, increasingly augmented by livestock and reproducible capital – buildings, tools, machines and durable goods of all kinds. Claims to much of this wealth today take the form of bonds and shares and other securities. In the United States, basic money is only 6 % of total privately owned wealth" (Tobin, 2019, p. 4).

subsumed under this attribute (p. 70). Dietz (2015) brings those two groups together by arguing that the core functions of money are 'paying' and 'calculating' (p. 100). It seems thus far that there is consensus that money is not primarily a store of value, but that its core functions are as a means of payment and a means of account. However, which of those two functions then ranks higher in the hierarchy of money's core functions does not appear to be a relevant or, in fact, a solvable question. Because, as the former group thinks, the more often something is used as a means of exchange, the more one tends to call it money. Paying with this 'thing' then becomes a habit[61] and one begins to calculate in that 'thing'. By then, the 'thing' takes on the attribute of money. So, money is a social category used as a means of exchange and as a means of account. We pay with money and we think in terms of money. Both functions are highly interrelated. One does not work without the other. Thus, generally, one has to identify anything that we use as a means of exchange and a means of account as money.

Serving as a means of exchange and a means of account constitute not only the core functions of money, but also the only clear difference to all other economic objects, as today's manifestation forms of money indicate. As argued, money is best defined by its functions. This becomes evident too if one compares money to other things. Today, the monetary authorities (e.g. the central banks) define money (M) as cash (coins and banknotes) and bank accounts (deposits) held by non-banks (for more detail, see section 4.3). **Figure 4** compares this contemporary manifestation of money to similar economic objects. I concentrate here on the comparison of the three above-mentioned functions. The left side shows the functions of money, how those functions are connected to each other, and what the difference among them is. The right side shows today's popular manifestations of those functions.

[61] Tobin (2019, p. 2) describes that 'habit' as follows: "The social convention makes a society's money generally acceptable within it, and the practice of general acceptability reinforces the convention. Y accepts money from X in exchange for goods and services and other things of value because Y is confident that Z, A, B,. . ., and indeed X will in turn accept that same money."

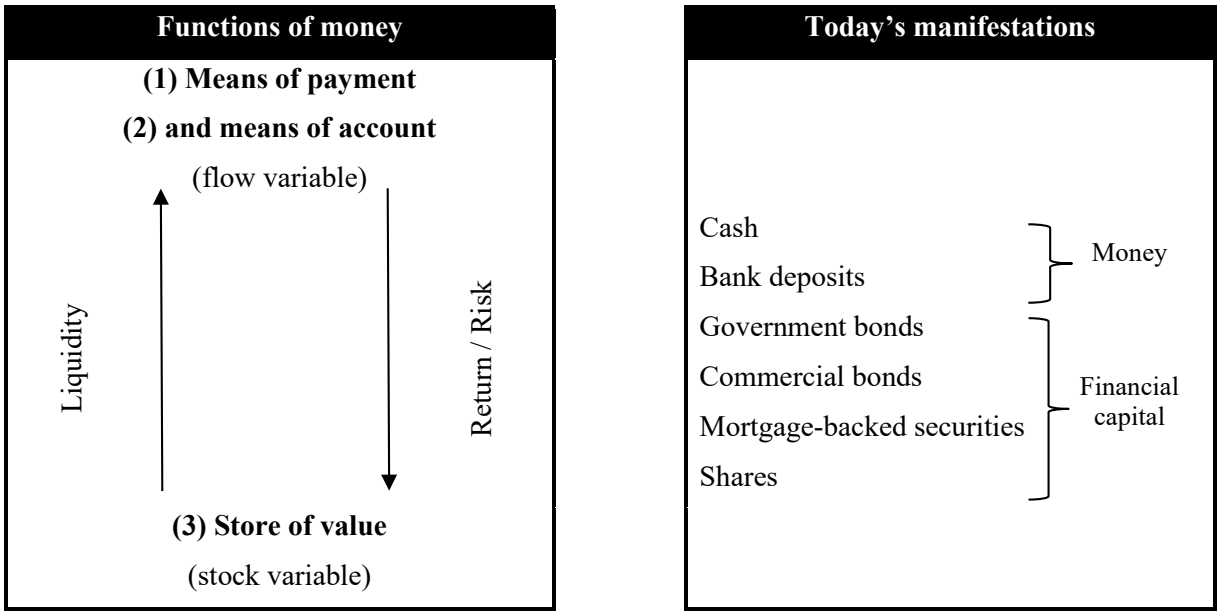

Figure 4: Functions of money and today's manifestations
Notes: Own figure, partly based on Ryan-Collins et al (2014, p. 60) and Dembinski (2009, p. 29-30)

At the top, the figure shows that cash is obviously a means of payment, a unit of account, and on down that it can also serve as a store of value. At the bottom, it shows that shares are a very common store of value and normally generate the highest return (in exchange for the greatest risk). In normal times, i.e. if the economy works well without considerable inflation, mainly cash and bank deposits serve as means of payment and a unit of account. During such normal times, mainly bonds, securities, and shares serve as a store of value. Thus, today the former are a manifestation of money whereas the latter are solely financial capital. Yet, also those objects, referred to as financial capital, have the potential of becoming a manifestation of money. So, again, regardless of its appearance, money is what is used as means of payment and as means of account. For the investigation in chapter 5, it is not only necessary to understand what money essentially is, but also to understand how money currently works. Thus below, I will explain that today, in capitalist economies, money works based on the so-called fractional reserve system.

4.2 The Fractional Reserve System

Historically, there have been many different monetary systems. For the development of modern capitalist economies, the most significant as well as well-researched have been in this chronological order (1) commodity money, (2) commodity-backed money, and eventually (3) the fractional reserve system (Velde, & Weber, 2019, p. 2; Bordo, 2019). As already mentioned in section 4.1, history has shown varying manifestation forms of money. Some monies have been commodities that are intrinsically useful for investment or consumptive purposes (e.g. gold, silver, cigarettes). Other monies have only been tokens without any intrinsic utility (e.g. coins, pieces of paper). The development of modern capitalistic economies has been shaped particularly by three systems: (1) commodity money, (2) commodity-backed money, and the fractional reserve system solely dependent on intrinsically useless fiat money.

Commodity money was a monetary system where commodities with an intrinsic value were used as money. Commodity money is a thing of the past, but it was the predominant monetary system for more than two millennia (Velde & Weber, 2019, p. 1), as it already had its beginnings between the 6th and 4th centuries BC (p. 2). In such a system, a commodity—intrinsically useful for production or consumption—was used as money (p. 1). As the value of a commodity may differ when it is used as money compared to its usage as a commodity, even commodity money has a fiat component (Velde & Weber, 2019, p. 3). With metallic commodities, it was possible to standardise money in the form of coins (p. 2). The most commonly used coins were those of gold, silver, and copper (p. 2). Often, the right of coinage and even mining was a prerogative of the central authority (p. 2). Although a commodity standard limits the scope of monetary policy, it does not prohibit it entirely (p. 1). The monetary authority still has the option of altering the value of money by "changing the commodity content or legal tender quality of monetary objects, or by restricting the conversion of commodities into money or vice versa" (pp. 1, 5). So, according to Bordo (2019, p. 2), debasement—a worsening of the coins' content—seems to be the earliest predecessor of modern monetary policy. Later, commodity money was superseded by commodity-backed money.

Commodity-backed money consisted of intrinsically useless tokens circulating as money, which on demand could be converted into the backing commodity. According to Bordo (2019, p. 2), commodity-backed money evolved from early commercial banks in Italy. Yet, the practice seems to have its origins in the practice of

goldsmiths issuing receipts as evidence of their storing gold for their clients (p. 2). Eventually, these certificates (notes) circulated as a means of exchange. As not all the claims were redeemed at the same time, the goldsmiths' learned that it was possible for the number of circulating claims to be greater than their reserves (p. 2). That realisation gave birth to money not fully backed and to fractional reserve banking (p. 2). The goldsmith and commercial bankers learned to issue their notes and to hold at the same time a sufficiently large reserve to meet redemption demand. For the development of todays' capitalist economies, the most important commodity-backed monetary system has been what is called the gold standard. The world had two experiences with the gold standard: the classical (before World War I) and the interwar gold standard (between World Wars I and II) (Officer, 2019, p. 1). It is crucial to note that those gold standards were not pure coin standards (like commodity money), but mixed standards. Under such mixed standards, not only gold coins but also notes issued by the government, central bank, or commercial banks, or even bank deposits were used as money (Officer, 2019, pp. 1-2). Government or central banknotes and central bank deposits were directly convertible into gold (p. 2). Concerning monetary policy under such a standard, there are two crucial elements worth mention. First, as the money supply here is a product of the monetary base and the money multiplier (fractional reserve banking), there are private banks creating money, but the total money supply is limited by the available gold reserve (p. 3). Second, the central bank's main task was to reinforce the effect of gold flow on the monetary base to enhance the specie-flow mechanism[62] (p. 4). After World War II, the Bretton Woods system evolved, in which only US dollars remained convertible into gold, and all member currencies were convertible into dollars (Velde & Weber, 2019, p. 2). Since the breakdown of the Bretton Woods system[63], there is no longer any link left between gold and the currencies—fiat money standards are now universal (p. 2). This constituted the beginning of the contemporary fractional reserve system.

In today's fractional reserve system, most of the money supply is provided by commercial banks, and all money is pure fiat money. Whereas in the two above-mentioned historical cases there was already a fiat component, in the case of pure fiat

[62] The specie-flow mechanism is the automatism that theoretically ensures the equilibrium in foreign trade. For a detailed description of the specie-flow mechanism, see Eichengreen (2008).

[63] The Bretton Woods system came to an end in 1973 when the US dollar exchange rate could no longer be maintained due to the high current account deficit in the United States and Germany, and Japan refused to support the US dollar by means of foreign exchange intervention through their central banks. For a more detailed description of the Bretton Woods system and its break-down, see Eichengreen (2008).

money, there is no longer any material anchor for the money's value (Velde & Weber, 2019, p. 3). The value of money solely depends on the public's trust. The fractional reserve system is a specific institutional setting where a central bank and commercial bank share the ability to produce fiat money. The central bank (the state) produces cash and reserves, whereas the commercial banks produce bank deposits (Desai, 2019, p. 4). The central bank's base money (H) is exogenous whereas the commercial bank's deposit money (D) is endogenous (p. 4). The name of the system refers to the fact that those commercial banks hold only a fraction of their debt obligation to the public (which is the circulating money) in the form of cash and reserves (Bhaduri, 2019, p. 1). As already mentioned, this is the very method of creating credit money by the money multiplier (p. 1). The more deposits the commercial banks have outstanding, the more reserves they hold (Friedman, 2019, p. 3). There are three main reasons for that. First, in most fractional reserve systems, the commercial banks are required by law to hold a minimum of reserves as a percentage of their outstanding deposits (Friedman, 2019, p. 3). Second, the commercial banks need the reserves as a supply of currency to meet the customers' demand for cash (p. 3). Third, commercial banks need reserves to effect payments among themselves, which are at least partly accomplished by transferring reserves (p. 3). In most contemporary systems, central banks no longer aim to achieve their goals (low inflation, real output close to potential) by controlling the quantity of money supply, but rather by controlling the short-term interest rates (Bordo, 2019, p. 1-5; Friedman, 2019, p.1-2). However, the understanding of the money supply process is still crucial to analysing monetary policy and its consequences (Friedman, 2019, p. 1). As today most capitalist economies have a fractional reserve system, this thesis will further consider only this specific system. Hence, particularly the analysis of the question of whether the contemporary monetary system meets the criteria of 'neutral money' is restricted to this explicit system. The other systems—commodity money and commodity-backed money—might well have different attributes concerning such 'neutrality'. The next section provides basic definitions as well as an overview on the functioning of the fractional reserve system, serving as the basis for further exploration in chapter 5.

4.3 The Fractional Reserve System: Participants, Monies, and its Working

"Progress can be made in monetary theory and policy analysis only by modeling [sic!] monetary arrangements explicitly." (Kareken and Wallace, 1980)

This section shows how the payment system—in a fractional reserve system—works. By that, the section provides the basis for understanding the money creation and destruction process (fundamental to chapter 5). First, I will discuss what economists and central banks today mean by the term money. Second, I will explain who the payments systems' participants are. Third, I will discuss all monies and their essential means of functioning.

As already mentioned in section 4.1, for the purpose of this thesis, money is defined as the sum of circulating coins and banknotes as well as the bank accounts held by non-banks. As previously discussed in section 4.1, money is best defined by its function. Despite that, for further analysis, I will use the quite simple definition borrowed by the monetary authorities. Central banks like the Swiss National Bank (SNB) or the Bank of England (BoE) define money (M) as cash (coins and banknotes) and bank accounts (deposits) held by non-banks. By way of illustration, **Figure 5** shows Switzerland's M1[64].

[64] In so doing, most of the central banks distinguish among M1, M2, M3, and even M4. These definitions differ in what types of deposits they include. For my analysis, this differentiation adds no value. Therefore, I do not distinguish between those categories within money (M). Yet, when I use statistical data, I only refer to M1—the narrowest definition of money. M1 includes coins and banknotes in circulation, sight deposits, and deposits in transaction accounts. Stated negatively: M1 does not include savings deposits and time deposits (SNB, 2016).

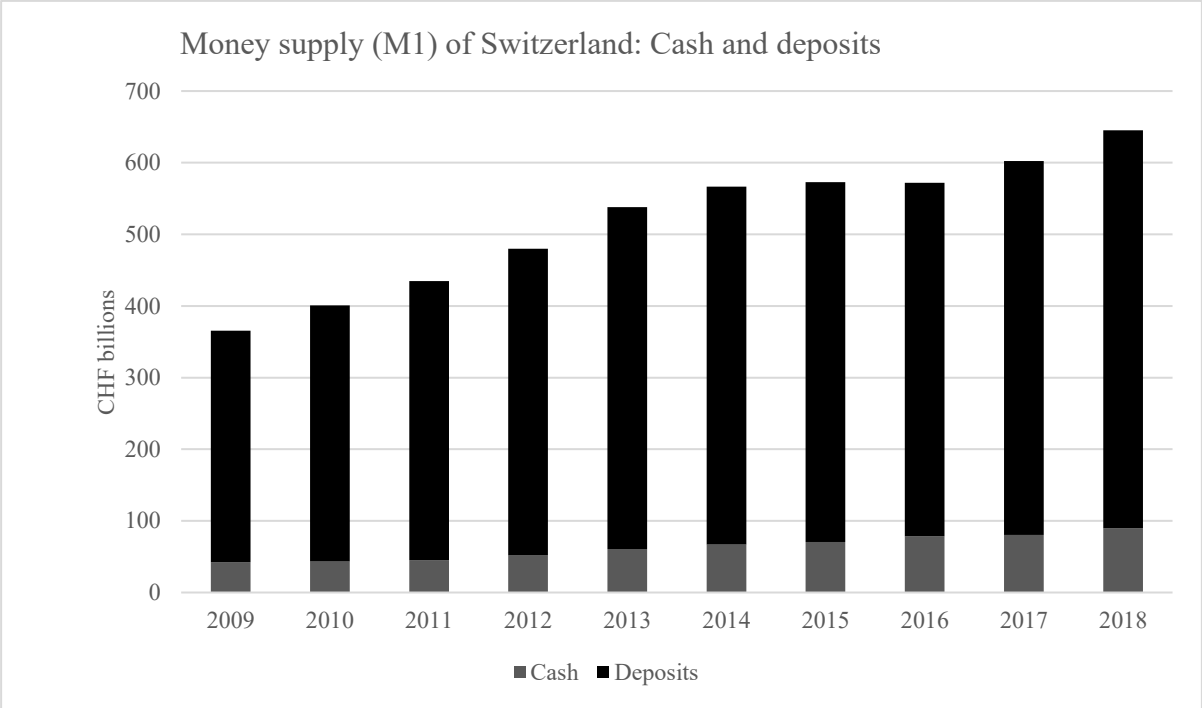

Figure 5: Monetary supply of Switzerland
Notes: Based on SNB (2018)

The figure mainly illustrates two things. M1 was increasing for most of the period and M1 mainly consists of deposits, whereas cash only comprises a small fraction of the monetary supply. In this first step, I have defined, for this chapter, what is meant by the term money and demonstrated that the dominant part of it consists of deposits. I will proceed to show how the payment systems work on that basis, by describing the different components of **Figure 6** (see next page).

As already implicitly stated, the payment system consists of three sectors (see **Figure 6**). At the bottom, the **non-bank sector** includes households, firms, and all other non-bank subjects. In the centre of the figure is the **commercial bank sector,** including all bank types: retail, wholesale, and investment. At the top, most advanced economies have a **central bank**. The central bank and the commercial banks together comprise the banking system, which provides the payment system for all non-banks. In other words: The central bank is the bank for commercial banks and the commercial banks are the banks for the non-banks. (McLeay, Radia, & Ryland, 2014, p. 16)

In addition to that, the payment system works with three money types: **cash (CU)**, **bank deposits (D)**, **and central bank reserves (R) (Ryan-Collins et al., 2014, p. 14).** Cash (CU) can be held by non-banks or banks and consists of coins (chiefly copper

and nickel) and banknotes[65]. Bank deposits (D) are only held by non-banks and are, in principle, a credit to the bank (McLeay, Radia, & Ryland, 2014, p. 15). In contrast to an ordinary credit, bank deposits can be reclaimed at any time by withdrawing cash from those deposits. The last money type is called central bank reserves (R). In principle, it is similar to bank deposits: The only difference is that reserves are the commercial banks' credit to the central bank (p. 16). Both, deposits and reserves are receivables for one party and liabilities for the other.

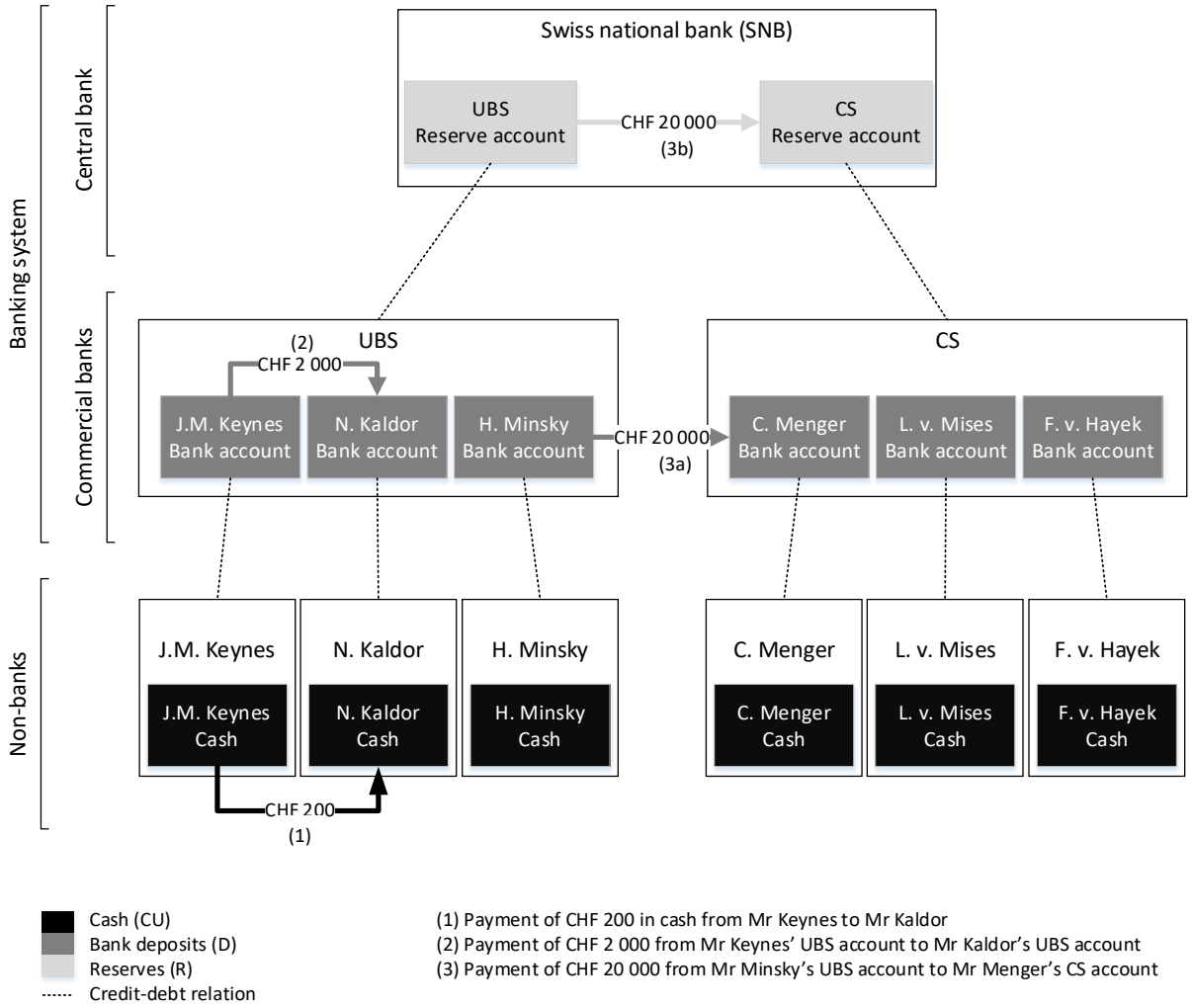

Figure 6: The payment system

Notes: Own figure, based on Ryan-Collins et al. (2014, p. 14; 64-69); McLeay, Radia, & Ryland, (2014, pp. 15-21), and Rossi (2007, pp. 70-72)

It is now clear what subjects and what money types are in play. But how do common payment transactions work? To keep it simple, in my example only non-banks hold cash. Thus, starting at the bottom, the non-banks hold cash as well as bank

[65] For a detailed history of the emergence of coins, banknotes, and deposits, see, for instance, Ryan-Collins et.al. (2014), Binswanger (2015a), Rothbard (1983/2008) or Davies (1996).

deposits, and the commercial banks hold central bank reserves. I now describe how typical transactions of non-banks work by means of **Figure 7**, which shows three example transactions—indicated by the numbers (1), (2), (3a), and (3b). Transaction (1) is a payment of CHF 200 in cash from Mr Keynes to Mr Kaldor. For this transaction type, non-banks need no help from commercial banks. Transaction (2) is a payment of CHF 2000 from Mr Keynes to Mr Kaldor via their bank accounts. Both non-banks hold their accounts at UBS. In that case, UBS simply changes the numbers in the bank accounts, decreasing its liability to Mr Keynes and simultaneously increasing its liability to Mr Kaldor. Transaction (3) is more complicated. Mr Minsky transfers CHF 20,000 from his bank account to Mr Menger's bank account. As the two men hold their accounts at different commercial banks, this case is more complicated. (3a) shows that the money has to be transferred from Mr Minsky's account to Mr Menger's account. UBS decreases its liabilities to Mr Minsky and CS increases its liabilities to Mr Menger. This results in UBS now having fewer liabilities and CS more. To balance that out, UBS has to transfer the same amount from its central bank account to the one of CS (3b). These changes shorten UBS' balance sheet: it now has fewer liabilities to Mr Minsky and fewer receivables from the central bank. Vice versa, CS has extended its balance sheet: it now has more liabilities to M. Menger and more receivables from the central bank.[66] (A similar example can be found in Ryan-Collins et al., 2014, pp. 64-69.)

Two points can be concluded so far based on this example. First, non-banks use cash (CU) and bank deposits (D) to make their payments, whereas banks use central bank reserves (R) to do so. Second, since most advanced economies' money supply largely consists of deposits (McLeay et al., 2014, p. 15), our money system is primarily based on credit-debt relations. I have clearly demonstrated how the payment system basically works and what money forms we use, but not yet where the money comes from, hence my next section describes the creation and destruction of money.

[66] In most advanced economies, the predominant value of all transactions is carried without cash (see Figure 5). Thus, bank deposits are the dominant money form. Furthermore, bank deposit transactions are effected fully electronically. All bank deposits are simply numbers stored by a computer. In contrast to the example above, millions of such transactions are carried out among only a few banks. This means that lots of transactions between those few commercial banks cancel out the others, a process called intra-day clearing. Hence the amount of reserves that has to be transferred between the commercial banks is only a small portion of all bank deposit transactions. The larger a commercial bank is, the less reserves it needs, because more transactions take place within the bank. In the extreme case of only one bank, it is obvious that no central bank reserves must be transferred (Rayan-Collins et al., 2014, pp. 74-76).

4.4 The Creation of Money in a Fractional Reserve System

This section shows how money is created and destructed. This overview is essential, as in chapter 5, the investigation of whether the contemporary monetary system is 'neutral' or not is based on these very mechanisms. The investigation there will analyse what a constantly growing money supply means to the normative ideal that money should be 'neutral 'and therefore requires a rather detailed description of those processes here. Figure 7 shows an overview of those processes.

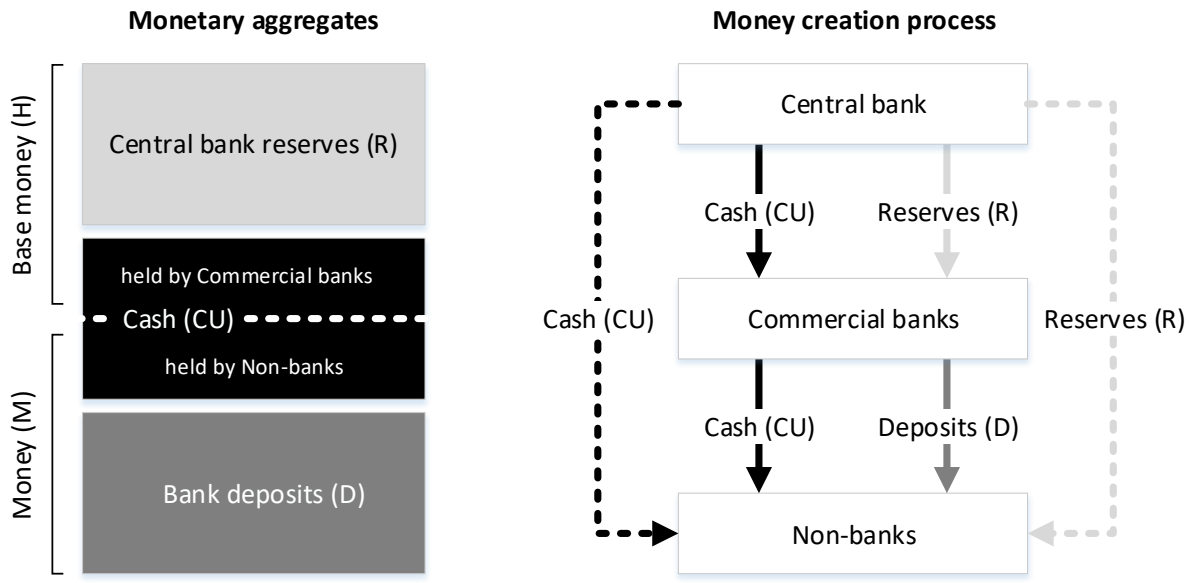

Figure 7: The money creation process and monetary aggregates
Notes: Own figure. The dotted lines represent the direct means of providing cash or reserves. In most modern economies, such means play only a limited and insignificant role.

The following three subsections explain those processes in detail. First, subsection 4.4.1 will show how deposits (D) and reserves (R) are created. In Figure 7, those processes are depicted as grey arrows on the right side. There are two reasons for starting with them: (a) most of our money today consists of deposits and (b) deposit creation is a bit more complicated to understand than cash creation. Thereafter, subsection 4.4.2 will show how cash can be created. This process can be understood by following the black arrows in the figure above. Third, subsection 4.4.3 summarises the whole money creation process. The money creation process takes place in two main steps (see the vertical lines in the centre of Figure 6)[67]. In a first step, the central bank provides reserves or cash to the commercial bank

[67] Besides that, it is theoretically also possible for central banks to directly interact with non-banks (see the dotted lines). In the reality of modern economies, this possibility plays only a limited role or does not even take place at all.

sector. In a second step, the commercial bank sector supplies the non-bank sector with deposits or cash. In all these transactions, money can be created by a central bank or commercial banks buying assets or providing credit. In fact, today most of our money is created by credit provision. To avoid redundancies, I focus here on the creation process[68]. This detailed understanding of those economic (accounting) transactions summarised above will serve as the primary basis for the analysis of whether money (created by those transactions) is 'neutral' or not (see chapter 5). In subsections 5.2.1 ('the built-in debt-machinery') and 5.2.2 ('the built-in redistribution-machinery'), the investigation will be based on the very same kind of analysis.

4.4.1 The creation of deposits and reserves

> *"It proved extraordinarily difficult for economists to recognise that bank loans and bank investments do create deposits."* (Schumpeter, 1954, p. 1114)

This section shows how the banking system can create money and base money in the form of deposits and reserves. I will explore this in two steps. First, subsection 4.4.1.1 will show that overall three transaction types (a, b, c) lead to a change of base money or money: (a) an interaction between the central bank and a commercial bank changes the amount of base money; (b) an interaction between a commercial bank and a non-bank changes the amount of money; and (c) an interaction between the central bank and a non-bank changes either the amount of base money or the amount of money. Then, in subsections 4.4.1.2 to 4.4.1.4, I will provide an example of each of those three types (a, b, c). In two of those examples, the description is based on T-accounts and thus quite detailed, for two reasons. First, those T-accounts will be used again for further analysis (see chapter 5). Second, to the author's knowledge, there are no sources available that describe all these transaction types. As these transactions are relevant to understanding the further analysis, it is necessary to describe them here.

[68] Moreover, empirical data (see Figure 5) shows that in recent decades the money supply has always increased, and section 5.2 will even show that an increasing money supply may be an inherent feature of our capitalist economies. Thus, I consider understanding money creation more important than its opposite: destruction.

4.4.1.1 *The basic mechanism of money creation*

This subsection will proceed in two steps. As a first step, I provide an example of the most common means of money creation: the provision of credit by a commercial bank. As a second step, I compare this example with the payment transactions provided in section 4.3 and based on that, I show that three transaction types overall can create money.

The major means of money creation—the creation of deposits via credit is best understood by T-accounts. I would like to illustrate that by an example based on McLeay et al. (2014, pp. 15-16). **Figure 8** shows the balance sheets of a commercial bank (UBS) and a non-bank (Mr Kaldor). At the top, balance sheet (I) shows both parties' assets and liabilities before the credit provision. Mr Kaldor then asks UBS for credit and below, balance sheet (II) shows the changes (grey background).

UBS balance sheet (I)

Assets		Liabilities	
Cash	50	Equity	50
Other assets	1000	Other liabilities	1000
Total	1050	Total	1050

Mr Kaldor's balance sheet (I)

Assets		Liabilities	
Cash	2	Equity	6
Other assets	4		
Total	6	Total	6

UBS balance sheet (II)

Assets		Liabilities	
Cash	50	Equity	50
Other assets	1000	Other liabilities	1000
Credit to Mr Kaldor**	4	bank account* (Kaldor)	4
Total	1054	Total	1054

Mr Kaldor's balance sheet (II)

Assets		Liabilities	
Cash	2	Equity	6
Other assets	4		
bank account* (Kaldor)	4	Credit from UBS**	4
Total	10	Total	10

Figure 8: Money creation via bank credit: T-accounts

Notes: Own figure, based on McLeay et al., 2014, pp. 15-16

In this example, Mr Kaldor asks for a credit sum of CHF 4 (or whatever unit) for one year, which then is provided by UBS, resulting in two transactions. First, UBS provides the negotiated sum. In this example, Mr Kaldor has no bank account, therefore UBS creates a new one and gives it the balance of 4 (*). For UBS, Kaldor's bank account is a liability. For Mr Kaldor, his bank account is a receivable. Second, Mr Kaldor must repay the credit. Hence, UBS records the credit as a receivable (**) and Mr Kaldor records it as a liability (**) on their respective balance sheets. Overall, for both parties, the credit provision leads only to a balance extension without any direct impact on their respective income statements. The transactions do not impact the income statements until Mr Kaldor pays interest. Interestingly, both transactions (* and **) are credit-debt relations, i.e. a credit towards the other party. The difference is only that a bank account can be used as a means of payment whereas the other credit cannot. This

example has now clearly shown how money is created via the specific means of credit provision. The next step is to describe the general mechanism of money creation.

Money (M) and base money (H) are created by financial or real-economic transactions between subjects of different sectors (central bank, commercial bank sector, and non-bank-sector) (see **Figure 10**). I establish this point by comparing the above credit provision example to different payment transactions (see **Figure 9**), which I briefly mentioned in section 4.3. For this reason, I shall take a closer look at those payment transactions and show them in the complete form of T-accounts (see **Figure 9**).

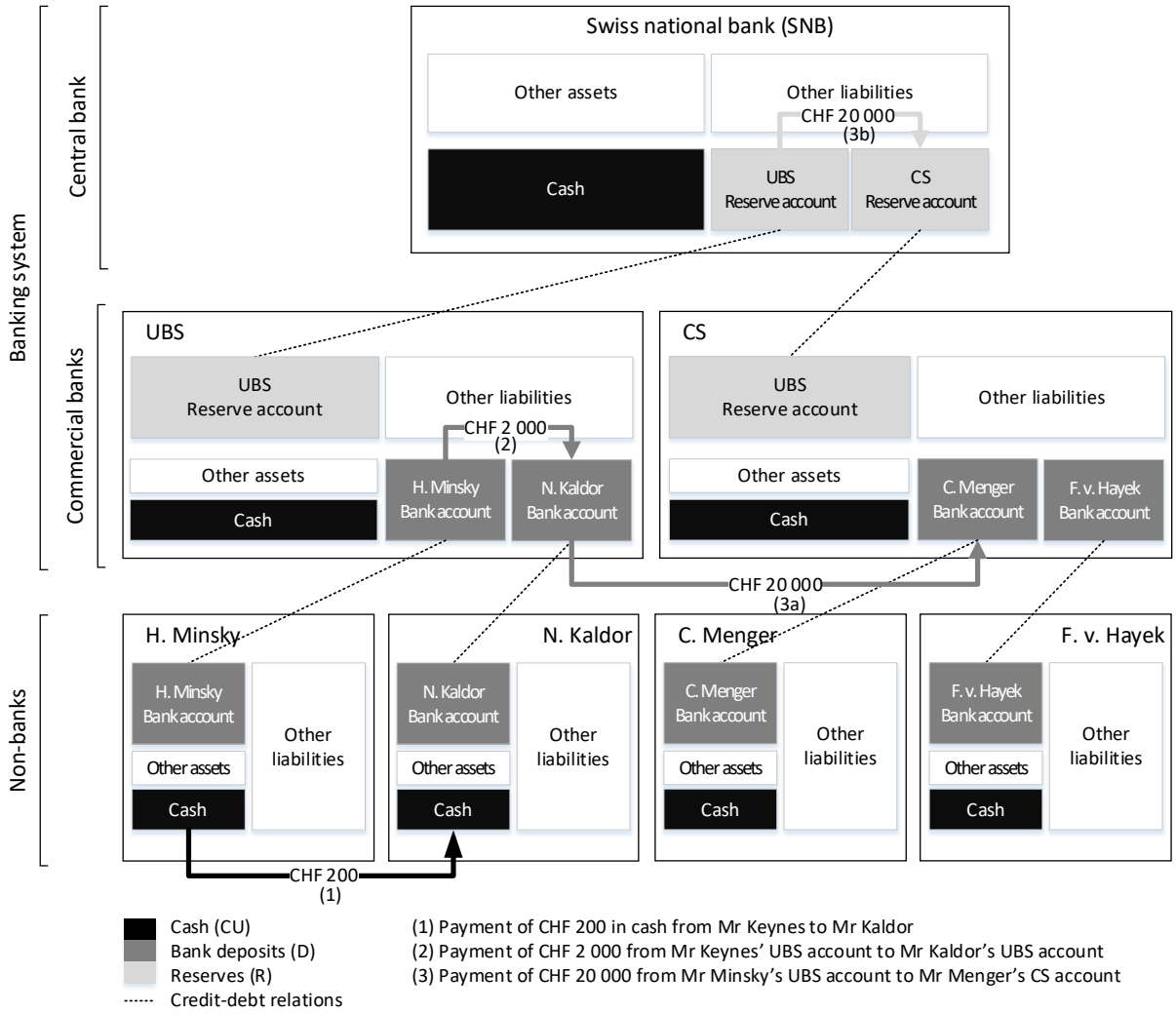

Figure 9: The payment system: T-accounts

Notes: Own figure, based on Ryan-Collins et al. (2014, p. 14; 58-69); McLeay, Radia, & Ryland, (2014, pp. 15-21), and Rossi (2007, pp. 70-72)

In transaction (1), Mr Minsky pays Mr Kaldor CHF 200 in cash. The amount of cash in the payment system remains stable, but the distribution has changed. In transaction (2), the payment of CHF 2000 from Mr Minsky's to Mr Kaldor's bank account is simi-

lar. The amount of deposits is stable but the distribution has changed too. Transaction (3) is slightly different. The transfer of CHF 20,000 from Mr Kaldor's UBS account to Mr Menger's CS account leads to two changes: the distribution of bank deposits (3a) and the distribution of reserves (3b) changes—but again, the amounts of both monies remain stable. The difference in these three transactions to the one described in the paragraph above is simple. In these three examples, all transactions are carried out between subjects of the same economic sector: the transactions are between two non-banks or between two commercial banks. In contrast, the money-creating transaction above took place between a non-bank and a commercial bank. Hence, the mechanism works as follows: transactions between subjects of different sectors create money or base money, whereas transactions within the same sector only change the distribution of already existing money or base money within the concerned sector (see also Grass and Stützel, 1988, pp. 261-265). **Figure 10** summarises these findings in a matrix. Both axes show the three subject categories and the cells show all possible combinations—all grey cells indicate doubled combinations.

Transaction between	**Central bank**	**Commercial bank**	**Non-bank public**
Central bank	=	(a) ΔH	(c) ΔH (R) or ΔM (CU)
Commercial bank	ΔH	=	(b) ΔM
Non-bank public	ΔH + ΔM	ΔM	=

Figure 10: Money creation: transactions among banking subject categories
Notes: Own figure, partly based on Grass & Stützel (1988, pp. 261-265) and Rossi (2007, pp.64-88)

Overall, three transaction types can lead to a change of base money (H) or money (M) (similar to that stated in Grass and Stützel, 1988, pp. 261-265; Rossi, 2007, pp. 64-88). (a) An interaction between the central bank and a commercial bank changes the amount of base money. (b) An interaction between a commercial bank and a non-bank changes the amount of money—as shown in the credit provision example above. (c) An interaction between the central bank and a non-bank changes both, the amount of base money and the amount of money. In all cases, it makes no difference whether the transaction is a financial or real-economic transaction if money or base money is used as a means of payment. The following three sections describe these three transaction types in detail, offering a basic understanding of money creation via transactions between central banks, commercial banks, and non-banks. For each transaction type, I explain one example: Subsection 4.4.1.2 shows a transaction of type a, subsection 4.4.1.3 one of type b, and subsection 4.4.1.4 shows one of type c.

4.4.1.2 *Interaction of central bank and commercial banks (type a)*

In normal times[69], most central banks implement their monetary policy mainly through repo-transactions[70]. The central bank uses repo-transactions as the main instrument to carry out its monetary policy. On the other hand, commercial banks use this transaction to meet their liquidity requirements. If the commercial bank has too little in reserves, it can ask the central bank for a repo-credit. The result of such a repo-transaction is a balance sheet extension in the case of the central bank, and an asset swap in the case of the concerned commercial bank. Furthermore, the supply of base money (H) rises.

But, how does that work in detail? And how are the monetary aggregates affected? **Figure 11** answers these significant questions by showing T-accounts before and after the repo-transaction (this example is partly based on Rossi (2007, p. 83)). On the left side, the figure shows the simplified balance sheets of the SNB before (I) and after (II) the transaction. On the right side, the figure shows the same for UBS. The changing accounts are highlighted in grey.

Central bank balance sheet (I)

Assets		Liabilities	
Gold	100	Equity	100
Other assets	900	Notes in circulation	100
		Other liabilities	800
Total	1000	Total	1000

Commercial bank's balance sheet (I)

Assets		Liabilities	
Cash	10	Equity	10
Securities	20	Other liabilities	20
Total	30	Total	30

Central bank balance sheet (II)

Assets		Liabilities	
Gold	100	Equity	100
Other assets	900	Notes in circulation	100
		Other liabilities	800
Securities	10	UBS' reserves	10
Total	1010	Total	1010

Commercial bank's balance sheet (II)

Assets		Liabilities	
Cash	10	Equity	10
Securities	10	Other liabilities	20
Reserves	10		
Total	30	Total	30

Figure 11: Base money creation via repo credit: T-accounts

Notes: Own figure, partly based on Ryan-Collins et al., 2014, pp. 78-83; Rossi, 2007, pp.64-88

On the left side, the central bank accounts for the purchased securities as an asset, whereas the newly created reserve account of the commercial bank is treated as a liability. This liability is similar to deposits that non-banks can hold at commercial banks. So, for the central bank, the transaction leads to a balance sheet extension. On the right

[69] Normal times means for Western central banks (e.g. FED, BoE, SNB) prior to the GFC.

[70] A repurchase (repo) agreement is a combination of a purchase of securities and a credit. The central bank buys some securities from a commercial bank for a limited period and pays the corresponding amount of money in the form of reserves. During the arranged period, the commercial bank has to pay interest on the provision of reserves. At the end of the period, the commercial bank repurchases the securities. So, a repo-transaction is a form of credit provision, in which the collateral (securities) becomes the property of the credit provider (central bank) (Ryan-Collins et al., 2014, pp. 78-79).

side, the commercial bank accounts for the sale of securities as an asset swap. Instead of securities, the commercial bank now holds reserves. For the commercial bank, these reserves are a receivable. Thereby, reserves are in fact liquidity reserves. I have now made clear how repo-transactions work. But how are the monetary aggregates affected? Before this transaction, there was only cash in the balance sheets. The commercial bank had cash as an asset (10) and the central bank accounted for notes in circulation as liabilities (100)[71]. Both of those monetary aggregates were not affected by the transaction. But via the repo-transaction, the commercial bank now holds a reserve account as a receivable and the central bank accounts for the same as a liability. The transaction has therefore created new base money in the form of central bank reserves. As it is now clear how repo-transactions between a central bank and a commercial bank work, the next subsection investigates the most important transaction type between commercial banks and the non-bank public: credit provision.

4.4.1.3 *Interaction of commercial banks and the non-bank public (type b)*

In most Western economies, the bulk of new money is created via bank credit. In the case of granting a credit, a commercial bank provides an amount of money for a limited period. The result of such credit provision is a balance sheet extension in the case of the commercial banks as well as in the case of the non-bank public. And of course, the money supply (M) rises.

Figure 12 depicts this in more detail by showing T-accounts before and after the credit transaction (Again, the example is borrowed from a similar example by Ryan-Collins et al. (2014, pp. 62-63)). On the left side, the figure shows the simplified balance sheets of the commercial bank before (I) and after (II) the transaction. On the right side, it shows the same for a non-bank. The concerned accounts are highlighted in grey.

[71] To understand why notes in circulation are accounted for as liabilities, it is necessary to have a look at the emergence of banknotes. In mediaeval times, gold coins were used as money. Because nobody wanted to store all his gold at home, people deposited it in banks. For example, if Mr Minsky had deposited all his gold (100) at the medieval-period SNB, he would have received an "I owe you" (IOU) in the form of a banknote. Until today, central banks recognise gold as an asset and banknotes in circulation as liabilities. (For further details on the history of fractional reserve banking, see e.g. Ryan-Collins et al. (2014) or Binswanger (2015a).

Commercial bank's balance sheet (I)

Assets		Liabilities	
Cash	10	Equity	10
Securities	10	Other liabilities	20
Reserves	10		
Total	30	Total	30

Non-bank's balance sheet (I)

Assets		Liabilities	
Cash	10	Equity	10
Other assets	10	Other liabilities	10
Total	20	Total	20

Commercial bank's balance sheet (II)

Assets		Liabilities	
Cash	10	Equity	10
Securities	10	Other liabilities	20
Reserves	10		
Nestlé's credit**	10	Nestlé's deposit*	10
Total	40	Total	40

Non-bank's balance sheet (II)

Assets		Liabilities	
Cash	10	Equity	10
Other assets	10	Other liabilities	10
Deposit at UBS*	10	Credit from UBS**	10
Total	30	Total	30

Figure 12: Money creation via bank credit: T-accounts

Notes: Own figure, partly based on Ryan-Collins et al. (2014, pp. 62-63) and Rossi (2007, pp. 22-23)

In this example, the non-bank asks for a credit sum of 10 for one year. Overall, for both parties, the credit provision leads only to a balance sheet extension without any direct impact on the parties' respective income statements. The transactions do not impact the income statements until the non-bank pays interest. Again, both transactions (* and **) are a credit-debt relation. The only difference is that a bank account can be used as a means of payment and is exchangeable for cash whereas the other credit cannot be and is not. But how are the monetary aggregates affected? Before this transaction, there were only reserves and cash in the balance sheets. The commercial bank had cash (10) and reserves (10). The non-bank had cash (10). Both of those monetary aggregates were not affected by the credit provision. But through the transaction above, the non-bank now holds a bank account as a receivable and the commercial bank records the same as a liability. Therefore, the transaction created new money in the form of a bank deposit. I will now proceed in another step to show the theoretically possible transaction types between a central bank and the non-bank public.

4.4.1.4 *Interaction of central bank and the non-bank public (type c)*

Most Western central banks do not directly interact with non-banks. Nevertheless, I briefly explain this third transaction type to present a complete picture. As I will show, such a transaction would create new base money, which the non-bank sector could use as a means of payment towards commercial banks or to demand cash from the SNB.

Figure 13 shows the corresponding T-accounts. As such transactions traditionally do not take place in modern banking systems, they are not described in the popular sources. The example here is thus based on the knowledge of how such transactions[72] would work in T-account logic. This transaction is very similar to credit provision by commercial banks (see 4.4.1.3). Here too, for both parties it leads to a balance sheet extension.

Central bank's balance sheet (I)

Assets		Liabilities	
Gold	100	Equity	100
Other assets	900	Notes in circulation	100
		Other liabilities	800
Total	1000	Total	1000

Non-bank's balance sheet (I)

Assets		Liabilities	
Cash	10	Equity	10
Securities	10	Other liabilities	10
Total	20	Total	20

Central bank's balance sheet (II)

Assets		Liabilities	
Gold	100	Equity	100
Other assets	900	Notes in circulation	100
		Other liabilities	800
Credit to non-bank	10	Non-bank's reserves	10
Total	1010	Total	1010

Non-bank's balance sheet (II)

Assets		Liabilities	
Cash	10	Equity	10
Securities	10	Other liabilities	10
Reserves at central bank	10	Credit from Central bank	10
Total	30	Total	30

Figure 13: Money creation via central bank credit: T-accounts

Notes: Own figure

How are the monetary aggregates affected here? Before the transaction (left side), there was only cash in the balance sheets. The non-bank recorded cash (10) as an asset whereas the central bank recorded all banknotes in circulation (100) as a liability. Both entries were not affected by the credit provision. But through the transaction above, the non-bank now holds a reserve account as a receivable and the central bank records the same as a liability (right side). Therefore, the transaction created new base money. The non-bank is now able to use the new base money as a means of payment towards commercial banks or to demand cash from the SNB. By showing this third transaction type, I have explained all transaction types (a, b, c) that create book money in the form of deposits (D) or reserves (R). In the proceeding step, I will show the same for cash creation.

[72] Although those transactions do not actually take place, they are not only theoretically but also practically absolutely plausible. In recent times, this perspective received attention as the "Reserves for All" (RFA) proposal. According to an analysis of Niepelt (2018), such an approach could well be one to central banking in future. According to this expert, the scepticism so often expressed about that approach is not very convincing, as he could demonstrate that this new approach could be implemented without having any (negatively) disruptive effects on the macroeconomy.

4.4.2 The creation of cash

Subsection 4.4.1 showed how the process of deposit and reserve creation works. In this subsection, I will elaborate on how its counterpart—the creation of cash—works. I will first elaborate on how cash can be brought into circulation, and second conclude what the differences between cash and deposits are.

Cash[73] is brought into circulation only by central banks interacting with another sector (commercial bank sector or non-bank sector). The process is similar to the one described in subsection 4.4.1.1. Hence, **Figure 14** below is identical to **Figure 10** in subsection 4.4.1.1. As explained, the money creation mechanism is simple. Only transactions between subjects of different categories result in money or base money creation, whereas transactions within a subject category only change the distribution of money. **Figure 14** summarises this in a matrix.

Transaction between	Central bank	Commercial bank	Non-bank public
Central bank	=	(a) ΔH	(c) ΔH (R) or ΔM (CU)
Commercial bank	ΔH	=	(b) ΔM
Non-bank public	ΔH + ΔM	ΔM	=

Figure 14: Money creation: Transactions among banking subject categories
Notes: Own figure, partly based on Grass & Stützel (1988, pp. 261-265) and Rossi (2007, pp.64-88)

Also, only transactions between different sectors can change the amount of cash in circulation. Whether the amount of money (M) or base money (H) also changes depends on the specific case. I will briefly explain that by way of concrete examples for all three transaction types (a), (b), and (c) (see **Figure 14**). Since only the central bank can create cash, the cash creation process always begins there. Further, as those processes will not be of particular interest in chapter 5, I shall only explain them in a very brief way.

Transaction (a) is an interaction between the central bank and a commercial bank. Its outcome neither changes the sum of base money nor extends balance sheets. There are two possible transaction types. The central bank can purchase assets from a commercial bank and pay in cash, thus increasing the amount of cash and in turn the

[73] In most of my investigation, I do not differentiate between coins and banknotes. Yet, historically as well as today, there are differences. In earlier days, coins were minted by the government whereas private banks produced banknotes. In many countries, this is still true today. For instance, in the UK as well as in Switzerland, coins are minted by the government (by the Royal Mint in the UK and by Swissmint in Switzerland), whereas it is the central bank that produces banknotes. However, in both cases, the central bank places the two types of physical money in circulation (see Macfarlane, Ryan-Collins, Bjerg, Nielsen & McCann, 2017).

amount of base money. Alternatively, a commercial bank could simply demand reserves (R) be changed into cash (see **Figure 15**).

Central bank's balance sheet (I)

Assets		Liabilities	
Gold	100	Notes in circulation	100
Other assets	900	Equity	100
		Other liabilities	800
Securities	10	Non-bank's reserves	10
Total	1010	Total	1010

Non-bank's balance sheet (I)

Assets		Liabilities	
Cash	10	Equity	10
Securities	10	Other liabilities	20
Reserves	10		
Total	30	Total	30

Central bank's balance sheet (II)

Assets		Liabilities	
Gold	100	Notes in circulation	105
Other assets	900	Equity	100
		Other liabilities	800
Securities	10	Non-bank's reserves	5
Total	1010	Total	1010

Non-bank's balance sheet (II)

Assets		Liabilities	
Cash	15	Equity	10
Securities	10	Other liabilities	20
Reserves	5		
Total	30	Total	30

Figure 15: Cash creation via swap of reserves to cash: T-accounts

Notes: Own figure, partly based on Ryan-Collins et al. (2014, pp. 71-72), Rossi (2007, pp. 86-87)

In this second option, the amount of cash increases but the amount of base money remains stable because base money is simply the sum of cash and reserves. In both cases, the central bank needs to have printed banknotes stored, then use them for payment, and at this time recognise them as a liability[74] (see **Figure 15**). The outcome of such a transaction is very similar for both parties: the transaction leads to an asset swap.

Transaction (b) is an interaction between a commercial bank and a non-bank. Here too, two transaction types are possible. In the first, the commercial bank uses the newly received cash to purchase assets from a non-bank, thus changing the amount of cash as well as the amount of money held by the non-banks. In the second, a non-bank may simply want to swap deposits into cash, causing the amount of cash to increase, while the amount of money remains the same.

The last case (c) is a direct interaction between the central bank and a non-bank. Here too, at least theoretically, there are two possible transaction types. In the first, the central bank purchases assets by cash, changing the amount of cash as well as the amount of money. In the second, the central bank provides reserves to a non-bank, which could demand the reserves be changed into cash. In this second instance, the amount of cash would increase, the amount of base money would decrease, and the amount of money would increase.

[74] It must be stressed that this kind of liability is never due, because banknotes are no longer convertible into gold. Hence, the central bank can simply create new base money by purchasing assets from commercial banks. This point will be of particular interest in section 5.4.

In sum, the amount of cash circulating in the public may be changed by the central bank, either directly or indirectly. Directly means direct central bank interaction with non-banks; indirectly means central bank interaction with commercial banks, which interact with the public. In principle, there are three cases that lead to an increase in the amount of cash held by the public. First, the central bank can purchase assets from non-banks and pay cash. Second, a commercial bank can ask the central bank for cash and then use the cash for purchasing assets from non-banks. Third, a non-bank can ask a commercial bank for cash, which then has to ask the central bank for this amount of cash.

Cash differs from deposits in several aspects. In contrast to bank deposits, only governmental authorities (e.g. central bank, treasury) are allowed to issue coins and banknotes. In most economies, they produce cash at very low costs and sell it at face value to other subjects (Ryan-Collins et al, 2014, p. 74). Cash differs from deposits in further aspects as well. Compared to deposits, cash is more liquid, less risky and has no return; and it is legal tender and not a credit-debt relation (Ryan-Collins et al., 2014, p. 60; Dembinski, 2009, pp. 29-30). Historically, also banknotes were liabilities (Ryan-Collins et al., 2014, pp. 37-40). Today, recording banknotes in circulation in central bank balance sheets is a relic of these times. Since an entity can no longer ask the central bank to exchange banknotes for the corresponding amount of gold, these book entries are de facto no longer a liability. The only thing one could receive from the central bank in exchange for a banknote would be another banknote. Thus, for governmental authorities, cash has more in common with equity than with liabilities[75]. Another difference is a legal one. In most modern economies, cash is the only legal tender and only governmental authorities are allowed to produce it (Ryan-Collins et al., 2014, p. 15, 67). As a result, cash is more liquid than deposits (p. 60) and the public may therefore have more trust in cash than in deposits.

[75] This point will be analysed, as it is of particular interest in section 5.4.

4.4.3 The entire money creation process in practice

In subsections 4.4.1 and 4.4.2, I explored the accounting mechanics of money production, as part of the foundation for the further investigation in chapter 5. This subsection combines all this information and describes how the entire process works in practice. As I will show below, the production of deposits is restricted by liquidity and capital requirements. However, although central banks could theoretically steer deposit creation, in practice they do not. Consequently, money production is predominantly steered and limited by market forces.

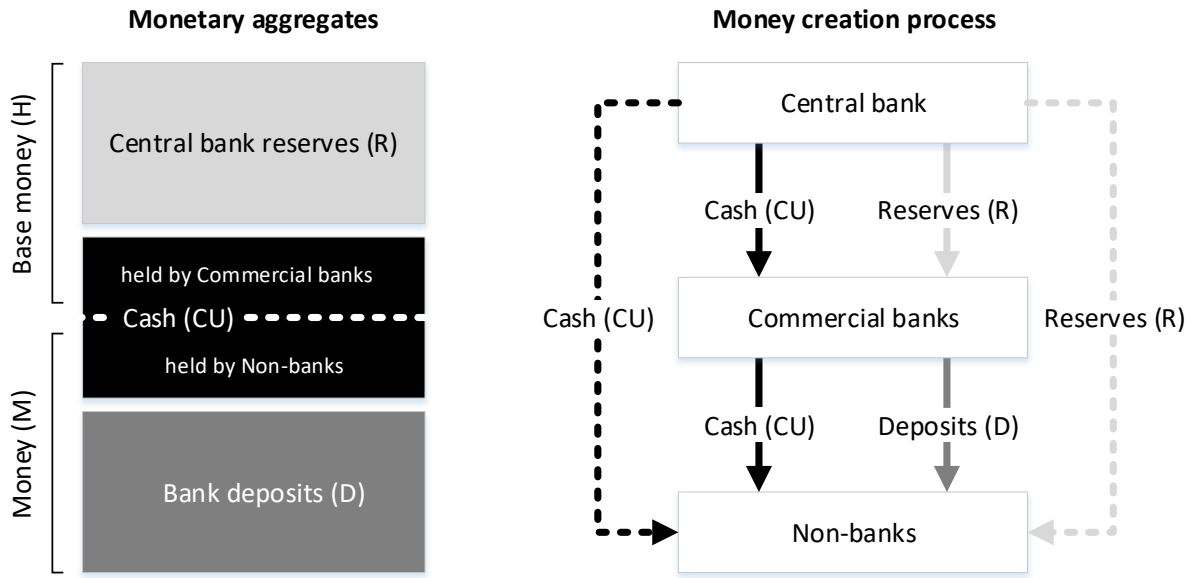

Figure 16: The money creation process and monetary aggregates

Notes: Own figure. The dotted lines represent the direct way of providing cash or deposits. In most modern economies this means plays only a limited and insignificant role.

To start with, **Figure 16** again summarises the money production process. The left side of the figure shows the different monetary aggregates. The right side shows the whole money creation process. In principle, it is possible for the central bank to directly provide money to the public (dotted lines). The central bank could either provide credit or buy assets from the public and pay in cash or reserves. In the reality of modern economies, these two means play only a limited role or none at all. Thus, the vertical lines in the middle of **Figure 16** show the more relevant part of the money creation process. As illustrated, there are two steps to money creation. First, the central bank provides base money by interacting with commercial banks and second, commercial banks provide money by interacting with the non-banks. In both steps, money can be created by buying assets or providing credit. In fact, today most of our money is created by means

of credit provision. Understanding exactly these processes is necessary for following the investigation in chapter 5. The analysis there will show that the specific mechanism that brings money into circulation plays a crucial role regarding its economic consequences and whether it is 'neutral' or not. I have thus far recounted the relevant accounting theory. However, there are still open questions in reality, waiting to be answered. How does money production work? Who defines the amount of money that is brought into circulation? I proceed to provide answers to both these questions in the following.

The production of deposits is restricted by liquidity and capital requirements. In most fractional reserve systems, the commercial banks are required by law to hold a minimum of reserves as a percentage of their outstanding deposits (Friedman, 2019, p. 3). Liquidity requirements define a minimum percentage of cash or reserves that banks must hold relative to their short-term liabilities. By that, government authorities want to assure that banks have sufficient liquidity[76]. In other words, if the bank does not have this required amount of reserves, there is a strong incentive to stop providing credit or to obtain more reserves from the central bank. Moreover, besides the regulatory liquidity requirement in place, there is also an economic need to have sufficient reserves. Commercial banks need reserves as a supply of currency to meet customer demand for cash, and commercial banks need reserves to effect payments among themselves, which are at least partly made by transferring reserves (Friedman, 2019, p. 3). In addition to liquidity requirements, there are also capital requirements that restrict the commercial banks' deposit creation. Capital requirements (e.g. BASEL III[77]) define a maximal leverage ratio[78]. If the maximum is reached, the bank must halt further money creation or reduce leverage. The only way to reduce leverage then is to obtain more equity by issuing shares or retaining profits. Through this explanation, it is clear that particularly the level of indebtedness (leverage) of commercial banks is crucial to understanding money creation. This is even more interesting as indebtedness is a key topic in the further analysis in this paper (see section 5.3). One of the main

[76] A bank can only become illiquid in a money that it is not able to produce itself. That is cash, reserves, or foreign currencies. Cash is needed if non-banks ask to swap their deposits for cash. Reserves are needed for interbank clearing. The less cash non-banks want to hold the less cash is needed. The fewer commercial banks there are and the bigger those commercial banks are, the less interbank clearing transactions are needed and therefore the less reserves are needed.

[77] BASEL III is one of the Basel Accords (Basel I, Basel II, Basel III) issued by the Basel Committee on Banking Supervision (BCBS). The Basel Accords are recommendations for regulation of the banking industry, e.g. by means of capital requirements. They are called the Basel Accords as the BCBS maintains its secretariat, or administrative office, at the Bank for International Settlements (BIS) in Basel, Switzerland.

[78] The leverage ratio is a measure of debt capital. For more details on that see section 5.3.

insights will be that in a fractional reserve system, indebtedness is an inherent element of all money creation. However, back to the basic mechanism of money provision and the legal restriction for commercial banks. As mentioned, there are both legal liquidity as well as legal capital requirements commercial banks must meet. Hence, one could argue that theoretically, monetary authorities could use those legal requirements to steer money supply.

However, although central banks could theoretically steer deposit creation, in practice they do not. In most contemporary systems, central banks no longer aim to achieve their goals (low inflation, real output close to potential) by controlling the quantity of money supply, but rather by controlling the short-term interest rates (Bordo, 2019, p. 1-5; Friedman, 2019, p.1-2). Thus, most central banks target inflation by steering interest rates (McLeay et al., 2014, pp. 20-21). Based on the fact that there are legal capital and liquidity constraints, typical textbooks describe the actual amount of money supply (M) as the product of the amount of reserves and the money multiplier (p. 21). In those descriptions, base money (H) is the restrictive element that determines how much money will be brought into circulation. However, central banks do not typically choose an amount of reserves to steer the interest rates and money (M) (p. 21). Rather, they only set the short-term interest rates (p. 21). A recent study provided empirical evidence that the process is the other way around: the demand for base money is a consequence, not the cause, of commercial banks making loans (Deleidi & Fontana, 2019). A theoretical explanation for this may be that central banks do not want to risk a bank run. In principle, central banks could control the amount of money by refusing to provide more reserves. But this would increase the danger of a bank run. Thus, they do not; they simply provide the demanded reserves, as data analysed by Deleidi and Fontana (2019) suggest. Yet, if it is not the central bank, then who decides how much money should be placed into circulation?

Money production is steered and limited by market forces. Commercial banks themselves cannot lend without considering the profitability and risk of their lending. Lacking profitability or default of some of their loans would put them at risk of being unable to cover their operating costs. In such a case, a commercial bank would risk that more and more central bank reserves would have to be transferred to other commercial banks, and that this bank at some point would become illiquid in terms of reserves. The non-bank public (households and companies) have a similar constraint. Companies only take out loans if those loans can be employed profitably. The same is partly true for households. Thus, monetary expansion needs both parties, the commer-

cial banks as well as the receiving non-banks, to be willing to grant and to take out loans. In other words, no party can carry out money-creating transactions without the cooperation of the other party. However, as most money is created by credit contracts, most of it automatically has an expiration date—the settlement date. For an increasing amount of deposits, it is therefore necessary that in a specific moment there must be more new credit contracts agreed than old ones expiring. (McLeay et al., 2014, pp. 17-20; Rossi, 2007, pp. 128-129)

Section 4.4 has shown in detail thus far how money creation[79] works. One general insight is that money creation is strongly connected to the leverage ratio (indebtedness) of commercial banks. Another significant fact is that the money supply is not deliberately steered by monetary authorities but is the result of market forces. This point too is further explored in the next chapter as a second key topic (see section 5.2). However, the main insight of this chapter is to understand how money creation generally works. The important question that remains to be answered is how money creation affects the economy. Chapter 3 has explained that today neoclassical mainstream economics assumes that money is 'neutral'. Is this true? Based on the accounting mechanics of money creation analysed above, it is now possible to answer these questions in the following chapter.

[79] As I mentioned in the beginning, in recent years there has been more money creation than destruction. Therefore, I did not address the money destruction process. Yet, destruction of money works in exactly the opposite way of its creation.

5 Is the Fractional Reserve System 'Neutral'?

In chapter 3, I argued that well-understood 'neutral money' must be 'neutral' among all individuals in pursuit of their individual life plans. In this chapter, I will demonstrate that the contemporary monetary system is not able to fulfil this requirement. On the contrary, the fractional reserve system inherently infringes this criterion. This conclusion will be derived by passing through the four sections of this chapter. Section 5.1 lays the groundwork for the analysis, by delivering an explanation of the operationalisation of 'neutrality of money'. As I argue in this initial section, minimum operationalisation of 'monetary neutrality' must at least entail that money should not have any inherent effects on (1) GDP growth or on (2) indebtedness, and (3) it should not have any inherent distributive effects either. These three requirements then provide the framework for the remaining three sections. Section 5.2 investigates the first requirement, and analyses whether money creation has an inherent effect on GDP growth. I will prove in that section that although there is no indication that the fractional reserve system itself has any inherent effects on GDP growth, there is a growth imperative caused by the general structure of capitalist economies. Section 5.3 looks at the second requirement: whether money production has inherent effects on indebtedness. The answer to this is clear. Money creation is always debt creation at the same time. This affects all sectors: the central bank sector, the commercial bank sector, and the non-bank sector. Finally, section 5.4 throws light upon the third requirement: whether money production has inherent distributive effects or not. The answer in this case is also clear. A fractional reserve system inherently redistributes income and wealth within the economy. Most of those insights are not new. They simply received scant attention in the economic mainstream during recent decades. This chapter's analyses are nevertheless new in two ways. First, to the knowledge of the author, there is no other source that investigates all of those effects on 'monetary neutrality' in such breadth. Second, all these effects on 'neutrality' will be elaborated not only empirically but also theoretically, based on accounting principles. Only by applying this theoretical lens, can one conclude that the effects at stake are inherent to the fractional reserve system.

5.1 Groundwork for the Analysis

This section lays the groundwork for the analysis of money creation. First, subsection 5.1.1 will elaborate on an operationalisation of the term 'monetary neutrality' and establish the scope of the investigation. Then subsection 5.1.2 will provide a technical base of fundamental accounting definitions for my investigation.

5.1.1 Operationalisation and scope

Although, 'monetary neutrality' is a qualitative term, it is necessary for this thesis to operationalise 'neutrality' in quantitative terms. In subsection 3.2.3, I pleaded the case that well-understood 'neutral money' must be 'neutral' among all individuals pursuing their individual life plans. This notion of 'neutrality' refocuses the term from being a purely economic one ('neutrality' towards the market) to one that is oriented towards individuals and the realisation of their life plans. Refocusing breaks down the boundaries of things that are measurable in quantitative terms. It widens the term's scope from only direct effects on (quantitative) economic variables to including direct and indirect (quantitative and qualitative) economic effects as well as effects on social conditions of life. However, operationalising the term in a quantitative way is necessary and sufficient for the purpose of this chapter. My aim is to answer whether the fractional reserve system is inherently 'neutral' or not and consequently not to identify all indirect effects money may cause that could violate the criteria of 'neutrality'. Rather, the idea is to identify the direct effects inherent to money that violate those criteria. As money is pure quantity (see Simmel (1907/2004, p. 390)), inherent direct effects of such a system must be quantitative effects, too. Hence, when I analyse here whether there are inherent effects, and given that it has simultaneously been established that money today is merely an accounting phenomenon, then it logically follows that those inherent effects in question must also be identified as accounting figures. Examples of effects generated by the monetary system that are frequently cited are changes in consumer prices or in exchange rates. Both take place in quantitative terms and are directly connected to the working of the monetary system. In contrast, qualitative aspects would most likely only be indirectly affected. Such indirect qualitative effects might be effects on the structure and dynamics of a society, on individual choice of life plans, on accessibility of the payment system, or on people's perception of the world. Whether the monetary system is 'neutral' or not regarding such effects could only be tested by qualitative empirical methods. Yet, la-

belling such indirect qualitative effects as inherent would be difficult. For instance, the question of whether the monetary system affects individuals' choice of their life plans—such as becoming either a teacher or an entrepreneur—would constitute such a qualitative question. This type of question is neither measurable in quantitative terms nor is its cause directly attributable to the monetary system. This point I have just made makes it clear that quantitative effects are what require analysis in the first place. Furthermore, if money is indeed already non-neutral only in terms of such direct quantitative effects, then my analysis would prove that 'non-neutrality' is not only a side-effect but is actually an inherent core of that system. Based on those considerations, I argue that limiting the scope of my analysis to such direct quantitative effects of money is sufficient. However, what quantitative measure would be adequate for that operationalisation?

Quantitative operationalisation of 'neutral money' demands that money not have any inherent effects on (1) GDP growth, on (2) GDP and wealth distribution, nor on (3) economic sectors' indebtedness. The operationalisation must be based on the requirement of 'neutral money' elaborated in subsection 3.2.3, which is that such 'neutrality' must comprise three elements: (1) Non-interference (no favouring or hindering) in regard to individuals' life plans, (2) equal unconditional access to the monetary system, and (3) equal unconditional security of the monetary system. The first element ensures that all individuals are free to choose their individual life plans. This could be deciding to either become a teacher or an entrepreneur, or to join market competition or to remain (at least to some degree) outside of it (self-limiters). Although this question entails qualitative aspects, it is nonetheless measurable in quantitative terms. If more people decide to spend their time in market competition this may lead to higher individual income of those people and may even lead to more GDP growth. Hence, in quantitative economic terms, such choices affect individual income and—on an aggregated level—GDP. My investigation and thus my chapter focus are based on my choice of an aggregated level. Therefore, the basic requirement of 'monetary neutrality' in regard to this first requirement would be that money have no inherent effects on GDP growth. 'Neutral money' must allow for all individuals, as well as for the society as a whole, to enter market competition or to remain to some degree outside of it. Hence, on the aggregate, this choice must be reflected by the fact that GDP growth or GDP decline is only affected by all individuals' free will and not by the inherent effects of the monetary system. If the current monetary system would inherently force or hinder GDP growth, this would clearly violate 'monetary neutrality'. Yet, there is a

second point tied to that: GDP distribution. Non-interference in people's life plans also means that the monetary system must be impartial in the sense that it should not favour some life plans over others. 'Neutral money' is money that is equally helpful for all kinds of life plans. Such a 'neutral' monetary system should not systematically favour e.g. the success of the real estate sector over the success of the agriculture sector. In economic terms, again this success would be measured in terms of income or GDP produced by the relevant sectors. So, if indeed the fractional reserve system would particularly favour the real estate sector and in so doing lead to higher incomes and GDP, this would violate the idea of 'neutrality'. Put in general economic terms, this means that the requirement in such case is that money not have any inherent effects on the distribution of income, neither via explicit (payments) nor via implicit wealth distribution (price changes). The second element, equal unconditional access to the monetary system, is clearly a qualitative and non-inherent element of a monetary system. As I have limited my analysis to the inherent effects of the monetary system, the question posed is whether access to the system such an inherent element is. Section 4.2 showed that in Europe, the most significant and well-researched monetary systems have been established in this chronological order (1) commodity money, (2) commodity-backed money, and eventually (3) the fractional reserve system. In all of those systems, access to the monetary system has not been significantly different, as the difference lies mainly in how money is created and backed, if it is, by a commodity or not (fiat component). Moreover, inherent to a monetary system are, as already set forth, the quantitative (accounting) aspects of such system. Thus, unconditional equal access to the system is clearly a qualitative and non-inherent element of a monetary system. Based on well-understood 'neutrality of money', the society's infrastructure must grant everybody unconditional access to the monetary system. However, as this is not an inherent element of a monetary system, it will not receive attention in this further analysis of inherent effects. Then, there is the third requirement: equal unconditional security of the monetary system. This third requirement means that every individual should equally benefit from a secure economic and monetary system that allows them to pursue their personal life plans. Stated negatively, insecurity and instability of the economic and monetary system, which in economic terms particularly endanger individuals' income and wealth, are to be avoided. As already argued in subsection 3.2.3, if one aims to have some macroeconomic variables that money should serve, then such macro variables should concentrate on 'security' rather than on 'growth'. A country's indebtedness could serve as a quantitative indicator for such security of the economy and the monetary system. Hence, 'monetary neutrality' that takes this idea of security

seriously, must be 'neutral' in regard to indebtedness of the economic sectors. Money that would systematically drive an economic sector or individuals into indebtedness, thus endangering them, whole business sectors or even the entire economy, would clearly violate this 'neutrality' requirement. Thus, the quantitative economic operationalisation of 'neutrality of money' is complete. In this narrow sense, the basic requirements for money to be 'neutral' are for it to (1) not have inherent effects on GDP growth, (2) not have inherent (direct and indirect) distributive effects, and (3) not have inherent effects on the indebtedness of economic sectors. It is important to bear in mind that the aim of this chapter is not to present the well-understood idea of 'monetary neutrality' but only its economic quantitative operationalisation.

My analysis of money production concentrates on the form of deposits (D) and its aggregated effects on the central bank, the commercial bank sector, and the non-bank sector in the case of a closed economy. All those simplifications help reduce complexity but still allow analysis of whether 'neutrality' is inherently violated or not. I have concentrated on the effects of deposit creation because deposits make up the major part of money, as previously stated. This simplification means that the whole money supply consists solely of credit-debt relations. Hence, the amount of money of the whole economy, in which banks are net-debtors and non-banks net-creditors, equals zero. Concentration on these sectors needs a bit more explanation. Most macroeconomic analyses distinguish among the public sector, the private sector, and the business sector. However, as money is produced among the central bank, commercial banks, and non-banks, my analysis is focussed on them as aggregate sectors. This makes the public, private, and business sectors part of what I call the non-bank sector. Yet, I do not consider these three sub-sectors in my analysis. As my analysis is based on accounting principles, all sectors are represented by aggregated balance sheets. In the interest of maintaining simplicity and uniformity, all sectors are represented as if they only consisted of corporations financed by share capital, bonds, and credit. This means that also the face value of all net receivables or net liabilities of the whole economy of shares and bonds equals zero. Thus, only a separate view of one of the three sectors would permit analysis of that single sector's capital structure. A last simplification I have made is limiting the analysis to a closed economy (excluding exchange rate and net exports)[80]. These three simplifications largely reduce complexity, but still permit assessing whether the requirements for 'neutrality' are met or not. This

[80] This last simplification is in line with other studies on which chapter 5 is based (e.g. H. Ch. Binswanger, 2012 and M. Binswanger, 2015b, 2009b).

chapter is dedicated to showing whether there are inherent effects on GDP, on indebtedness, or on wealth distribution. Nevertheless, section 6.2. still discusses the limitations of the analysis as a result of these simplifications. As my analysis continues to be based on balance sheets, the next subsection provides basic accounting definitions here.

5.1.2 Accounting definitions

Understanding how money creation affects different economic sectors requires differentiating between all possible transactions that can change the amount of money in an economy. Every transaction that changes the amount of money must be a swap of money for another economic object. **Figure 17** shows all object categories into which new money (bank deposits) can be exchanged, although I only refer to typical object types that are relevant for my analysis[81].

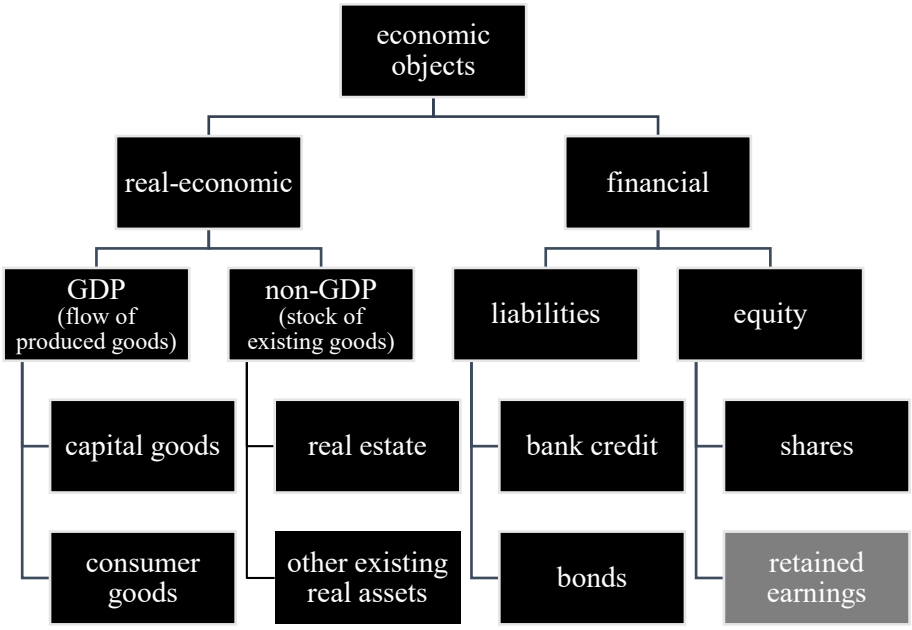

Figure 17: Economic object categories
Notes: Own figure

On the left side, real-economic objects include GDP objects and non-GDP objects. GDP objects are all objects that contribute to GDP[82]. These may be final goods for investment (capital goods, I) or consumption (consumer goods, C) purposes. Consumer goods obviously serve for consumption. In contrast, all capital goods together make

[81] For instance, I do not mention loans between non-banks. These are not relevant to my analysis. As such loans only exist within the non-bank sector, they cancel themselves out.
[82] The gross domestic product (GDP) measures all final goods and services produced in a period.

up the capital stock (K)[83], which is used to produce goods. Non-GDP objects are goods and services that already existed before the production period—this means goods and services that do not count for the GDP of the same period. This may be the purchase of an existing home, an existing plant, or already existing production equipment. On the right side, financial objects may be either liabilities or equity. Financial objects (financial capital) are legal claims on other economic objects. These financial objects (liabilities and equity) are normally used to finance the operating activities of a corporation.

From an economic point of view, the difference between liabilities and equity (shares) concerns particularly credit repayment and interest. In the case of liabilities, the borrower has to pay a set rate of interest regardless of his profits or losses and to repay the principal in the end. In the case of equity (shares), there is neither a repayment obligation nor must a fixed rate of interest be paid. Hence, in the case of equity, all those factors are determined internally, whereas in the case of liabilities, these factors are externally determined (Dembinski, 2009, pp. 16-30, 77-78). Another difference between liability and equity concerns the legal claim: shares represent ownership in the concerned corporation, whereas bonds (liability instruments) do not. In both categories, liabilities and equity, there are two relevant sub-categories (see again **Figure 17**). The first category, liabilities, can be divided into bank credit (e.g. consumer credit, mortgage credit) and bonds. Bank credit is a relationship between a specific bank and its customer, whereas bonds are freely tradable. In the case of bonds, the borrower can leave his borrower role at any time by selling the securities. The second category, equity, consists of shares and retained earnings. By issuing shares, a corporation is able to finance itself without having the obligation of repayment. Another form of self-financing is to retain profits and account for them as retained earnings in the balance sheet. Because this last form of financing a corporation is not a transaction type but simply the result of successful business, it is highlighted grey in the figure to mark this difference.

Another important issue for my accounting analysis is the difference between accounting for a single economic unit, a business sector, or the economy as a whole. This becomes especially obvious when it comes to defining liabilities and equity. For a single economic unit, the above-mentioned definition is sufficient. But does the definition work when applied to a business sector or even the whole economy? To answer that, **Figure 18** shows a simplified example of the whole macroeconomic balance

[83] $K = \sum_{k=1}^{n} I$

sheet. On the left side, there is an aggregation of all assets and liabilities, comprising the central bank's, all commercial banks', and all non-banks' assets and liabilities.

The macroeconomy's balance sheet (aggregated)

Assets		Liabilities	
Bonds	10	Bonds	10
Shares	10	Shares	10
Deposits	10	Deposits	10
Banknotes	10	Banknotes	10
Coins	5	Equity	100
Capital stock	95		
Total	130	Total	130

The macroeconomy's balance sheet (consolidated)

Assets		Liabilities	
Coins	5	Equity	100
Capital stock	95		
Total	100	Total	100

Figure 18: The macroeconomy's equity: T-accounts
Notes: Own figure, partly based on Grass & Stützel (1988, p. 10)

On the right side, the figure shows the same balance sheet, which is now consolidated. All debt-credit relations within the economy—including shares and bank deposits—have been eliminated. As it is now obvious, the equity of a closed economy consists of its capital stock and all coins in circulation[84]. In conclusion, accounting shows that in a closed economy, the total capital stock[85] is a good approximation of its equity. This approximation will become important when it comes to analysing leverage ratios (see section 5.3). Proceeding on this basis, it is now possible to investigate whether the fractional reserve system actually violates the requirements for 'monetary neutrality' or not. Note again that three quantitative requirements must be met. Money must not have any inherent effects on (1) GDP growth, or (2) economic sectors' indebtedness, and (3) it must not have any inherent distributive effects on them either. Section 5.2 investigates the first requirement that money should not have any inherent effects on GDP growth.

5.2 The General Dynamic: The GDP Growth Imperative

This section will show that, according to the models of H.C. Binswanger (2012, 2009a) and M. Binswanger (2015, 2009b), capitalist economies have an inherent growth imperative for both GDP and money supply. Section 5.2.1 starts by exploring H.C. Binswanger's growth spiral. Then, section 5.2.2 will explore the related but different growth imperative of M. Binswanger.

[84] Banknotes, as stated earlier, are generally accounted for as liabilities in the central bank's balance sheet. However, according to my considerations in subsection 5.3.1, this seems at least questionable.

[85] As mentioned earlier, capital (K) is made up of all net investments (I). By definition, consumption (C) is consumed and therefore not accumulated in K.

5.2.1 H.C. Binswanger's growth spiral

According to H.C. Binswanger (2012, 2009a), modern economic development must be understood as a growth spiral. The starting point of his model is that firms must make profits in aggregate for the economy to function. The reason for that is twofold: production must be financed in advance, and on an aggregate level, it only gets financed if there is the prospect of profit on an aggregate level. I would now like to explain these points in more detail. It is essential to note that production takes time. Firms must pay for their input factors (i.e. labour) when the production starts. Yet, they can only sell the products after production is completed. Thus, the firms require an advance, which is the firms' capital. In other words, the advance consists of borrowed capital and equity. Without this advance, there would be no investment, no market, and no economic growth as we know it. This is the first part of the story. The second part is that those advances require the prospect of profit. Capital is only invested in this risky production process if there is the prospect of profit as compensation for the risk. Firms expect a profit that not only covers the interest on their borrowed capital, but that also exceeds coverage of that expense, that is, a net profit. For the functioning of the economy in the aggregate, expected profits must be positive in the aggregate, too. This can only occur if profits are more likely than losses, which requires that in the aggregate the total of all firms' profits exceeds all their losses. Thus, according to C.H. Binswanger, in the aggregate, the functioning of the economy requires that firms make profit in the aggregate. (Binswanger, 2012, p. 4)

That firms make profit in the aggregate is only possible in an economy where there is constant growth of money supply and GDP. If one acknowledges that in the aggregate, all firms must make profit, then of course, the question arises of how that can at all be possible. The firms' aggregate profits are nothing other than the difference between aggregate earnings and costs. Yet, how is it possible that all market participants earn more than they spend, in the aggregate? This is where H.C. Binswanger's growth spiral comes into play (see **Figure 19**).

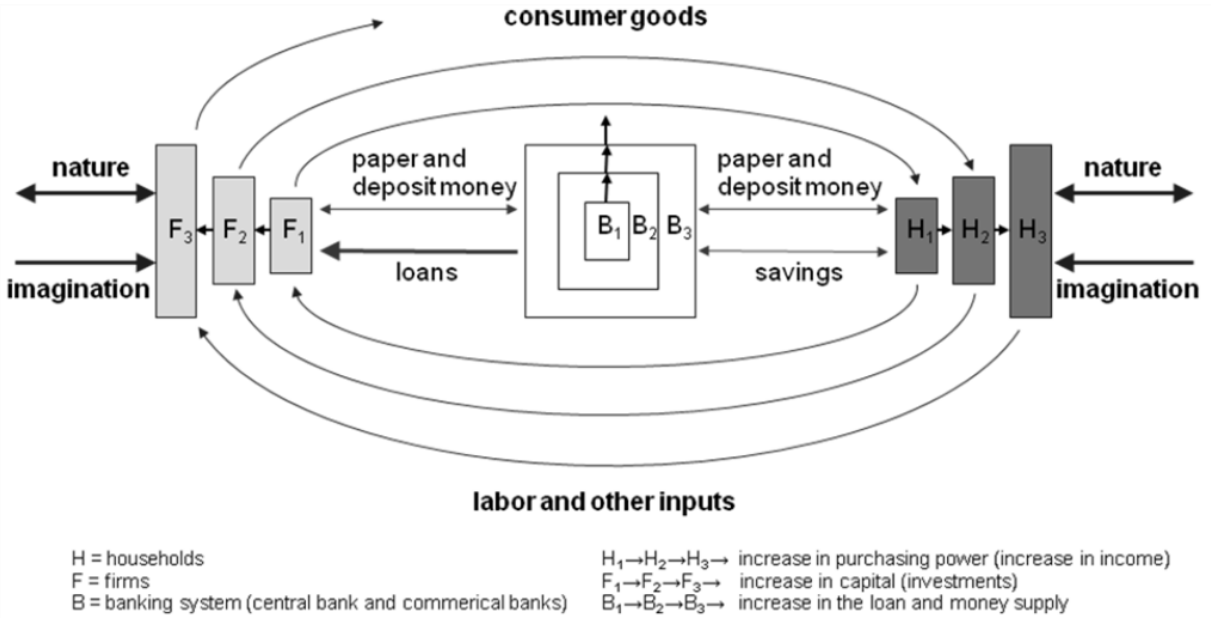

Figure 19: H.C. Binswanger's growth spiral
Notes: Binswanger, 2012, p. 5

According to H.C. Binswanger's model, the timing between production and consumption and the related monetary compensation is crucial. Bear in mind that because production takes time, all production must be financed in advance and the goods can only be sold later. That is to say: when firms begin their production process for a certain period, they finance it by money borrowed from banks, for instance. The borrowed money is used to pay for the labour and other production costs. This then constitutes households' income. Households immediately use their income to buy already existing products. Those products were produced by the firms in the previous period, and they were financed by the (smaller) advances of that previous period. Therefore, the firms can now sell their existing products and receive as earnings what they paid the households as production costs for the production. As long as firms expand their production of goods, and as long as this production is financed by an increasing stock of circulating credit money, all firms combined can make profits in the aggregate. The crucial element concerning timing is that the firms' earnings (on the goods of period X) increase whilst the production costs (of the goods of period X) become smaller. There are consequently two crucial requirements that allow for aggregate profits: a constant inflow of money (growth of money supply) and constant expansion of production (GDP growth). (Binswanger, 2012, pp. 4-5)

If there were no profit in the aggregate, the growth spiral would become a shrinking spiral. The profit and growth dynamics described above, however, are a growth imperative. Only a continuous monetary expansion allows for expansion of produc-

tion, which further increases households' incomes, in turn increasing demand, and finally generating firms' aggregate profits. The increase in demand is necessary to compensate firms for the supply already increased in the previous period. If production did not rise, demand would not either. If demand did not rise, then the firms' profit margin would decrease. If the profit margin dropped below the critical level, i.e. the level the investors expect as compensation for their risk, they would stop investing, and firms would have to slow their production expansion. Profit margin would further decrease, and the growth spiral would gradually become a shrinking spiral (see **Figure 20**).

Figure 20: H.C. Binswanger's growth imperative
Notes: Binswanger, 2012, p. 6

On the basis of this model, H.C. Binswanger propounds that there is a growth imperative built into the modern credit money-financed economic system. According to him, stability and zero growth are not possible in modern credit money economies. In his mathematical model, he identified the minimum growth rate necessary for the growth spiral to avoid not becoming a shrinking one. This model shows that this minimum growth rate is determined by the bank's interest rate on credit, the bank's leverage ratios, and the net return investors expect as compensation for their risk. According to H.C. Binswanger's model, a closed economy requires a growth rate of at least 1.8% p.a. in the long run. (Binswanger, 2009a, pp. 317-348)

As some features of H.C. Binswanger's model were criticised by Irmen (2011), more substantiation for the growth imperative is necessary. According to Irmen (2011, pp. 8-9), the reason an economy should achieve the derived path with steady growth at all remains unclear. Irmen further criticised that "the model does not allow for any adjustment of interest rates or other behavioral parameters, even if the econo-

my shrinks continuously." Hence, according to Irmen, the typical market adjustment processes cannot take effect in this model. This criticism is evidence of the need for further substantiation of the growth imperative argument. Thus subsection 5.2.2 presents an additional model for the growth imperative, namely M. Binswanger's growth imperative.

5.2.2 M. Binswanger's growth imperative

M. Binswanger (2009b) showed in his model that capital economies with fractional reserve systems do inherently have a GDP growth imperative. According to M. Binswanger's (2009b) model, capitalist fractional reserve systems do have an inherent GDP growth imperative. His model is built on four basic assumptions (p. 712). First, the firms' production expansion must be financed by credit expansion of banks. Second, production takes time: what is now in production is not up for sale until the next period. Third, the aggregate business sector must make a profit—otherwise the whole economy would turn into a downward spiral. Those three assumptions are not only identical to the assumption of H.C. Binswanger's model; they are also common in post-Keynesian economic approaches (see Godley & Lavoie, 2016), according to M. Binswanger (2009b, p. 712). Yet, the fourth assumption is not considered in H.C. Binswanger's model or in post-Keynesian approaches. This fourth aspect focuses on commercial banks' money creation and how that affects their balance sheets. It posits that if the commercial bank sector increases the money supply by increasing loans (on the asset side), the sector also must increase equity and reserves (on the liability side)[86]. In order to do that, a portion of the commercial bank sector's income must not be put back into circulation as money but must be retained to increase reserves. I will not explain the mathematics of the model, but I will briefly explain the assumptions M. Binswanger made on the parameters of the model for running the simulations. In the simulation, 50 percent of the firms' profits were reinvested and the rest paid out as dividends. In addition to that, there were additional investments financed by bank credits. 40 percent of bank loans were used for investment, the rest for paying wages. The bank loan interest rate was 10 percent, and the depreciation rate 10 percent too. Furthermore, 80 percent of bank profits were paid out as dividends, the rest retained as reserves. **Figure 21** shows the trend in the firm's profits depending on different growth rates.

[86] The necessity of that increase is due to the fact that otherwise leverage ratio would continuously increase, which would increase the risk of financial crises. To a certain degree, the increase in equity and reserves is even forced by capital adequacy ratios.

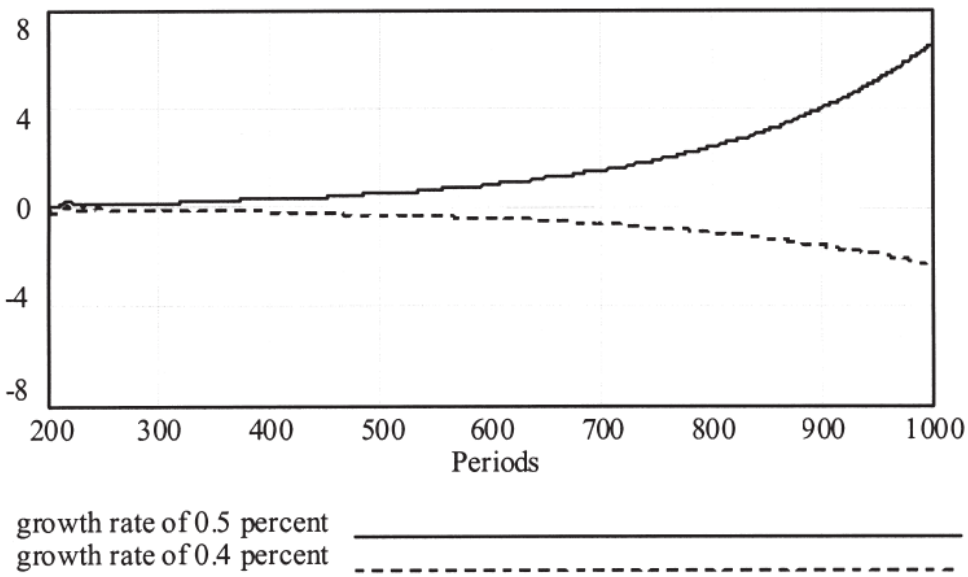

Figure 21: M. Binswanger's growth imperative
Notes: Binswanger, 2009b, p. 722

Based on this model, M. Binswanger calculated that the growth rate at which firms generate zero profit is 0.45 percent. As he stated, a nominal growth rate of 0.45 percent p.a. does not seem very high. Yet, he argues that in reality the required profits may be substantially higher than the interest rate to compensate investors for their risk-taking. In addition to that, also higher interest and depreciation rates as well as higher profit-retention ratios of banks would lead to a stronger growth imperative.

Although his model was criticised concerning some features by Gilányi (2015) and Johnson (2015), both agreed that there is such a growth imperative. Gilányi (2015) criticised M. Binswanger's model for not considering the variation of the money stock. Gilányi took this variation into account and concluded that the minimum growth rate would be 2 percent instead of M. Binswanger's 0.45 percent (2015, pp. 595-596). Johnson (2015), on the other hand, criticised M. Binswanger's model for not being stock-flow consistent, as common post-Keynesian models are. After reformulating M. Binswanger's model to render it stock-flow consistent, Johnson's (2015, p. 614) model identified the minimum growth rate to be 10 percent (sic!). M. Binswanger (2015b), in his rejoinder to Gilányi and Johnson, welcomed their criticism, and emphasised that all model modifications still come to the same fundamental conclusion: there is a growth imperative. Binswanger further emphasised that he agreed with Gilányi that there is not only a minimum GDP growth rate, but also a constantly growing money supply needed (p. 652). Binswanger further maintains that fully integrating the effects and requirements concerning the money stock would require

consideration of all processes of money creation and destruction as well as the related transactions (e.g. investment and housing expenditures) (p. 651). On the basis of the models of H.C. and M. Binswanger, it thus far seems clear that capitalist economies have an inherent growth imperative[87]. Moreover, this growth imperative requires a constantly growing money supply as well. Hence, according to those models, it is not the fractional reserve system that is non-neutral concerning GDP growth, it is rather the very structure of the capitalist economy. The fractional reserve system itself seems not to force growth: it only enables it. Furthermore, it is even a critical requirement that there be a continuous monetary expansion. Nevertheless, as there is still a growth imperative, this violates the normative idea of 'neutrality'. The fact that the structure of capitalist economies inherently leads to a growth imperative yields two consequences for 'neutrality'. First, it exerts pressure on all those individuals who wish to remain outside of competition to some degree (i.e. the self-limiters) to enter competition. Even worse, at aggregate level, it forces society as whole to join in competition. This means that if every individual of a society would choose to be a self-limiter, this would automatically turn the whole economy into a disastrous shrinking spiral. Second, the growth imperative requires that the money supply constantly grow too. A constantly growing money supply then results in inherent effects on indebtedness and distribution of wealth, as the next two subsections will show. So far, this subsection has demonstrated that presuming money to be 'neutral', in the mainstream economics sense that changes in the money supply do not have any effects on GDP, is anything but legitimate. A constantly growing money supply is required instead to avoid a disastrous shrinking spiral. Seen in this manner, money is not 'neutral', as a set or even declining money supply, for example, would clearly have severe effects on GDP. The next section analyses the effects of money on indebtedness of economic sectors.

5.3 The Built-in Debt Machinery

A fractional reserve system is a huge debt machinery. As section 5.2 showed, capitalist economies require both, growth of GDP and growth of the money supply. Thus, my further analysis takes an ever-increasing money supply for granted. In this case, the growing money supply has the potential to increase indebtedness of all economic sectors. Below, I will show, primarily drawing on accounting methods, how sector for sector money creation affects indebtedness in that way. There

[87] A more detailed description of the history of and different arguments for and against the growth imperative can be found in Richters and Semoneit (2019).

are two reasons for this approach. First, as exploring the inherent effects is the aim of the analysis, those inherent effects must be proven by accounting methods. This is particularly obvious in the case of indebtedness, because indebtedness is always solely an accounting phenomenon. The second reason for the approach is that there are—to the knowledge of the author—scarcely any recent studies[88] on this topic available that could sufficiently prove those inherent effects. Hence, below, I will demonstrate solely by those accounting methods, how sector for sector money creation affects indebtedness. I perform, to this end, a separate analysis of all three sectors: the central bank sector, the commercial bank sector, and the non-bank sector. I will start with the central bank sector producing base money (H).

5.3.1 Growing money supply and the central bank's indebtedness

When a central bank issues reserves or banknotes, this increases its leverage ratio. Below, starting with **Figure 22**, I will explain the effects of base money production on the central bank's indebtedness. There are two possibilities of money creation: the creation of reserves (Example 1 on the left side) and the creation of banknotes (Example 2 on the right side). The balance sheets show, for both cases, the change in the leverage ratio, or the ratio between borrowing (B) and equity (E)[89].

[88] Most studies on indebtedness focus on indebtedness of the private sector, or on public debt. Indebtedness of the bank sector is not normally considered in those well-known sources. Furthermore, the majority of those publications also do not ask if or how indebtedness is related to money production. One of the rare exceptions to this is Steve Keen's "Monetary Model of Capitalism" (2011, pp. 357-377). The reason for that is the general fact that in recent years neoclassical mainstream theory has neither investigated money properly nor even incorporated it its central models. The same is true for applying the accounting lens: In mainstream theory, accounting models has hardly played any role in recent years. Another, but also heterodox, exception is Michael Hudson's work indebtedness (see Hudson, 2015; Hudson, 2014).

[89] $L = \frac{B}{E}$, in which B stands for borrowing, E for equity, and L for leverage ratio.

Example 1: Creation of reserves

Central bank balance sheet (I)

Assets		Liabilities	
Gold	100	Equity	100
Other assets	900	Notes in circulation	100
		Other liabilities	800
Total	1000	Total	1000
Leverage ratio		9	

Central bank balance sheet (II)

Assets		Liabilities	
Gold	100	Equity	100
Other assets	900	Notes in circulation	100
		Other liabilities	800
Securities	10	Commercial banks' reserves	10
Total	1010	Total	1010
Leverage ratio		9.1	

Example 2: Creation of banknotes

Central bank balance sheet (I)

Assets		Liabilities	
Gold	100	Equity	100
Other assets	900	Notes in circulation	100
		Other liabilities	800
Total	1000	Total	1000
Leverage ratio		9	

Central bank balance sheet (II)

Assets		Liabilities	
Gold	100	Equity	100
Other assets	900	Notes in circulation	110
		Other liabilities	800
Securities	10		
Total	1010	Total	1010
Leverage ratio		9.1	

Figure 22: Base money creation and the central bank's indebtedness: T-accounts
Notes: Own figure

In both cases, the newly issued money is accounted for as liabilities. Therefore, in both cases, money creation leads to an increasing leverage ratio. On that basis, one must conclude that money production would endanger the central bank's solvency.

Yet, is it correct to account for banknotes and reserves as debt liabilities? From a historical point of view, it certainly is. Yet, there is no longer redemption of currency. Thus, today in fact neither notes in circulation nor reserves as a whole are due. Therefore, I argue that those entries in the central bank's balance sheet should no longer be treated as borrowings. My argument accords with Bossone and Costa's (2018a) view. They state that neither banknotes nor reserves are de facto debt liabilities, despite the fact that—de jure—they are. These authors argue that, in earlier times, banknotes were convertible into silver or gold. The same was true for reserves. However, for decades there has no longer been any such obligation. Whatever the central bank produces, reserves or banknotes, the holder of them does not have any legal claim. The only thing the holder could claim is their exchange into the other form (for example, changing reserves to banknotes). Yet, if there is no external claim, then banknotes and reserves are no longer debt liabilities (see 5.1). Therefore, I maintain that if the central bank creates money, by the same token, it creates its own equity[90]. Although this view of central bank indebtedness is not the traditional one, it has gained increasing attention

[90] Strictly following this idea would also mean that central bank seigniorage as explained in 5.4.2 would have to be adjusted upwards.

in recent years (see, for example, Bossone, Costa, Cuccia, & Valenza, 2018; Hellwig, 2014; Binswanger, 2009a, p. 119; and subsection 5.3.2). Thus, as argued above, the creation of base money does not endanger the central banks' solvency[91]. As I have proven, de jure, the creation of base money leads to an increasing leverage ratio. However, de facto, i.e. from an economic point of view, that is not the case. I therefore conclude at this point that, despite base money creation increasing the central bank's indebtedness, it does not endanger the central bank's solvency. Nonetheless, the situation is different in the commercial bank sector, as the next subsection will show.

5.3.2 Growing money supply and the commercial bank sector's indebtedness

When the commercial bank sector increases total deposits, this increases the sector's leverage ratio. Normally, when the commercial bank sector increases total deposits, this increases the leverage ratio of the sector as a whole and endangers the sector's stability. I will explain this first point, again using balance sheets. I differentiate here between two transaction types: (a) transactions that only affect the commercial bank sector's aggregate balance sheet and (b) transactions that affect its aggregate balance sheet as well as the aggregate income statement. Yet, in the end, both categories have the same effect: deposit creation leads to increasing leverage. I explain this based on **Figure 23**. It shows on the left side (a) an example of a pure balance sheet transaction, and on the right side (b) one that affects both, balance sheet and income statement. In both cases, the analysis focuses on the change in the sector's leverage ratio[92].

[91] In addition to that, a central bank cannot only create base money without endangering its solvency; it can also generate its own liquidity. As the central bank itself produces the money circulating in an economy, it cannot become illiquid in that very self-produced money. Therefore, the only way a central bank could become illiquid is if it has obligations in a currency it does not produce itself. These could be foreign currencies or alternative currencies like Bitcoin or WIR (Switzerland).

[92] $L = \frac{B}{E}$, in which B stands for borrowing, E for equity, and L for leverage ratio.

(a) Pure balance sheet transaction

Commercial bank sector's balance sheet (I)

Assets		Liabilities	
Cash	10	Equity	10
Securities	10	Other liabilities	20
Reserves	10		
Total	30	Total	30

Leverage ratio = 2

Commercial bank sector's balance sheet (II)

Assets		Liabilities	
Cash	10	Equity	10
Securities	10	Other liabilities	20
Reserves	10		
Shares	5	Deposit*	5
Total	35	Total	35

Leverage ratio = 2.5

(b) Balance sheet and income statement transaction

Commercial bank sector's balance sheet (I)

Assets		Liabilities	
Cash	10	Equity	10
Securities	10	Other liabilities	20
Reserves	10		
Total	30	Total	30

Leverage ratio = 2

Commercial bank sector's balance sheet (II)

Assets		Liabilities	
Cash	10	Equity	5
Securities	10	Other liabilities	20
Reserves	10		
		Deposits of employees	5
Total	30	Total	30

Leverage ratio = 5

Figure 23: Money creation and the commercial banks' indebtedness: T-accounts

Notes: Own figure

I start with the transaction on the left side: (a) a pure balance sheet transaction. In the example, the bank sector purchases shares from the non-bank sector. This works similarly to credit provision—it is simply a balance sheet extension. The result is an increase in the commercial bank sector's leverage ratio (from 2 to 2.5). The right side illustrates by example (b) a slightly different story. Here, the bank sector pays its employees' salaries (non-bank sector). In a first step, this only affects the deposits. Yet, in a second step, this transaction affects the sectors' income statement as well. Paying the employees' salaries increases expenditure whereas earnings remain the same. In this way, at the end of the year—ceteris paribus—this transaction leads to a decrease in equity. Again, the result is an increase in the leverage ratio (from 2 to 5). This is generally how money creation affects the bank sector's balance sheet. In both cases, the leverage ratio has increased. In other words, money creation leads to increasing indebtedness of the bank sector. But how are banks able to decrease leverage? Like every corporation has, banks also have two options: they can retain earnings or issue new shares. To decrease the leverage ratio of the whole commercial bank sector, retained earnings as well as the emission of shares[93] must be carried out with non-banks. Oth-

[93] A rather simple way out of such high indebtedness is what Credit Suisse and Barclays did during the GFC (see e.g. Werner (2016, p. 374). Both cooperated with a non-bank to create their own equity. They did two things. First, they granted a loan to the cooperating non-bank, thus creating new deposits. Second, they sold new shares to that non-bank, which the non-bank paid with the newly created deposits. In this arrangement, the newly created deposits were cancelled out and leverage was reduced.

erwise, if the transaction is carried out within the banking sector, only the distribution but not the extent of indebtedness changes.

Yet, as in the case of the central bank, the commercial bank sector's deposits may not necessarily be seen as debt liabilities. Or, as Bossone and Costa (2018b) put it, deposits have a stochastic nature: they are equity and debt at the same time. At least to some degree, they have equity attributes. In line with Bossone and Costa (2018b), I argue that bank deposits are not liabilities in the strict economic sense. I present the following example they constructed to make their point:

> *"In the hypothetical case of a fully consolidated banking system in a cashless economy where all agent accounts sit with only one bank, all payments and transfers would be 'on us' for the bank. The bank would need no reserves for settling transactions and would be under no debt obligation to its clients. It might create all the money that the economy could absorb without holding reserves, and its money would have the same power as legal money in settling all debts."*

Hence, in that case, deposits would be more like equity than like a debt obligation (see the similar point I made on the case of central banks' equity in subsection 5.3.1). However, in the real world, there are many banks and non-banks, and not only deposits and cash. Therefore, deposits are partly equity and partly debt liabilities. This view of bank deposits is not a generally accepted one but is also not a new idea. Friedman and Schwartz (1969, p. 2) already argued based on Pesek and Saving (1967) as follows:

> *"Commodity money and fiat money are assets to their holders, but in no meaningful sense debts to anyone. Hence, they should be included in the consolidated net wealth of the community without any offsetting entries. They are 'money' without simultaneously being debt."*

Despite those convincing arguments, commercial bank deposits are commonly strictly accounted for as debts. However, in recent years, this view of bank deposits (as well as of central bank reserves) has gained more and more attention (see, e.g. Bossone, Costa, Cuccia, & Valenza, 2018; Hellwig, 2014; Binswanger, 2009a, p. 119).

This stochastic nature of bank deposits is the reason why, in normal times, even a heavily indebted bank sector is not endangered. As long as the non-bank sector's trust in the commercial bank sector is strong and no dramatic change occurs in their usage of money, even a very large leverage of the commercial bank sector can work. Yet, the situation may suddenly change, and a banking crisis may occur, when that

trust wavers. Thus, commercial bank money creation is a double-edged sword. However the problem of such banking crises is also linked to the problem of liquidity, which I will not discuss in any more detail here[94].

The commercial bank sector not only has special privileges and power, the sector is also more vulnerable than other economic agents. The commercial bank sector can create—at least to some degree—its own equity and liquidity. The sector can create money by increasing its customers' deposits. Increasing the customers' deposits means nothing other than increasing the bank's debt towards its customers. And this, in other words, means that commercials banks are able to grant credit from their customers themselves. In such form of credit provision, banks do not need the consent of the borrower. And, as long as they interact only with their own customers, they cannot become illiquid. Furthermore, the bigger the banks are, and the fewer banks there are, the less is their dependence on the central bank. Thus, commercial banks can only become illiquid if they have to pay in cash, reserves, or foreign currencies. Connected to that privilege of creating liquidity is a second privilege—namely, of creating their own equity. On an aggregated level, the afore-mentioned self-granted credit (bank deposits) is never due because the non-banks never want to withdraw all their deposits. And if they would, the result would be a run on the banks. Furthermore, in most economies,

[94] Commercial banks can only become illiquid in currency they cannot produce themselves, like cash, reserves, foreign currencies, or alternative currencies like Bitcoin. To maintain their liquidity, they can obtain reserves from the central bank, attract currencies from non-banks, and manage their balance sheet so that not too many liabilities arise in those currencies. Commercial banks can only become illiquid in currency they cannot produce themselves. For instance, if a bank wants to pay its employees' wages, it can simply change their deposits. Yet, if their employees hold their deposits in another bank, then it does not work that way. In this case, the concerned bank has to transfer central bank reserves to the other party's bank (see section 4.3). Thus, a commercial bank can become illiquid, if it must pay money that the bank is not able to produce itself. According to Polleit and von Prollius (2014, p. 114), this is basically base money, which banks need to fulfil minimum reserve requirements (reserves), to be liquid vis-à-vis their customers (cash), and to be liquid vis-à-vis other commercial banks (reserves). Yet, they may also get into trouble when they have liabilities in other currencies which they cannot produce themselves (e.g. foreign currencies). To maintain their liquidity, they can obtain reserves from the central bank, attract currencies from non-banks, and/or manage their balance sheet so that not too many liabilities arise in those currencies. Obtaining additional cash or reserves from central banks is usually possible but costly. The same is true for interbank credits. The more profitable means is to attract new deposits from other banks, which then leads to an inflow of additional reserves. Apart from that, there are other more strategic options to maintain liquidity. One option is to avoid granting new loans faster than the rest of the banking system, which could lead to rising net obligations to the rest of the banking system (Rossi, 2007, p. 129). Another option is, of course, to avoid granting loans to bad debtors (p. 129). The last strategic option derives from what I already stated concerning banks' solvency. Banks could strive to reduce demand for cash, call for lowering the liquidity requirements, and merge into even bigger and bigger banks. All those changes would lead to a diminishing need for base money and therefore strengthen their autonomous ability to be liquid. The less cash or foreign currencies the non-banks wish to hold, the lower the probability of liquidity problems. The bigger the banks are, and the fewer banks there are, the less reserves for interbank clearing are needed. As stated here, commercial banks' liquidity may be the most ambivalent issue concerning money creation. It depends on different circumstances.

the total of aggregate deposits has been increasing for decades. Hence, in normal times, those deposits are never due—like equity. Therefore, it is questionable whether bank deposits are de facto credit or whether they are a kind of equity. This means that commercial banks are indeed able—to some degree—to create their own equity too. However, money creation is not only a great privilege of the commercial bank sector, it also results at the same time in a special vulnerability. As shown above, the sector's special business model of creating money automatically leads to increasing leverage. In a fractional reserve system, the commercial bank sector's business is indebtedness. Every money-creating transaction increases the commercial banks' leverage ratio. This is true no matter whether the new deposits are created by a bank purchasing real-economic objects or providing new financial capital. The bank sector can decrease this leverage only by issuing shares to the non-bank sector or retaining earnings from the non-bank sector. This systemic issue puts commercial banks in danger of becoming insolvent (experiencing a bank run). Thus, because the commercial banks' business model is based on indebtedness, they are especially vulnerable when it comes to insolvency. It is now clear that an ever-growing money supply inherently leads to growing indebtedness of the commercial bank sector. But what does a growing money supply mean for the non-bank sector's indebtedness?

5.3.3 Growing money supply and the non-bank sector's indebtedness

When the commercial bank sector creates money, this not only affects the sector's own indebtedness, but also has effects on the non-bank sector's indebtedness. The most severe effect on the non-bank sectors happens when new money is injected by increasing the commercial bank sector's liabilities (e.g. bank loans) and the newly created money is used for consumptive purposes. Again, I analyse those effects based on the leverage ratio. All those insights are based on the accounting analysis below. I will analyse how the type of money provision (liability or equity) and the new money's usage (consumption, investment, purchase of existing assets) affects the non-banks' leverage. In a first step, I will analyse how the leverage changes if all the new money is used for consumption. In a second step, I perform the same analysis for the case that all money is used for investment. In a third step, I then repeat the analysis for the case that all money is used to purchase already existing assets.

First, I would like to analyse how the leverage ratio changes if the new money is used only for consumption—this means that the capital stock remains stable[95]. If this is the case and the money is created by new liabilities (e.g. bank loans), this increases the leverage of the non-bank sector. If the new money is created by new equity, this decreases the leverage. Once again, I use T-accounts to analyse those two cases. **Figure 24** offers an example for both cases. On the left side (a), the figure shows the non-bank sector's balance sheet for the case that new money is issued in the form of liabilities and that it is used for additional consumption. Concerning the result on the leverage ratio, it makes no difference whether new money is issued via credit provision or via purchasing bonds—the example illustrates the former. On the right side (b), the figure shows the same for the case that the new money is issued in the form of equity. This means that money is issued by the commercial bank sector purchasing shares of the non-bank sector.

(a) The provision of capital as liabilities

Non-bank sector balance sheet (I)

Assets		Liabilities	
Cash	10	Equity	10
Other assets	10	Other liabilities	10
Total	20	Total	20

Leverage ratio = 1

Non-bank sector balance sheet (II)

Assets		Liabilities	
Cash	10	Equity	10
Other assets	10	Other liabilities	10
Deposits	5	Bank loans	5
Total	25	Total	25

Leverage ratio = 1.5

(b) The provision of capital as equity

Non-bank sector balance sheet (I)

Assets		Liabilities	
Cash	10	Equity	10
Other assets	10	Other liabilities	10
Total	20	Total	20

Leverage ratio = 1

Non-bank sector balance sheet (II)

Assets		Liabilities	
Cash	10	Equity	15
Other assets	10	Other liabilities	10
Deposits	5		
Total	25	Total	25

Leverage ratio = 0.67

Figure 24: Money creation: Usage for consumption: T-accounts

Notes: Own figure

The transactions work similarly but the result for the leverage is completely different. In example (a), the leverage ratio increases, whereas it decreases in example (b). To conclude: if money is used for consumptive purposes and this money is created by new liabilities, this increases the leverage of the non-bank sector. But in the same case, if it is created by new equity, this decreases leverage. However, the latter is clearly an un-

[95] As I put forth in section 5.1, for the entire economy, the capital stock (K) is a good approximation for the equity of the whole economy (Grass & Stützel, 1988, p. 10). For my analysis, I assume that the entire capital stock is owned by the non-bank sector. The capital stock grows only if additional net investments (I) are made. Hence, in the case that the additional money is solely used for consumption, the capital stock remains stable. Equity then also remains stable.

likely case, since the purpose of emitting shares is obviously financing business activities (investment) and not consumption.

Second, I analyse how the leverage ratio changes if the new money is used for investment—this means that the capital stock rises in the same amount[96]. If this is the case and the additional money is created by new liabilities, the leverage of the non-bank sector remains stable. If it is created by new equity, the leverage decreases. **Figure 25** shows this based on T-accounts.

(a) The provision of capital as liabilities

Non-bank sector balance sheet (I)

Assets		Liabilities	
Cash	10	Equity	10
Other assets	10	Other liabilities	10
Total	20	Total	20

Leverage ratio = 1

Non-bank sector balance sheet (II)

Assets		Liabilities	
Cash	10	Equity	15
Other assets	15	Other liabilities	10
Deposits	5	Bank loans	5
Total	30	Total	30

Leverage ratio = 1

(b) The provision of capital as equity

Non-bank sector balance sheet (I)

Assets		Liabilities	
Cash	10	Equity	10
Other assets	10	Other liabilities	10
Total	20	Total	20

Leverage ratio = 1

Non-bank sector balance sheet (II)

Assets		Liabilities	
Cash	10	Equity	20
Other assets	15	Other liabilities	10
Deposits	5		
Total	30	Total	30

Leverage ratio = 0.5

Figure 25: Money creation: Usage for investment: T-accounts

Notes: Own figure

The example on the left side shows the injection of the new money by bank loans (deposits +5, bank loans +5). The additional purchasing power is then used to implement a successful investment project, which leads to additional assets (other assets +5), which is nothing other than growing capital stock (equity +5). As a result, leverage remains stable. The example on the left shows the same, apart from the fact that this time, the additional money is brought into circulation (deposits +5) by the commercial bank sector buying the non-bank sector's shares (equity +5). Again, the successful investment project leads to growing capital stock (other assets +5), which is nothing other than equity (equity +5). In this case, the non-banks' leverage ratio even decreases.

[96] The assumption here is that the capital stock is completely owned by the non-bank sector and that all investment projects are successfully carried out so that the growth of capital stock equals the growth of non-banks' equity.

Third, I analyse how the leverage ratio changes if the new money is used to purchase existing assets—this means that the asset prices and therefore the total sum of assets would rise. If this is the case and the additional money is created by new liabilities, the leverage of the non-bank sector remains stable. If the new money is created by new equity this decreases the leverage. **Figure 26** shows this based on T-accounts.

(a) The provision of capital as liabilities

Non-bank sector balance sheet (I)

Assets		Liabilities	
Cash	10	Equity	10
Other assets	10	Other liabilities	10
Total	20	Total	20

Leverage ratio = 1

Non-bank sector balance sheet (II)

Assets		Liabilities	
Cash	10	Equity	15
Other assets	15	Other liabilities	10
Deposits	5	Bank loans	5
Total	30	Total	30

Leverage ratio = 1

(b) The provision of capital as equity

Non-bank sector balance sheet (I)

Assets		Liabilities	
Cash	10	Equity	10
Other assets	10	Other liabilities	10
Total	20	Total	20

Leverage ratio = 1

Non-bank sector balance sheet (II)

Assets		Liabilities	
Cash	10	Equity	20
Other assets	15	Other liabilities	10
Deposits	5		
Total	30	Total	30

Leverage ratio = 0.5

Figure 26: Money creation: Usage for already existing assets: T-accounts
Notes: Own figure

Again, the example on the left shows what happens if the money injection is brought into circulation by the commercial bank sector granting loans, whereas the example on the right shows the same for the case that new money is brought into circulation by the commercial banks buying the non-bank sector's shares. Yet, what is the consequence of this additional purchasing power? When demand for assets rises but supply is stable, then prices will rise, although it is unclear to what extent prices would rise. According to the quantity theory I assume that—ceteris paribus—asset prices rise to the same degree that the money supply does. This means for my example that both increase by 50 percent. According to these considerations, in both examples the additional demand for assets increases the assets' value (+5). Since equity is approximated by those assets, the equity's value increases as well (+5). However, it is important to note that in real terms those assets (capital stock, production potential) do not change. There is only a change in relative prices. Despite that, the result of the accounting analysis is the same as if there were a change in real investment. To conclude these two analyses, in the example on the left, leverage is stable, and in the example on the right, leverage even decreases.

One can—unsurprisingly—say that the most severe effect on the non-bank sector's indebtedness occurs when new money is injected by increasing the sector's liabilities and the newly created money is used for consumptive purposes. Using newly created money for consumptive purposes increases indebtedness of the non-bank sector the most, whereas usage for investment purposes does so the least[97]. Similarly, provision of money by increasing the non-bank sector's liabilities affects its indebtedness negatively, whereas provision by increasing equity does not. This concludes the analyses on the effects on indebtedness of the relevant three sectors.

The examinations have clearly demonstrated that a fractional reserve system is non-neutral: there is built-in debt machinery. A fractional reserve system with continuous money production inherently affects indebtedness of all three sectors. In so doing, it clearly violates the requirement that 'neutral money' should not have inherent effects on indebtedness. Starting with the first sector, when a central bank issues reserves or banknotes, this increases its leverage ratio. Yet, as banknotes and reserves are not liabilities in the strict economic sense, the central bank's solvency is de facto not endangered by money production[98]. The situation is different concerning the commercial bank sector. Here, only if all newly created money would be used for investment purposes or brought into circulation by increasing the sector's equity, only then would money production not have inherently negative effects on indebtedness. In all other cases, money production inherently increases the commercial bank sector's indebtedness. As commercial banks' deposits have equity attributes, there is normally no problem. Even heavily indebted bank sectors are then not necessarily insolvent. Yet, there is always the latent risk that a banking crisis could occur (a bank run). Hence, the fractional reserve system is inherently non-neutral, as there is this built-in debt-machinery, which inherently leads to a heavily indebted commercial banking system. The destabilising essence of high indebtedness puts the whole monetary system at risk of a banking crisis or a bank run. As the money and the banking system are so essential to the economy, this means that the economy and society as a whole are always subject to this latent risk of collapse. This clearly violates the idea that 'neutral money' should be a secure tool for everybody (see subsection 3.2.3). Concerning this security aspect, it is not legitimate for the monetary system to inherently endanger the property of all participating individuals in general, or even to endanger some individuals' prop-

[97] Some empirical evidence that supports those theoretical insights can be found in Jordà, Schularick, and Taylor (2014a).

[98] Liquidity and solvency of a central bank can only be endangered if there are liabilities in a foreign currency which the central bank cannot produce itself.

erty (i.e. money, financial assets, real assets) more than that of others. Thus far, I have presented the considerations concerning the commercial bank sector. Concerning the third sector, indebtedness of the non-bank sector is also affected by money production. In this scenario, using newly created money for consumptive purposes increases indebtedness of the non-bank sector the most, whereas usage for investment purposes does so the least. Yet, in contrast to the commercial bank sector, most of the effects on indebtedness in this case are not inevitable effects of the fractional reserve system but also the consequences of the free choice of individuals (e.g. using the new money for consumptive or investment purposes). The only direct effect of money provision is whether money is provided via equity or via liabilities. In the fractional reserve system, the latter is the norm and the one that again leads to indebtedness. Nevertheless, one must conclude that the most severe effects on indebtedness occur on the commercial bank sector, not on the non-bank sector. Nonetheless, one can still draw the conclusion that a fractional reserve system clearly violates the requirement of being ‘neutral’ in the sense of having no inherent effects on indebtedness of those three investigated sectors. Again, reference is made to a brief comparison to the economic mainstream’s notion of ‘neutrality of money’. The economic mainstream takes ‘monetary neutrality’ for granted and builds its models on that assumption. Moreover, economic mainstream largely reduces the notion of ‘neutrality of money’ only to the quantity equation variables and in doing that does not even consider indebtedness as relevant for this economic concept. However, this section has clearly evidenced that neglecting effects of money on indebtedness is clearly a flaw in economic mainstream thinking. As a last point, the next section explores whether money production in a fractional reserve system is ‘neutral’ concerning the distribution of wealth and income.

5.4 The Built-in Redistribution Machinery

> *"For to every one who has will more be given, and he will have abundance; but from him who has not, even what he has will be taken away."* (Matthew 25:29, Revised Standard Version)

This section will show that a fractional reserve system inherently redistributes income and wealth within the economy[99]. A growing money stock is again assumed in this section. There are two major distributive effects to consider here. First, section 5.4.1 will show that a fractional reserve system with an ever-growing money supply inherently leads to redistributive effects solely by altering asset prices. Then, section 5.4.2 will show that a second redistributive effect is caused by seigniorage. Seigniorage profits result from the privilege of the central bank as well as the commercial banks to produce money. There is a last source of redistribution: The central bank's interest rate policy alters the distributive effects between net debtors and net creditors as well as it possibly indirectly affecting the prices of other already existing financial (e.g. shares, bonds) and real (e.g. real estate) assets.

5.4.1 Distributive effects caused by asset price changes

> *"When the capital development of a country becomes a by-product of a casino's activities, the job is likely to be ill-done."* (Keynes, 1936/2010, p. 159)

This section argues that all money injections to some degree redistribute total income and wealth by asset price changes. Those distributive effects are not but new, as they are already known—at least in a general way—as the Cantillon effect. However, as with many other aspects of this thesis, neoclassic mainstream economics has more or less forgotten or ignored knowledge thereof. Cantillon described this effect as follows:

> *"If the increase of actual money comes from mines of gold or silver in the state the owner of these mines, the adventurers, the smelters, refiners, and all the other workers will increase their expenses in proportion to their gains. They will consume in their households more meat, wine, or beer than before, will accustom*

[99] By such inherent redistribution of income and wealth, the fractional reserve system is clearly a mechanism that must be considered in the inequality discussion. However, to the knowledge of the author, today the economic inequality discussion scarcely considers money or specifically the fractional reserve system as being relevant to it. There are only very few attempts observable that do so (e.g. Schnabl, 2017; Ledoit, 2011). For these reasons, I shall not refer to that discussion.

themselves to wear better cloths, finer linen, to have better furnished houses and other choicer commodities. They will consequently give employment to several mechanics who had not so much to do before and who for the same reason will increase their expenses: all this increase of expense in meat, wine, wool, etc. diminishes of necessity the share of the other inhabitants of the state who do not participate at first in the wealth of the mines in question. The altercations of the market, or the demand for meat, wine, wool, etc. being more intense than usual, will not fail to raise their prices. These high prices will determine the farmers to employ more land to produce them in another year: these same farmers will profit by this rise of prices and will increase the expenditure of their families like the others. Those then who will suffer from this dearness and increased consumption will be first of all the landowners, during the term of their leases, then their domestic servants and all the workmen or fixed wage-earners who support their families on their wages. All these must diminish their expenditure in proportion to the new consumption, which will compel a large number of them to emigrate to seek a living elsewhere. The landowners will dismiss many of them, and the rest will demand an increase of wages to enable them to live as before. It is thus, approximately, that a considerable increase of money from the mines increases consumption, and by diminishing the number of inhabitants entails a greater expense among those who remain." (Cantillon, 1755)

The above-cited distributive effects of money injections are well known today as the Cantillon effect[100] (Blaug, 1996, p 21). However, Richard Cantillon described those distributive effects based only on his experience of commodity money and only in a

[100] In a commodity standard, all money injections have distributive effects. There are two reasons for that. First, as Cantillon showed, the additional purchasing power gets unequally distributed within the economy. He described such distributive effects based on his experience of commodity money. According to Cantillon, gold or silver injections always have distributive effects. The first economic agent who gets the new money benefits the most (Cantillon, 1755; Blaug, 1996, p. 21). Second, according to Simmel (1907/2009, p. 215), the price relations change and thus lead to redistributive effects too. Still today, as in Simmel's time, some scholars argue that money is neutral in the sense that it does not change price relations. They argue that doubling the money supply would lead to a doubling of all prices and would thus leave relative prices untouched. According to Simmel, that is anything but true. He argues that even if one suddenly had twice as much money as before, one would not be inclined to expend twice as much as before for every commodity (Simmel, 1907/2009, p. 215). One reason for that is, according to Simmel, the relation between objects and their prices, which with time become psychologically solid and do not adjust without resistance. Another reason, he argues, is that an equally distributed increase of purchasing power would lead to a tumultuous demand for goods which were for the broad masses the previous aim of their wishes, whereas the demand for other goods may not change at all. Hence, I think those points make it clear that even if all purchasing power were equally distributed, price relations would change. Changing price relations then automatically lead to redistributive effects as well. I therefore think that both Cantillon and Simmel would agree that in a commodity standard, any money injection would lead to distributive effects.

very general way. Thus, the aim of this section is to remedy those two shortcomings. First, it is necessary to show whether and how the Cantillon effect also applies to the fractional reserve system. Second, it is necessary to conduct this analysis in more detail.

Ledoit (2011) investigated and verified the Cantillon effect on our contemporary monetary world by modelling the economy as a social network. According to Richard Cantillon, money injections always have distributive effects, and by that he meant that the first economic agent who gets the new money benefits the most (Cantillon, 1755; Blaug, 1996, p. 21). Ledoit (2011) recently provided support for Cantillon. He modelled a social network and concluded that "the agent closest to the location where money is injected is better off, and the one furthest is worse off." [101] In the contemporary monetary order, the first money owner is the central bank, and the second one is the commercial bank. Both benefit in the form of seigniorage (for details on that, see subsection 5.4.2). The third money owner is the non-bank, who uses the money for GDP demand or non-GDP demand. GDP demand means demand for goods created in the same period, whereas non-GDP demand is demand for already existing goods. Depending on money's usage, relative price changes make some non-banks better off and other non-banks worse off. Thus, it is fair to say that all money injections, not only in a commodity standard but also in a fractional reserve system, have distributive effects via changing relative prices. Additionally, even orthodox economics mentions one means of redistributive effects of monetary policy: the devaluation of cash balances[102]. Yet, the question remains of how this effect works in a fractional re-

[101] Ledoit (2011) validated the Cantillon effect for our contemporary monetary world by modelling the economy as a social network. The basic idea of Ledoit is that the economy is a social network in which agents are linked to certain other agents but not everybody trades with everybody equally (p. 2). In such a social network, Ledoit argues, "it becomes legitimate to say that a certain event takes place 'somewhere' in the economy, at a particular location and not anywhere else." Thus, even the central bank must inject money somewhere and cannot do it equally throughout the economy (p. 2). In chapter 2, I showed that in contemporary economies, the central bank injects money into the banking system. Therefore, I ask as Ledoit (p. 2) asks: "[t]he money injected will certainly percolate through the social network that is the economy, but how?" In Ledoit's model, all agents are endowed with one unit of a consumption good (distinct from the others), with the same quantity of money, and the same degree of preference for money (p. 2). The central bank then expands the money supply by purchasing a particular consumption good (G1) from a particular agent (A1). According to Ledoit's model, this injection increases the price of G1 more than the prices of all other goods. This means that agent A1 as the only agent dealing directly with the central bank is better off than the other agents (p. 2-3). Ledoit concludes that through those effects, "monetary expansion redistributes real consumption from the agent who is furthest from the central bank to the agent who is closest to the central bank (p. 3)."

[102] Orthodox economics mentions mainly one means of redistributive effects of monetary policy: the devaluation of cash balances. According to Ledoit (2011, p. 3), all articles on redistributive effects of monetary policy concentrate on the devaluation of cash balances. By that, I think he refers only to contemporary orthodox journal articles. Indeed, there are many such articles that concentrate on redistribution of cash balances (e.g.

serve system, and under what conditions it favours one or the other party. I shall explore those effects in detail, based on both accounting analysis as well as empirical data, below.

The quintessence of this analysis is twofold. First, both accounting analysis as well as empirical data support the distributive effects of a growing money supply. Second, concerning its effect, the more newly injected money is used for investment, the less that distributive effects occur. I investigate these points in four steps, following the different ways in which newly injected money may be used. Again, the basic premise is that there is a growth imperative that forces a continuously growing money supply (see section 5.2). As already seen concerning indebtedness, the effects of money injections vary depending on what the newly created money is used for. Thus, all possible forms of usage must be analysed here. As newly created money is additional purchasing power, it may be used for GDP demand or non-GDP demand. This yields four possible ways of usage (see **Figure 27** below). Starting on the left side, in the case of GDP demand, newly injected money may increase demand for consumption (C) or investment (I). In the case of non-GDP demand, newly injected money may increase the demand for real assets (A_r) like real estate, or financial assets (A_f) like treasuries. Hence it is necessary overall to differentiate among four different means of money entering circulation. Each way affects the economy differently. In all those cases, I do not look at who the spender of the money is, only at what the money is spent for.

Bhattacharya et al., 2005; Palivos, 2004; Romer & Romer, 1998). Common to all is that redistribution takes place through devaluation of money. According to Bhattacharya et al. (2004), monetary expansion redistributes real wealth from agents with large amounts of money (old ones) to ones with small amounts of money (young ones). Similarly, Romer and Romer (1998) argued that monetary expansion (inflation) redistributes wealth from creditors to debtors.

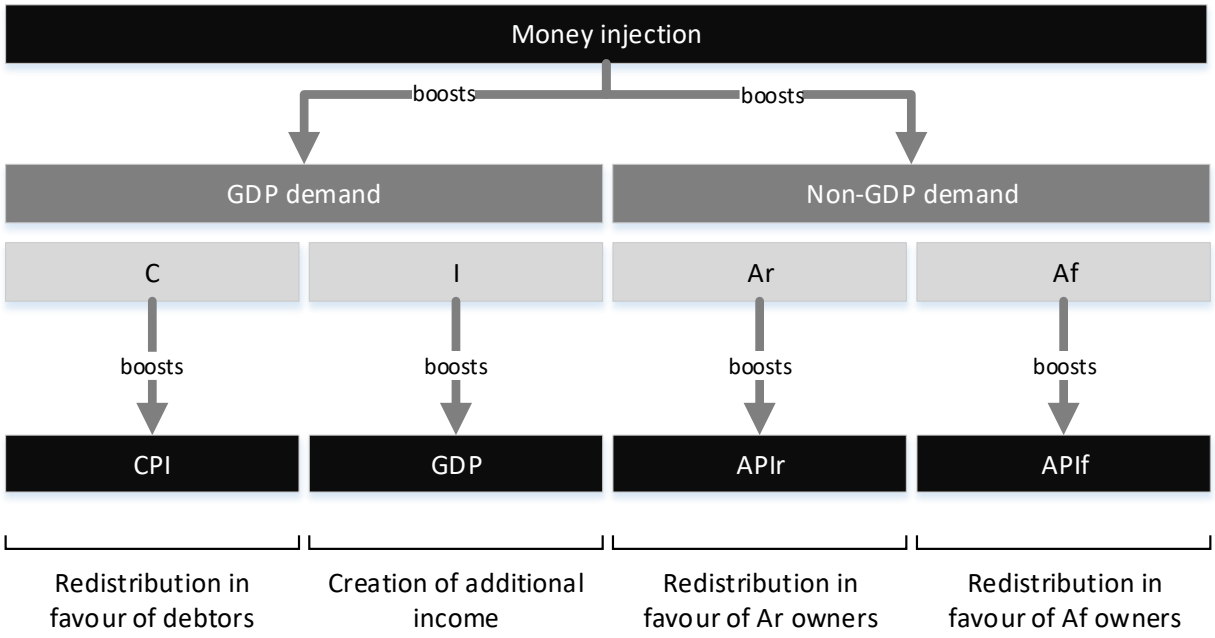

Figure 27: Money injections and their effects on the non-bank sector
Notes: Own figure, partly based on Binswanger (2015a, p. 131, p. 223, pp. 244-254), Hudson (2014), Turner (2014, p. 13), Werner (2012, pp. 8-9; 2007, pp. 267-279), Davis & Zhu (2011), Ledoit (2011), Swiston (2008), Liang & Cao (2007), Werner (2005), Romer & Romer (1998), Blaug (1996, p. 21), and King and Levine (1993).

Starting on the left side, in the case of usage solely for consumption, the money injection leads to distributive effects in favour of debtors. If new money—e.g. a consumer credit—is spent for consumer goods, then this single transaction does, ceteris paribus, only change the demand for consumer goods. There is no direct impact on the capital stock, because consumer goods are consumed rather than used for further production. Moreover, such an additional consumer good demand does not have any direct impact on the supply side of GDP. Therefore, given a supply of C, the bigger such additional demand for C is, the more consumer good prices will increase. Rising consumer good prices are measured by the consumer price index (CPI). Hence, additional money used for consumer goods tends to produce consumer price inflation. Such consumer price inflation leads to redistributive effects between net creditors and net debtors: Net creditors' real wealth drops whereas net debtors' wealth rises (see Romer & Romer, 1998). So, new money used solely for consumption leads only to redistributive effects. Yet, what happens if new money is used for investment?

If newly created money is spent on successful investment projects, this increases total income. As in the case above, only the immediate effects of this single transaction are considered. The rise in demand for investment shifts demand and production

from consumer goods to capital goods. Yet, unlike in the case of consumer goods, increasing demand for capital goods leads to an increasing capital stock (K)[103]. The bigger K is, the bigger is the potential output. In the long run, in the case of successful investment projects, this will lead to increasing GDP, which is nothing other than total income. In this case, there is no indication that such newly injected money would lead to rising CPI. On the contrary, those new investments might even lead to declining prices. But, is there empirical evidence for my considerations? Yes, my simple analysis is consistent with other research findings. For instance, Swiston (2008) showed, for the US, that a net tightening in commercial and industrial loans reduced GDP significantly. Similarly, King and Levine (1993) found in a 77-country study that, among other factors, the percentage of credit allocated to private firms strongly and robustly correlated with real capital accumulation (K) and economic growth (GDP). There are even more recent studies by Silva, Tabak and Tetzner Laiz (2019), and Ryan-Collins, Werner and Castle (2016) that support those points as well. Hence, newly injected money used for investment appears to boost GDP—the economy's income. In that sense, such investments lead to additional income (GDP). Yet, what are the consequences if newly injected money is used exclusively for non-GDP demand?

If new money is spent on existing real assets, this has only distributive effects in favour of real assets' owners. Instead of GDP demand, new money may also be used for non-GDP demand. This means buying already existing real assets (A_r) like real estate. If new money creates additional demand for already existing real assets, then—ceteris paribus—the only direct impact is rising real asset prices (API_r). Hence, the consequence of additional purchasing power for real assets is only a rise in those assets' prices. Those theoretical considerations are supported by different recent studies (e.g. Schnabl, 2017; Bäurle & Scheufele, 2016; Davis & Zhu, 2011; Liang & Cao, 2007; Werner, 2005). Furthermore, as in the case of rising CPI, also rising API_r has redistributive effects. While all other prices like consumer prices (CPI) and financial assets' prices (API_f) remain stable, only real assets' prices (API_r) rise. If the holders of those real assets were to sell their assets, they would now have more purchasing power then they had before the money was injected. Thus, such a money injection into real assets leads to a gain in net wealth for their owners over all non-holders of real assets.

Lastly, if additional money is spent exclusively on financial assets, this has distributive effects in favour of their net holders. Another form of non-GDP demand is

[103] $K = \sum_{k=1}^{n} I$

demand for financial assets (A_f). It works as in the case of real assets. If a money injection leads solely to additional demand for A_f, then only those prices (API_f) will rise. M. Binswanger (1997) showed this effect with a circular flow model and described the result as follows: "If an increasing part of financial funds circulates outside the circular flow of money, which describes the money flows connected to the real activities within the economy, the relation between money creation and real investment but also between money creation and the price level is obscured." However, is there empirical proof of that? According to M. Binswanger (2015a, pp. 223), in most economies there are only few or even no bank loans for purchasing financial assets. Therefore, the above-mentioned connection is hard to prove empirically. One exception is the US. For the US, Binswanger found a connection between money supply growth (M2) and the S&P 500 index for three exemplary time periods[104] (pp. 244-254). Although the empirical data is thin here, there seems to be evidence for this point, too. Additionally, given that money injections in financial assets boost API_f, there are again only redistributive effects, as in the case of real assets. Again, if only those assets' prices rise, then those assets' owners are better off than all non-holders are. The non-holders here include also the debtors of those financial assets. Hence, a money injection used solely for financial assets does have redistributive effects in favour of the net holders of those assets.

In conclusion, my theoretical accounting analysis as well as diverse empirical evidence support the insight that money injections either boost total income (GDP) or redistribute it. I conclude that in a commodity standard as well as in a fractional reserve system, any money injection has redistributive effects. As soon as a money injection leads to inflation, such inflation redistributes real wealth from agents with lots of money (creditors) to agents with little money (debtors). Even without inflation, money injections alter relative prices and redistribute real wealth. This is supported by the classical, qualitative analysis of Cantillon (1755), by the network analysis of Ledoit (2011), as well as by my analysis substantiated by diverse empirical studies. As Ledoit pithily stated, whenever a central bank injects money "the agent closest to the location where money is injected is better off, and the one furthest is worse off" (Ledoit, 2011). Whoever (in whatever form) produces money enjoys the most benefits: he can—depending on its form—produce money at very low costs and sell it at face value. In a contemporary monetary system, the first money owner is the central bank, the

[104] Those three periods are 1897-1910, 1920-1934, and 1995-2000.

second one is the commercial bank, and the furthest is likely to be somebody with no connection to the banking system, such as, for instance, someone with no banking account. Moreover, what the newly injected money is spent for is crucial to the distribution among the further agents. The more newly injected money is used for investment, the fewer distributive effects occur. The more it is used for consumption or already existing assets, the more distributive effects occur. Additionally, there is evidence that the latter is increasingly the case. A long-term study of seventeen industrial countries (including the US and the UK) found that since 1990, the total of mortgage loans exceeds the total of all other loans, and that currently, mortgage loans on average make up about 60 percent of all bank loans (Jorda et al., 2014b, pp. 5-6). The same study demonstrated empirically that this rise of mortgage loans is often connected to real estate price bubbles (see Jorda et al., 2014a, & Jorda et al., 2014b). Thus far, it seems obvious that a fractional reserve system with an ever-growing money supply inherently leads to redistributive effects caused simply by asset price changes[105]. Yet, there are other inherent sources of redistribution, which I will investigate in the next subsection.

5.4.2 Distributive effects caused by seigniorage profits

In addition to redistributive effects caused by asset price changes, redistribution may be induced by seigniorage profits. Seigniorage profits result from the privilege of the central bank as well as the commercial banks to produce money. Money (M) can be placed into circulation in the form of coins, banknotes, or deposits, which production generates seigniorage. However, the form in which money is injected: coins, banknotes, or reserves, matters. Seigniorage is slightly different for each of those cases. In total, there are three entities that may benefit from that privilege: the state (in the case of coins), the central bank (in the case of banknotes and reserves), and the commercial bank sector (in the case of deposits). I explain all four cases below, starting with seigniorage from minting coins.

[105] Undoubtedly, my analysis is limited by its comparative-static approach. For instance, in the case of a mortgage loan, it what the first money owner (real estate buyer) uses the money for may be clear. But what the next money owner (real estate seller) uses it for is not (see Binswanger, 2015a, p. 224). My analysis may thus be limited but it nevertheless yielded interesting results, which indicate some tendencies at the very least. Moreover: all my results are in line with the basic premises of post-Keynesianism. One of Keynesianism's very premises is that first-round-effects are crucial for the further economic development (as I already stated in section 1.5). At least, the initial use of additional money does have unambiguous consequences. Furthermore, because loans are granted for a specific purpose, this purpose not only has consequences for initial use of the new money but also for the dynamics of this process. For instance, if all new loans are granted for real estate, the loan supply will constantly grow, and the real estate supply is constant, then real estate prices must rise—regardless of what the additional money is used for after the real estate purchase transactions. In addition to that, my analysis of all four cases is backed by empirical evidence.

If new money is injected in the form of coins, seigniorage is calculated as the face value of those coins minus the cost of their production and distribution, plus all earnings on the assets bought by issuing the coins. In many countries (e.g. Switzerland and the UK), coins are produced by the state and then sold to the central bank, which brings them into circulation. However, because the coins' seigniorage is rather small and to keep things simple, I assume here that the same institution (central bank or a governmental body) produces and injects them into the economy. In the case of coins, the new money is normally brought into circulation by buying assets. This gives the issuing institution an additional asset, which may generate further earnings (e.g. interest). The negative expenses are the costs of production and distribution of the coins. Hence, there is an immediate seigniorage from such money production. (Macfarlane, Ryan-Collins, Bjerg, Nielsen, & McCann, 2017, p. 14).

If new money is injected in the form of banknotes, then seigniorage is a bit more difficult to identify. In contrast to coins, banknotes consist of paper and must therefore be replaced from time to time. When a central bank issues banknotes and sells them to commercial banks, then the central banks account for those banknotes as liabilities. Since they are recorded as a liability, there is no direct seigniorage from selling them. Hence, seigniorage in this case is the difference between the revenues of the assets bought injecting the banknotes into the economy and all costs of producing, distributing and replacing them. This type of seigniorage is much greater than from producing coins. (Macfarlane et al., 2017, p. 13)

The next option is that a central bank issues new reserves. The production cost of reserves is much lower than for banknotes and coins because there is no physical production involved. Generally, seigniorage here is similar to that for banknotes: seigniorage is the revenue earned on the assets bought by the new central bank reserves. Yet, if the central bank pays interest on the reserves, which the commercial banks hold, then—depending on the interest rate—seigniorage may be zero or even negative. (Macfarlane et al., 2017, p. 14)

Like the central bank and the state, commercial banks also benefit from seigniorage profits. According to Macfarlane et al. (2017, p. 18), commercial bank seigniorage is best understood as the costs that would occur if commercial banks could not create deposits. If banks did not have this ability, then they would have to act as if they were P2P (peer to peer) lenders. They would borrow money from savers at a competitive market rate and then lend those monies. The profit would be the spread between interest from savers and lenders. However, banks can create deposits. Therefore, they

do not have to pay such a competitive market rate but only a smaller interest rate on the customers' deposits. Thus, seigniorage is calculated as the outstanding deposits multiplied by the spread between the market rate the banks had to pay and the customer deposit interest rate. (Macfarlane et al., 2017, pp. 17-18)

If commercial banks must hold cash or reserves, this decreases their seigniorage and shifts seigniorage to the central bank. Commercial banks—some even by law—hold cash and reserves as a liquidity reserve. These assets are therefore unavailable for investment in interest-bearing assets. Yet, because the central bank can lend out this amount of cash and reserves, it receives the corresponding funds and can invest those funds in interest-bearing assets. So, some of the potential seigniorage profit does shift from commercial banks to the central bank. In contrast, the lower the legal reserve requirement is, and the less cash is held by non-banks, the more seigniorage revenue shifts to the commercial bank sector. (Macfarlane et al., 2017, pp. 18-19)

However, the more interest the central bank pays on the reserves held by commercial banks, the more seigniorage shifts from the central bank to the commercial banks. In recent times, major central banks have started to pay interest on the central bank reserves. Such interest rates may be positive (e.g. in the US or UK) or negative (e.g. in Switzerland). Positive interest rates lower the opportunity costs of holding reserves, whereas negative interest rates do the opposite. (Macfarlane et al., 2017, p. 19)

Thus, as explained in plain text, commercial bank seigniorage consists of three elements. The formula below summarises those three elements:

$$S = D(i_{bm} - i_d) - (H * i_{bm}) + R * i_{br}$$

where:

S = commercial bank seigniorage
D = commercial bank deposits
i_{bm} = market benchmark interest rate
i_d = interest paid on deposits
H = base money, consisting of cash and reserves
R = central bank reserves
i_{br} = central bank base rate

Starting on the left side, the first element shows the basic idea of commercial bank seigniorage: the interest spread between the market interest rate and the interest banks

pay on deposits. The second element shows the potential seigniorage that is lost because banks must hold base money. On the right, the third element shows the amount of seigniorage that is shifted from the central bank to the commercial banks by paying positive interest on central bank reserves—or vice versa. (Macfarlane et al., 2017, pp. 19-20)

To summarise, in a fractional reserve system, the central bank (state) as well as the commercial bank sector have the privilege of seigniorage profits. To illustrate that point, **Figure 28** shows the seigniorage profits of the commercial banks as well as the central bank in the UK.

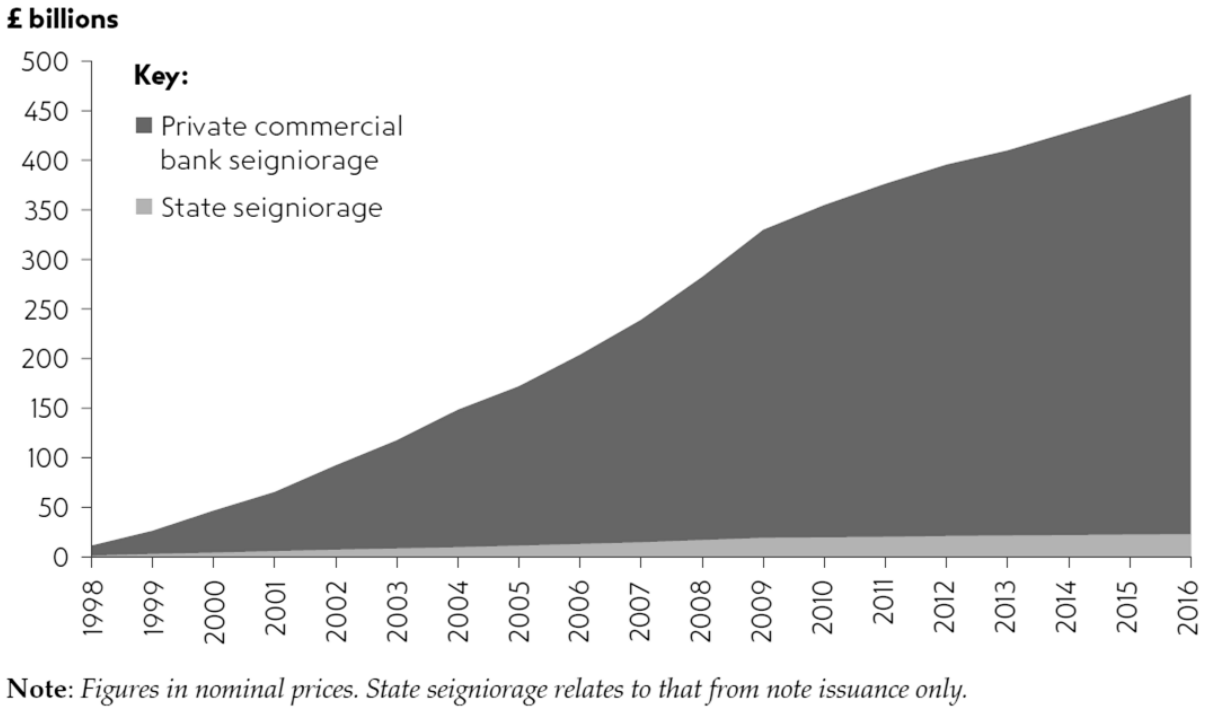

Figure 28: Cumulative seigniorage in the UK economy from 1998 to 2015
Notes: Macfarlane et al., 2017, p. 29

As I have shown, due to the central banks' policy as well as technological and social changes, seigniorage profits may shift more from one sector (e.g. the central bank) to another (e.g. commercial bank sector). However, the existence and exact distribution of those seigniorage profits depend not only on the institutional setting of an economy. Another aspect is the ownership structure of those relevant organisations.

But, who benefits from the seigniorage advantage? This depends. When the concerned banks are publicly owned, then the public owners. If they are privately owned, then the private owners. Again, I present some data to illustrate that. Most of

the commercial banks are owned by private shareholders. But what about the central banks? **Figure 29** shows a classification of central banks by ownership.

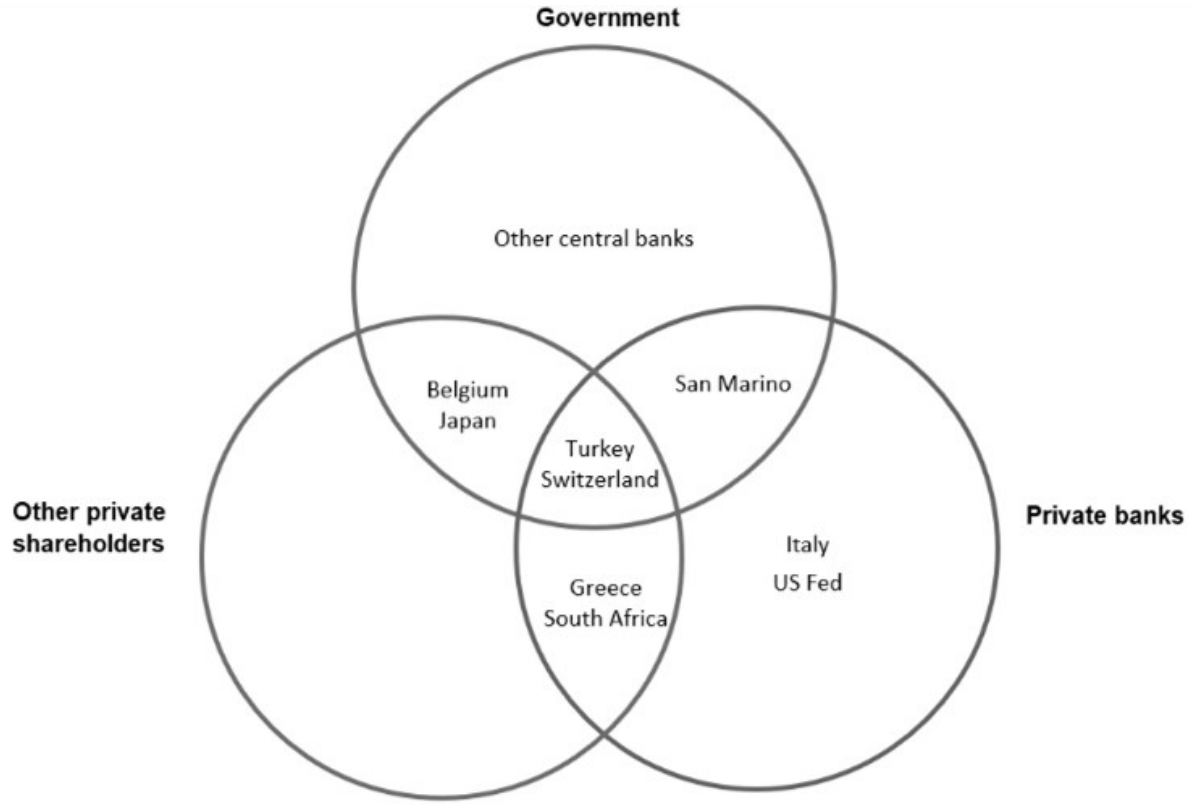

Figure 29: Classification of central banks by ownership
Notes: Bholat & Martinez Gutierrez, 2019

Interestingly, private shareholders or even private banks do play a significant role concerning the ownership of some major central banks. Thus, not only the seigniorage privilege of commercial banks but also the seigniorage privilege of central banks is an issue concerning distributive effects of the fractional reserve system.

The examination of those distributive effects has once again indicated that a fractional reserve system is non-neutral: such a system inherently favours the haves over the have-nots. A fractional reserve system inherently redistributes income and wealth within the economy. A fractional reserve system with an ever-growing money supply inherently boosts prices of financial or real assets or consumer prices. This leads to redistributive effects largely in favour of net-owners of already existing assets. A second redistributive effect is caused by seigniorage. Depending on the central banks' policy, technological and social changes, as well as the ownership structure of those organisations concerned, different economic actors may ultimately benefit from the profits. There is also a final source of redistribution. The central bank's interest

rate policy alters the distributive effects between net debtors and net creditors. It may also indirectly affect the prices of other already existing financial (e.g. shares, bonds) and real (e.g. real estate) assets. Given these facts, the ideal that 'neutral money' must be impartial between individuals and their individual life plans (see subsection 3.2.3) is clearly and seriously violated. Instead, the analysis has found that the ever-growing money supply in our fractional reserve system inherently and systematically redistributes income and wealth. Money in this system is not the demanded 'neutral' lubricant that helps everybody to strive for his or her individual life plan. Far from that, money inherently favours those who already possess assets and those who fortunately choose the life plan to conduct business in the right business sector (the one favoured by monetary expansion). Again, I shall briefly compare those insights to the mainstream idea of 'neutrality of money'. The economic mainstream not only reduces 'neutrality of money' to an axiomatic statement, it also usually reduces it to the quantity equation variables. Thus, it considers GDP but not GDP distribution or other distributive effects. However, this section indicates that monetary expansion clearly leads to strong distributive effects in different ways. Hence, the economic notion of 'neutrality of money' must necessarily be expanded to include distributive effects (as proposed, for instance by Moreira, Tabak, Mendonça, & Sachsida, 2016). The following section will briefly summarise the means by which the fractional reserve system is non-neutral, as this analysis has demonstrated thus far.

5.5 No, the Fractional Reserve System Is Not 'Neutral'.

This chapter aimed at investigating whether the fractional reserve system meets the requirements of the ideal of 'neutral money'. The general result is that this is not the case. Although there is no indication that the fractional reserve system itself has inherent effects on GDP growth, there are other strong effects that must be mentioned. It is not the fractional reserve system but the capitalist system in general that leads to such inherent effects on growth, namely, to a growth imperative. Yet, there are other violations of 'neutrality' directly caused by the fractional reserve system. A growing money supply inherently leads to more and more indebtedness of the commercial bank sector. The same is partly true for the non-bank sector. If a large proportion of newly created deposits is used for non-productive purposes (i.e. consumption) in that sector, its level of indebtedness rises as well. So, the analysis indicates that there is a permanently destabilising element built into the fractional reserve system. The above analysis also indicated that there are several inherent distributive effects

concerning all three sectors. The owners of the central bank and the commercial banks benefit from seigniorage privileges. Within the non-bank sector, owners of financial assets as well as owners of real assets (real estate) tend to benefit from relative price changes. This is because money creation alters price level relations among different asset categories (real assets, financial assets), thus redistributing net wealth among net owners and non-owners of those assets. And—according to the Cantillon effect, it is the first owners of new money (credit) who benefit more than the other market participants. Lastly, one must not forget similar redistributive effects stemming from the central bank’s interest rate policy. Changing the interest rate alters the distributive effects between creditors and debtors. Thus, based on an integrative economic ethics notion of ‘neutrality of money’ and a post-Keynesian analysis of fractional reserves systems, this thesis demonstrates that fractional reserve systems violate the requirements for ‘neutral money’ in many ways. Money in our contemporary fractional reserve system is unfortunately far from being this ‘neutral money’, this equally and unconditionally accessible secure societal tool for every individual to pursue her or his individual life plan.

6 Achievements, Limitations, and Further Research Needs

This last chapter summarises the thesis' achievements and limitations as well as discussing further research desiderata. Section 6.1 shows that the thesis has made two main contributions to the scholarly debate. The first one is a normative contribution to economic theory, effected through revisiting the normative core of 'neutrality of money'. The second contribution is made to the basic discussion of regulatory and monetary policy: the thesis argues that the prevailing 'fractional reserve system' is not 'neutral' in this rediscovered normative sense. After this summary of the thesis' contributions, section 6.2 reflects on the overall study design. There are two main limitation areas of this study. The first limit of the study is its operationalisation of 'neutrality of money' reduced to quantitative variables, although the notion of 'neutrality of money' in this thesis is clearly also a qualitative one. The second area of limitations concerns the study's understanding of the working and consequences of money based on post-Keynesianism. Although post-Keynesianism seems to be a sound basis, more post-Keynesian work is nonetheless needed to better understand the dynamics of the fractional reserve system and the capitalistic system. Thereafter, based on the study's contributions (section 6.1) as well as its limitations (section 6.2), section 6.3 will provide an outlook on future research desiderata. Again, there are two areas worth considering. First, as the last chapters of the thesis are limited to a quantitative perspective, further work on the qualitative aspects of 'monetary neutrality' is required. Then, the thesis' outcome itself indicates a second area where research would be desirable: The goals and instruments of monetary policy must be re-discussed in the scholarly and political debate.

6.1 Achievements: Research Results

The guiding question of this thesis has been whether the fractional reserve system is 'neutral' or not. Seeking the answer to this question led to two scholarly contributions. The first contribution is the rediscovery of the normative core of 'neutrality of money'. In today's economic mainstream, 'neutrality of money' is mostly used as an axiomatic assumption for model-building. This axiomatic assumption presumes that changes in the quantity of money only affect the price level of the economy and nothing else (see subsection 3.1.1). In contrast to that, chapter 3 found that already in its first deliberate usages, 'neutrality of money' was meant as a normative ideal. The

thesis' aim was therefore to rediscover the normative core of 'monetary neutrality'. As exactly this endeavour—to explore "the inherent normativity of economic rationality itself" (Ulrich, 2008a, p. ix)—is the leitmotif of Ulrich's integrative economic ethics, this first contribution was made by drawing on this particular approach. Seen in that light, the thesis is a contribution to the economic ethics' enlightening task, as Ulrich it calls. The result delivered is a well-understood, explicitly normative conception of 'neutral money' for economic theory. The main difference to Hayek's idea of 'monetary neutrality' is that 'neutral money' no longer serves the market ('neutrality' towards the market), but rather directly serves people ('neutrality' towards individuals and their life plans). As this is the case, 'neutral money' must be 'neutral' among all individuals pursuing their individual life plans. This requires that a 'neutral' monetary system respect the following moral rights of those individuals:

(1) non-interference (no favouring or hindering) in regard to the individuals' life plans
(2) equal unconditional access (as in the case of coins) to the monetary system
(3) equal unconditional security (as in the case of coins) of the monetary system

This means that money is no longer reduced to a pure economic lubricant that only promotes the efficiency of the distribution of scarce resources to maximise GDP, as Hayek likely had in mind. Rather, 'neutral money' must not play an independent role in fostering the pursuit of some life plans whilst endangering others. Those considerations are new in the sense that they have revived the explicit normative discussion on 'monetary neutrality'. This reconsideration of a normative notion of 'neutrality of money' indicates two implications for mainstream economics. First, it makes clear that explicit consideration of money in economic theory is indispensable. This is crucial, as during the last decade—at least until the Great Financial Crisis—economic mainstream theory and models hardly considered money, banks, and the financial sector (Martin, 2014; Werner, 2012, p. 2; Werner, 2005, p. 162). As a result, mainstream scholars underestimated the role of money (Dietz, 2016) and there are simply too few answers to questions about the link between finance and the real economy (Dembinski, 2009, p. 99). The second implication for economic theory is the indication that normative reasoning is a crucial part of economic theory. Although economic thought has its early roots in moral philosophy (Nussbaum, 2016), until today, it has mostly been understood as a positive science that should answer questions about 'what is' but should be silent as to 'what ought to be' (Putnam & Walsh, 2012, p. 1). In contrast to that common perception of economic theory as a positive science, revisiting the term 'neu-

trality of money' suggests that normative reasoning has always been and still is a crucial element of economic theory. Hence, this thesis argues that both explicitly considering money and normative reasoning are crucial to well-understood macroeconomics.

The second contribution is the argument that the prevalent fractional reserve system is far from 'neutral' in the above-mentioned sense. Based on the above-mentioned notion of 'neutrality of money', in chapter 5, a quantitative operationalisation was needed to analyse whether the prevalent monetary system is indeed 'neutral'. This quantitative operationalisation stated that such 'neutral money' should not have any inherent effects on (1) GDP growth, or (2) economic sector indebtedness, nor should it (3) have any inherent distributive effects on the economic sectors. Based on that operationalisation, chapter 5 offered an investigation into whether the fractional reserve system meets 'neutral money' requirements or not. The findings indicate that money is not 'neutral' in that sense. Hence, the investigation indicates that it is problematic to presume that money is 'neutral' in the mainstream economics sense that changes in the money supply do not have any effects on GDP. Although there is no indication that the fractional reserve system itself does in fact have inherent effects on GDP growth, there are other strong effects deserving mention. It is not the fractional reserve system but the capitalist system in general that leads to such inherent effects on growth, namely to a growth imperative[106]. This 'non-neutrality' of the capitalistic system is problematic as it undermines the idea of 'neutrality' in regard to individual life plans. Yet not only does such a growth imperative violate 'neutrality', but it also inverts means and ends. As chapter 2 demonstrated, the ultimate purpose of all economic activity must be its service to human life. A growth imperative, however, reduces human life to a means serving the end of an ever-growing economy. Additionally, the growth imperative leads to the fact that a constantly growing money supply is needed to avoid a disastrous shrinking spiral. Viewed as such, money is at least indirectly 'non-neutral', as a constant or even a declining money supply would clearly have severe effects on GDP. Apart from that, there are other violations of 'neutrality' that directly result from the fractional reserve system. The economic mainstream usually reduces the notion of 'neutrality of money' to the quantity equation variables only and does not even consider indebtedness as relevant for this economic concept. Yet, this thesis argues that neglecting effects of money on indebtedness is a blind spot in the

[106] The question of whether the fractional reserve system itself also has a growth imperative is still open. In other words, if there were no growth imperative caused by the general capitalist system, then would there be one caused by the monetary system? Some rare attempts have been made to answer that question (see Richters and Siemoneit, 2019).

economic mainstream. In the fractional reserve system, a growing money supply inherently leads to more and more indebtedness: money creation is always debt creation at the same time. Hence, a fractional reserve system is a huge debt-machinery, affecting all sectors: the central bank sector, the commercial bank sector, and the non-bank sector. Why is this problematic from an economic ethics point of view? Because this renders the monetary system, and thus the entire capitalist economy, very fragile. This is especially problematic because it is especially the weak and the poor who are at the greatest risk due to this instability. The next violation of 'neutrality' is its inherent redistributive element. Again, the economic mainstream not only reduces 'neutrality of money' to an axiomatic statement, it mostly also does not consider GDP distribution or other distributive effects. However, according to this thesis, monetary expansion leads to distributive effects in different ways. One of those may well be summarised as a kind of 'Matthew effect': the tendency of a growing money supply to render asset-owners better off and non-owners worse off. Within the non-bank sector, owners of financial assets as well as owners of real assets (real estate) tend to benefit from relative price changes. Furthermore—according to the Cantillon effect—it is always the first owners of new money (credit) who benefit more than the other market participants. In addition to that, the owners of the central bank and the commercial banks gain from seigniorage privileges, and interest policy is directly distributive via interest payments themselves. Again, one may ask: Why is all this so problematic? Because it undermines the idea of 'neutrality' regarding life plans (equality of opportunity). Self-determined freedom is directed ad absurdum here by the inherent constraints and distributional effects caused by the fractional reserve system. From the very beginning of the game, the cards were shuffled in favour of the haves, and not in favour of the have-nots. Those insights into the dynamics of the fractional reserve system are not generally new. It is just that most of them have received little attention in the economic mainstream in the last decades. However, the way in which those insights are used and applied to the thesis' question is new, namely in three different ways. First, to the knowledge of the author, there is no other source that investigates those effects on 'monetary neutrality' in breadth (i.e., considering different dimensions of 'neutrality'). Second, those effects on 'neutrality' are not only based on empirical studies but also explained theoretically, based on accounting principles. The application of this theoretical lens allows to conclude that the effects at stake are indeed inherent to the fractional reserve system. And third, there is no other contemporary source that has investigated 'neutrality of money' based on an explicit normative notion of 'neutrality'. The implications for economic theory and economic model-building are as fol-

lows. First, according to the thesis, it is very problematic to either implicitly or explicitly presume money to be 'neutral', as was the case in most macroeconomic models until very recently (see Galbács, 2015, p. 149; McCallum, 2004, p. 14). Mainstream economics should acknowledge that 'neutrality of money' is neither a well-proven empirical fact nor an unproblematic presumption. Rather, 'neutrality of money' must once again be treated in economics as a normative ideal as intended when coined. Second, the economics profession and particularly its experts on GDP growth (growth imperative), indebtedness (built-in debt-machinery), and economic inequality (built-in redistribution-machinery) should consider that the monetary system is a variable that must be considered as relevant for their research areas and agendas as well.

6.2 Reflection on the Study Design: Limits

After the summary of achievements, this section will present a reflection on the study's limits. There are two main areas to mention. First, although this thesis' notion of 'monetary neutrality' is considered to be a comprehensive one (qualitative and quantitative), the operationalisation has been limited to quantitative variables. According to the considerations in chapter 3, money must, in the first place, be 'neutral' among individuals and their life plans. Such a notion of 'monetary neutrality' is tangible only through qualitative and quantitative variables. Yet, in chapter 5, due to the study's aim, the operationalisation of 'neutrality' was deliberately limited to quantitative variables. This was a reasonable decision as the aim of the study was to explore whether the monetary system inherently violates the rule of 'neutrality' or not. As a monetary system is a quantitative structure, this is the most adequate means of showing its inherent effects also in the quantitative variables[107]. dimension. However, the

[107] In contemporary economics, 'neutrality of money' is not only deprived of its normative character, it is also frequently reduced to quantitative variables like those of the quantity equation (price level, aggregated income, money supply). However, according to Hayek and Koopmans, 'neutral money' was not meant to disturb the whole market allocation process. By stating that, they not only meant aggregated variables like income (or GDP); they even explicitly mentioned relative prices. Hence, in their view, 'neutral money' would be money that serves the markets by reducing transaction costs but that—apart from that—does not inherently alter the market allocation process. Hence, even from an economic perspective, reducing the idea of 'neutral money' to the quantity equation variables would never be acceptable. At least two elements would be lost: relative prices, and income distribution. However, from an integrative economic ethics point of view, such a reduction of 'neutral money' is not surprising. This might have its origin in the "fiction of the common good" ('Gemeinwohlfiktion' in the German original) (see section 2.4). In early neoclassical economics, the normative leitmotif, or guiding principle, was the "social maximization of utility for the wellbeing of all" (Ulrich, 2008a, p. 161). In this version of economics, free markets automatically assure the "social maximization of utility for the wellbeing of all" (Ulrich, 2008a, p. 163), which can then be measured as aggregate income (Y). Because of that, it is legitimate in that version of economic theory to reduce the goal of economic activity to the aggregate variable Y. However, as shown in section 2.2, such a generalisation of the purpose of economic activity is neither necessary nor legitimate. This view neglects

danger of such operationalisation is that it may again lead—mistakenly or unconsciously—to a reduction of the general qualitative notion of 'monetary neutrality' to a purely quantitative (economic) one. The operationalisation chosen obviously did not intend that. In fact, it is evident that 'monetary neutrality' must entail both quantitative variables (as used in chapter 5) as well as qualitative aspects (e.g. social and cultural aspects). An important limitation of thesis is therefore that those qualitative aspects of 'neutrality' would require to be more and broader elaborated and embedded in social sciences research. Particularly the notion of 'neutrality of money' with its three moral requirements[108] requires further clarification and embedding in related scholarly discussion to be exhaustive. Another limitation concerns the understanding of money production in the banking system. Here, the thesis focuses also primarily on quantitative (i.e. accounting) aspects and mentions behavioural questions (entrepreneurial and risk taking considerations) only to minimal degree. Chapter 1 showed that understanding money (and economics in general) would benefit from a more diverse social sciences inspired approach instead of following mainstream economics' deductive approach. Besides explicitly taking a post-Keynesian perspective this elaboration on 'neutrality of money' would benefit from such a more holistic approach[109]. There is yet a second area of limitations.

The understanding of the monetary system relies on the basis of post-Keynesianism. Nonetheless, further post-Keynesian work is needed to better understand the dynamics of the fractional reserve system and the capitalistic system in general. As chapter 1 already showed, post-Keynesianism and the credit theory of money constitute a very promising approach to understanding the working and dynamics of aggregate economic variables (GDP, indebtedness, etc.) in the context of a fractional reserve system. Also chapters 4 and 5 indicated the usefulness of that foundation for the aim of this study. On that basis, the thesis demonstrated, at least on a general level, how such a system works and in what manner that violates the ideal of 'neutral

the idea that the primary purpose of economic activity is to ensure that all people can pursue their individual life plans, and that this cannot be approximated by maximising aggregate income. Hence, there was obviously a temptation to reduce 'monetary neutrality' to such aggregate variables. However, the considerations in subsection 3.2.3 clearly pointed out that not only are such generalisations absolutely illegitimate but also that it is not possible to treat the notion of 'monetary neutrality' with quantitative variables only.

[108] (1) Non-interference in regard to the individuals' life plans, (2) equal unconditional access to the monetary system, and (3) equal unconditional security of the monetary system.

[109] This includes e.g. sociological and anthropological accounts on the functioning of money or historic accounts on historical scholarly debates on money (as for instance on the debate between the banking and the currency school during the 19th century in Great Britain).

money'. However, not all relevant questions in that field have already been addressed by post-Keynesian scholars nor have they all been discussed within the scope of this thesis. The most obvious limitation is that the study was reduced to a closed economy. In economic reality, crucial elements like exchange rates and foreign trade have therefore not been mentioned. Another central feature of this thesis is the growth imperative mentioned multiple times. Understanding the growth imperative and its consequences on the money supply requires more research and is considered in this thesis rather briefly. This involves questions on whether the monetary system itself leads to a growth imperative and/or how other accounting aggregates behave in certain ways (induced by the conditions of the monetary system). This research gap may be partly due to the fact that the post-Keynesian approach is not part of the economic mainstream. Thus, particularly the understanding of the growth mechanism as well as all its consequences on other aggregate accounting variables allow and indeed require further (stock-flow consistent) research[110].

[110] The thesis has shown that more of particularly such stock-flow consistent analysis on understanding the capitalist system and its monetary system is needed. There is still no in-depth understanding of the growth constraint of capitalist economies. The studies reviewed here agree that such a constraint exists (e.g. Johnson, 2015; Gilányi, 2015, Binswanger, 2009b). However, the extent of this constraint and the parameters on which it depends are not fully comprehended. Moreover, the question arises as to what role the monetary system plays in this process. Does the money supply only follow the growth constraint or is the monetary system itself subject to such a growth constraint? Moreover, this thesis only analysed the closed economy. This means that foreign trade and the international monetary system were not considered. In general, it seems that stock-flow consistent models could reveal even more details about the dynamics of aggregate variables caused by monetary growth. Overall, stock-flow consistent models seem crucial to understanding the balance sheet aggregates of the economic sectors (e.g. trends in money supply, debt, equity, etc.). The question is, for example, under what circumstances can the aggregate money supply grow, without leading to higher indebtedness in the different sectors? Most studies on indebtedness focus on indebtedness of the private sector or public debt. Indebtedness of the bank sector is usually not treated in those well-known sources. Furthermore, most of those publications do not ask if or how indebtedness is related to money production. One of the rare exceptions to that is Steve Keen's "Monetary Model of Capitalism" (2011, pp. 357-377). The reason for this research gap may be that in recent years neoclassical mainstream theory has neither investigated money properly nor even incorporated it in its central models. The same is true for applying the accounting lens: in mainstream theory, accounting models have played hardly any role in recent years. As the post-Keynesian approach is not part of the economic mainstream, particularly the understanding of the capitalist growth mechanism as well as all its consequences on other aggregate accounting variables allow for and indeed require further (stock-flow consistent) research. Unfortunately, this strand of research is not very widespread, especially in economics. This is so, despite the fact that a wealth of interdisciplinary research in system dynamics could be tapped (see Forrester, 2014; Meadows & Wright, 2011). In light of this, the state of research is still correspondingly scant. More research on this is definitely needed.

6.3 Outlook: Research Desiderata

Based on the study's achievements and limitations, I now discuss in this section the need for further research on the topic. I shall conclude that there are three main fields to consider. First, more work on the qualitative aspects of 'monetary neutrality' is needed. In this thesis, the evaluation of whether the fractional reserve system can meet the requirements of 'neutral money' or not is limited to quantitative aspects. Consequently, theoretical as well as empirical work on the qualitative aspects of 'neutral money' are still necessary. In subsection 3.2.3, this thesis set out what 'monetary neutrality' must entail from an integrative economics perspective. 'Neutral money' must be 'neutral' among all individuals pursuing their individual life plans. This requires that a 'neutral' monetary system respect the following moral rights of those individuals: (1) non-interference in regard to the individuals' life plans, (2) equal unconditional access to the monetary system, and (3) equal unconditional security in using the monetary system. Particularly concerning the qualitative aspects of 'neutral money', further theoretical as well as empirical work is necessary. Those requirements comprise three elements. First, as the notion of 'neutral money' is core to all further considerations, it is necessary to challenge whether the three above-mentioned moral rights for 'neutral money' indeed hold and exhaustively define what such 'neutrality' means. Second, those moral rights require further clarification and embedding in related scholarly discussions. I will now briefly discuss the three moral rights and what a further discussion on them must comprise. The first moral right, non-interference in regard to the individuals' life plans, shall ensure that all individuals are free to choose their individual life plans. For the purpose of this thesis, this moral right has been quantitively operationalised by whether GDP or wealth distribution is affected inherently by the monetary system. However, a holistic understanding of 'neutrality' must comprise also qualitative aspects as e.g. questions as choosing a profession, starting a family, or even decisions concerning leisure activities or engaging in politics. Here, an exhaustive definition of this moral right could be built upon e.g. Martha Nussbaum's (2003) "central human capabilities" or other other well-established approaches on defining and measuring what makes a (good) human life. The second moral right, equal unconditional access to the monetary system, means that all human beings desire unconditional access to money, as it is the case with cash. For the purpose of this thesis, this moral right has been classified as a qualitative one and there was not considered in the analysis of chapter 5. Yet, based on well-understood 'neutrality of money', the society's infrastructure must grant everybody unconditional access to the monetary sys-

tem. The question here to further develop is what dimensions this right must entail. According to section 4.1, the function of money is threefold: (1) means of exchange, (2) means of account, and (3) store of value. Hence, the moral right would have to entail exactly those three functions of money. However, today, most money creating transactions are at the same time credit providing transactions (see section 4.4). Thus, the monetary system is not separable from finance. Besides liquidity allocation, finance also entails capital allocation and risk allocation (see e.g. Dembinski, 2008, p. 100; Turner, 2010, p. 8; and Kay, 2015, pp. 5-6). This raises the question whether those other functions of finance would have to be addressed too by this access right to the monetary infrastructure. This would then be in line with for instance the "right to credit" as Meyer (2018) proposes it. This third moral right, equal unconditional security of the monetary system, means that every individual should equally benefit from a secure economic and monetary system that allows them to pursue their personal life plans. Stated negatively, insecurity and instability of the economic and monetary system, which in economic terms particularly endanger individuals' income and wealth, are to be avoided. To this thesis, this moral right has been quantitively operationalised in the form of the economic sectors' indebtedness. Yet also this criterion must be challenged whether it is sufficient in quantitative and qualitative terms. There are at least two dimensions that must be considered. First, whether or what attributes of the individuals[111] as well as what attributes of the whole system (national economies as well as the global economy) must be addressed by that moral right. Second, and connected to the first one, the dimension whether only the system, some parts of the system, or only some particular objects (e.g. asset categories) or subjects must be safe and secure or even if only some events must be prevented from happening (e.g. financial crises, currency crises, recessions, etc). Third, there is the question whether a 'neutral money' must indeed be an absolutely secure system or whether it would be sufficient to provide a 'safe haven' (safe banks, as Acharya (2008) proposed it) and then leave it to the individuals' choice to go the riskier or the safer way. As last requirement, the further research on 'neutrality of money' would then require to empirical explore whether or to what degree such a comprehensive notion (quantitative and qualitative) of 'neutral money' is violated today. To summarise, there is not only a further elaboration and normative definition of 'neutral money' needed, but also a comprehensive empirical exploration by (probably quantitative as well as qualitative) social research.

[111] This also includes single bank entities, and for instance their leverage ratio as demanded from the Basel Accords or in a more rigorous form by Admati and Hellwig (2013).

As a second requirement, the goals of monetary policy must be re-discussed in the scholarly and political debate. The primary aim of today's monetary policy is to avoid consumer price inflation. For many decades and even today, for most central banks and scholars it is self-evident that the central bank's main task is to avoid consumer price inflation—almost as a form of dogma, as Dembinski put it (2009, p. 52). The thesis challenges this predominant goal of monetary policy. If one takes the normative idea of 'neutral money' seriously, this will have far-reaching consequences. The consequence is then, that not a 'stable money' but instead a 'neutral money' must be the goal of monetary policy. This would be a categorial shift from a 'pure' economic goal to a well-understood ethical goal. As section 3.1 showed, even Hayek who understood 'neutral money' as normative ideal to aim for, understood it in economistic sense ('neutral money' as money that serves the markets processes only). This is still the case today, when scholars and central bankers theorise on the aims of monetary policy. Most of the time, their thoughts remain in the field of economics when they see avoiding inflation as functional requirement for a smooth efficiently functioning economic system[112]. Well-understood, ethically legitimate monetary policy, however, must serve the highest economic aim, the good life, and not be reduced to efficiency. Hence, taking this thesis idea of 'neutral money' seriously means to transform the economic discussion on 'monetary policy' into an explicit normative ethical discussion. Rather than being one-dimensional, such a discussion would have to refer to three moral rights concerning 'monetary neutrality': (1) non-interference in regard to the individuals' life plans, (2) equal unconditional access to the monetary system, and (3) equal unconditional security while using the monetary system. Beginning with the first point, the aim that monetary policy does not discriminate among different life plans would mean on a quantitative level that there is no inherent distributive element within monetary policy. However, as already analysed in detail, the fractional reserve system does inherently lead to distributive effects. As long as monetary policy focuses on consumer price stability only, it inevitably violates the ideal of 'neutral money'. For instance, as most central banks focus on consumer price inflation, they do not explicitly consider asset prices (see Dembinski, 2009, p. 31). Central banks could therefore explicitly consider asset price inflation as well as consumer price inflation when carrying out monetary policy. This might be done by maintaining a stable consumer price to asset price ratio, in addition to only targeting consumer price inflation. This would al-

[112] This makes clear that the dogma of avoiding inflation is not only too one dimensional, but that it is a form of economic reductionism (a reduction of monetary policy to the efficiency aim only).

ready reduce some of the distributive effects by asset price changes. Other distributive effects (caused by commercial bank seigniorage and interest policy) cannot be resolved by monetary policy, but rather by the general institutional arrangement and banking regulation or taxation. Then, turning to the second point: ensuring equal unconditional access to the monetary system. Today, this part of a well-understood notion of 'monetary neutrality' is scarcely addressed by the goals of monetary policy or monetary infrastructure. Today, bank deposits and especially credit cards are only available for non-banks meeting certain criteria. In the case of bank deposits, this may be due to the banks' regulation and administrative processes (e.g. identity checks). In the case of credit cards, this could go even further, because credit card owners must have a minimum level of creditworthiness. If all money were bank deposits or if most transactions had to be concluded by credit card, then certain people would be excluded from the payment infrastructure. It thus seems clear that today only cash is close to an unconditional form of money—it is usable by everyone without any precondition. Hence, to ensure 'neutral money', the goals and regulations of the monetary and banking infrastructure must be revisited, considering this aspect of 'monetary neutrality'. Finally, the last point: equal unconditional security of the system for everybody. Financial stability is today already explicitly addressed in monetary and banking regulation. Particularly here, recent years have introduced new regulatory ideas for the stability of the system. Most of those attempts focus on capital regulations to ensure the stability of single banks and thus of the system in general. Yet, according to the considerations of this thesis, the stability and security aim must go beyond that. The thesis showed that money injections always change debt levels in some ways. A well-understood stability therefore must not only consider the debt levels of commercial banks but also debt levels of all economic sectors and other elements mentioned in section 6.2.

Yet, there is not only the question concerning aims, but also the question of implementation. Thus, the third requirement is: What instruments should be used to pursue such monetary policy? Today, the primary goal of monetary policy is to avoid consumer price inflation and the main instrument for pursuing that is interest rate policy. Yet, what are the proper monetary instruments to aim for 'neutral money'? Again, I would like to refer here to the three moral rights concerning 'monetary neutrality': (1) non-interference in regard to the individuals' life plans, (2) equal unconditional access to the monetary system, and (3) equal unconditional security while using the monetary system. Beginning with the first point: What is the proper monetary in-

strument to ensure that monetary policy does not discriminate among different life plans and that there is no inherent distributive element within monetary policy? Is this still interest rate policy, which is part of the redistributive effects of the monetary system? Some scholars argue that central banks should shift their focus on money supply. For instance, Ryan-Collins et al. (2016) argue that policymakers should not only emphasise the role of bank credit, but that they need to disaggregate it and specifically target bank credit for GDP transactions. This points to the idea of credit guidance, as Werner (2002) refers to it. Credit guidance would mean that governmental authorities would steer what newly injected money would be used for (e.g. investment rather than speculation). The idea would be to shift credit allocation from unproductive (e.g. speculative) to productive (e.g. capital stock building) credit. According to the considerations in subsection 5.4.1, avoiding those unproductive consumptive expenses would reduce the redistributive element of the monetary system. Another idea for neutralising the most severe consequences of those redistributive effects (Cantillon effect) might be to consider those effects when carrying out monetary policy. As already mentioned above, central banks could therefore explicitly consider asset price inflation as well as consumer price inflation when carrying out monetary policy by e.g. maintaining a stable consumer price to asset price ratio. The seigniorage profit of commercial banks would still remain. In this regard, one could as part of the process of issuing banking licences define how and how much of the seigniorage profit had to be skimmed off by taxes. A rather intrusive measure concerning that problem would be to prohibit all private money production or to prescribe a set money supply. If all money were to be produced publicly, then the government could use the seigniorage privilege for public purposes or redistribute it to all people equally. Another alternative would be a stable money supply, which would, however, conflict with the capitalist system's growth compulsion. Then, turning to the second point: What might the proper instrument to ensure equal unconditional access to the monetary system be? Today, bank deposits and especially credit cards are only available for non-banks meeting certain criteria. Because of that, it thus seems clear that today only cash is close to be an unconditional form of money. In addition to cash, a minimal intrusive option would again be to provide an additional public infrastructure. A public 'empowering bank' for the biggest losers of the contemporary 'non-neutral' system could, for instance, ensure that everybody has access to the system. Finally, the last point: Equal unconditional security of the system for everybody. Particularly here, recent years have introduced new regulatory ideas for the stability of the system. As an example, Admati and Hellwig (2013) proposed that banks must hold equity on the order of at least 20-30 percent (p. 179) of

their total assets, whereas Cocchrane (2014) even claimed that banks should be founded on 100% equity—which would constitute a kind of narrow banking (see Kay, 2015; Kotlikoff, 2010). One last idea that would not radically change the current system would be the introduction of safe banks. Acharya (2008) promoted this idea of safe banks. According to him, the government should create a sufficient number of safe banks, which "invest exclusively in government securities, accept no more deposits than liquidation value of assets, and issue no liabilities (like debt) except common stock and preferred stock". In that system, all other banks would operate without regulation. In the case of a bank run, in his idea, the safe banks would serve the panic-prone depositors. Yet, maybe the normative ideal of a secure 'neutral money' should even lead to a discussion about a whole new monetary system. One could try to decrease the share of debt-based money by promoting commodity money (e.g. a gold standard favoured by some Austrian scholars) or positive money issued by the central bank (Niepelt, 2018). In that case, such an e-currency would supplement existing money without forcing anyone to hold it[113]. A more radical proposition would be to completely switch to commodity money or positive money (see Huber, 2011).

To conclude, this thesis not only analysed whether the fractional reserve system is neutral or not—it also raised new questions. This last section showed that although this thesis offers a new perspective on monetary policy, a lot of work remains to be done. If indeed a 'neutral money' is to be our monetary policy aim (or ideal), then this new aim requires a lot of further research to achieve.

[113] Yet, instead of interfering in markets with such radical reforms, governmental authorities could provide a safe alternative for all people who do not want to bear the above-mentioned systemic risks of debt-based money. The simplest way would be to open central bank reserves for all, as mentioned by Niepelt (2018). This would allow all risk-averse people to move their savings from commercial banks to the central bank. This would be possible without any new infrastructure. A similar idea would be to introduce electronic cash. As electronic cash would be a synthetic commodity, it could even allow for a decrease in the share of debt-based money.

Sources

Acharya, S. (2008). Safe banking to avoid moral hazard. *Journal of Risk Management in Financial Institutions*, *1*(3), 297–310.

Admati, A. R., & Hellwig, M. F. (2013). *The bankers' new clothes: What's wrong with banking and what to do about it*. Princeton, Oxford: Princeton University Press.

Anderson, E. (2004). Ethical Assumptions in Economic Theory: Some Lessons From the History of Credit and Bankruptcy. *Ethical Theory and Moral Practice*, *7*(4), 347–360. Retrieved from http://www.marketsandmorality.com

Arcand, J.-L., Berkes, E., & Panizza, U. (2012). *Too Much Finance?* (IMF Working Paper No. 12/161). Retrieved from International Monetary Fund website: http://www.imf.org/external/pubs/ft/wp/2012/wp12161.pdf

Aßländer, M. S. (2011a). 1. Die wirtschafts- und unternehmensethische Debatte im deutsch sprachigen Raum. In M. S. Aßländer (Ed.), *Handbuch Wirtschaftsethik* (pp. 71–76). Stuttgart: J.B. Metzler. Homann, K., & Bloome-Drees, F. (1992). *Wirtschafts- und Unternehmensethik*. Göttingen: UTB.

Aßländer, M. S. (2011b). 6. Republikanischer Ansatz (Horst Steinmann und Albert Löhr). In M. S. Aßländer (Ed.), *Handbuch Wirtschaftsethik* (pp. 108–115). Stuttgart: J.B. Metzler.

Aßländer, M. S. (2011c). Ordnungstheoretischer Ansatz (Karl Homann). In M. S. Aßländer (Ed.), *Handbuch Wirtschaftsethik* (pp. 116–124). Stuttgart: J.B. Metzler.

Bagus, P., Gabriel, A., & Howden, D. (2018). On the Necessary and Sufficient Conditions for Legitimate Banking Contracts. *Journal of Business Ethics*, *147*(3), 669–678. https://doi.org/10.1007/s10551-015-2972-y

Bäurle, G., & Scheufele, R. (2016). *Credit cycles and real activity - the Swiss case* (SNB Working Papers No. 13).

Benes, J., & Kumhof, M. (2012). *The Chicago Plan Revisited* (IMF Working Paper No. 12/202). Retrieved from International Monetary Fund website: https://www.imf.org/external/pubs/ft/wp/2012/wp12202.pdf

Bezemer, D. J. (2010). Understanding financial crisis through accounting models. *Accounting, Organizations and Society*, *35*(7), 676–688. https://doi.org/10.1016/j.aos.2010.07.002

Bhaduri, A. (2019). Moneylenders. In M. Vernengo, E. Perez Caldentey, & J. R. J. Barkley (Eds.), *The New Palgrave Dictionary of Economics* (pp. 1–3). London: Palgrave Macmillan; Palgrave Macmillan UK. https://doi.org/10.1057/978-1-349-95121-5_816-1

Bhattacharya, J., Haslag, J. H., & Martin, A. (2005). HETEROGENEITY, REDISTRIBUTION, AND THE FRIEDMAN RULE *International Economic Review*, *46*(2), 437–454. https://doi.org/10.1111/j.1468-2354.2005.00327.x

Bholat, D., & Martinez Gutierrez, K. (2019). *The ownership of central banks*. Retrieved from Bank of England website: https://bankunderground.co.uk/2019/10/18/the-ownership-of-central-banks/

Binswanger, H. C. (2009a). *Die Wachstumsspirale: Geld, Energie und Imagination in der Dynamik des Marktprozesses* (3., durchges. Aufl.). Marburg: Metropolis-Verlag.

Binswanger, H. C. (2012). Growth imperative and money creation – a new outlook on growth dynamics. In G. Mennillo, E. Friedrich, & T. Schlenzig (Eds.), *Management for professionals. Balanced growth: Finding strategies for sustainable development* (pp. 3–9). Berlin, Heidelberg: Springer.

Binswanger, M. (1997). The Finance Process on a Macroeconomic Level from a Flow Perspective: A New Interpretation of Hoarding. *International Review of Financial Analysis*, *6*(2), 107–131.

Binswanger, M. (2009b). Is there a growth imperative in capitalist economies? a circular flow perspective. *Journal of Post Keynesian Economics*, *31*(4), 707–727. https://doi.org/10.2753/PKE0160-3477310410

Binswanger, M. (2015a). *Geld aus dem Nichts: Wie Banken Wachstum ermöglichen und Krisen verursachen*. Weinheim: Wiley-VCH.

Binswanger, M. (2015b). The growth imperative revisited: a rejoinder to Gilányi and Johnson. *Journal of Post Keynesian Economics*, *37*(4), 648–660. https://doi.org/10.1080/01603477.2015.1050333

Blanchard, O., & Illing, G. (2014). *Makroökonomie* (6., aktualisierte Aufl. [der amerikan. Aufl.]). Hallbergmoos: Pearson Deutschland.

Blaug, M. (1997). *Economic theory in retrospect* (5th ed.). Cambridge, New York: Cambridge University Press.

Boldyrev, I., & Svetlova, E. (2016). After the Turn: How the Performativity of Economics Matters. In I. Boldyrev & E. Svetlova (Eds.), *Enacting Dismal Science* (pp. 1–27). New York: Palgrave Macmillan US.

Bootle, R. P. (2011). *The trouble with markets: Saving capitalism from itself* (2nd ed.). London: Nicholas Brealey Pub.

Bordo, M. D. (2019). Monetary Policy, History of. In M. Vernengo, E. Perez Caldentey, & J. R. J. Barkley (Eds.), *The New Palgrave Dictionary of Economics* (Vol. 12, pp. 1–9). London: Palgrave Macmillan; Palgrave Macmillan UK. https://doi.org/10.1057/978-1-349-95121-5_2743-1

Bossone, B., & Costa, M. (2018a). The "accounting view" of money: money as equity. Retrieved from http://blogs.worldbank.org/allaboutfinance/accounting-view-money-money-equity-part-i

Bossone, B., & Costa, M. (2018b). The "accounting view" of money: money as equity. Retrieved from http://blogs.worldbank.org/allaboutfinance/accounting-view-money-money-equity-part-ii

Bossone, B., Costa, M., Cuccia, A., & Valenza, G. (2018). Accounting Meets Economics: Towards an 'Accounting View' of Money. *SSRN Electronic Journal.* Advance online publication. https://doi.org/10.2139/ssrn.3270860

Brodbeck, K.-H. (2012). *Die Herrschaft des Geldes: Geschichte und Systematik* (2., durchges. Aufl.). *WBG-Wissen verbindet*. Darmstadt: WBG, Wissenschaftliche Buchgesellschaft.

Bullard, J., & Keating, J. W. (1995). The long-run relationship between inflation and output in postwar economies. *Journal of Monetary Economics*, *36*, 477–496.

Büscher, M. (2011). 5. Integrative Wirtschaftsethik (Peter Ulrich). In M. S. Aßländer (Ed.), *Handbuch Wirtschaftsethik* (pp. 100–107). Stuttgart: J.B. Metzler.

Cantillon, R. (1755). *Essay on the Nature of Commerce in General: Part Two*. Retrieved from https://socialsciences.mcmaster.ca/econ/ugcm/3ll3/cantillon/essay2.txt

Cas, M. (2016). The Classical Dichotomy. *Economic Review*, *45*(1), 123-131.

Cecchetti, S. G., & Kharroubi, E. (2012). *Reassessing the impact of finance on growth.* (BIS Working Papers No. 381). Retrieved from Bank for International Settlements website: http://www.bis.org/publ/work381.pdf

Chick, V., & Dow, S. C. (2013). Post-Keynesian Theories of Money and Credit: Conflicts and (some) Resolutions - Oxford Handbooks. In G. C. Harcourt & P. Kriesler (Eds.), *The Oxford handbook of post-Keynesian economics*. Oxford, New York: Oxford University Press. https://doi.org/10.1093/oxfordhb/9780195390766.013.0008

Cochrane, J. H. (2014). Toward a Run-Free Financial System. *SSRN Electronic Journal.* Advance online publication. https://doi.org/10.2139/ssrn.2425883

Colander, D., Föllmer, H., Hass, A., Goldberg, M., Juselius, K., Kirman, A., . . . Sloth, B. (2008). *The Financial Crisis and the Systemic Failure of Academic Economics* (Outcom of the 'Modeling of Financial Markets' working group at the 98th Dahlem Workshop, 2008). Retrieved from http://keenomics.s3.amazonaws.com/debtdeflation_media/papers/Dahlem_Report_EconCrisis021809.pdf

Cox, R. W. (1981). Social Forces, States and World Orders: Beyond International Relations Theory. *Millennium: Journal of International Studies*, *10*(2), 126–155. https://doi.org/10.1177/03058298810100020501

Danthine, J.-P. (2008). Superneutrality. In M. Vernengo, E. Perez Caldentey, & J. R. J. Barkley (Eds.), *The New Palgrave Dictionary of Economics* (Vol. 1996, pp. 1–4). London: Palgrave Macmillan; Palgrave Macmillan UK. https://doi.org/10.1057/978-1-349-95121-5_2194-1

Davies, G. (1996). *A history of money: From ancient times to the present day* (New ed.). Cardiff: University of Wales Press.

Davis, E. P., & Zhu, H. (2011). Bank lending and commercial property cycles: Some cross-country evidence. *Journal of International Money and Finance*, *30*, 1–21. https://doi.org/10.1016/j.jimonfin.2010.06.005

De Marneffe, P. (1990). Liberalism, Liberty, and Neutrality. *Philosophy & Public Affairs*, *19*(3), 253–274. Retrieved from http://www.jstor.org/stable/2265396

Deleidi, M., & Fontana, G. (2019). Money Creation in the Eurozone: An Empirical Assessment of the Endogenous and the Exogenous Money Theories. *Review of Political Economy*, *31*(4), 559–581. https://doi.org/10.1080/09538259.2020.1737390

Dembinski, P. H. (2009). *Finance: Servant or deceiver? financialization at the crossroads* (English ed.). [Geneva], Houndmills, Basingstoke, Hampshire, New York: Observatoire de la Finance; Palgrave Macmillan.

Desai, M. (2019). Endogenous and Exogenous Money. In M. Vernengo, E. Perez Caldentey, & J. R. J. Barkley (Eds.), *The New Palgrave Dictionary of Economics* (Vol. 51, pp. 1–4). London: Palgrave Macmillan; Palgrave Macmillan UK. https://doi.org/10.1057/978-1-349-95121-5_557-1

Dierksmeier, C. (2016). *Qualitative Freiheit: Selbstbestimmung in weltbürgerlicher Verantwortung*. *Edition Moderne Postmoderne*. Bielefeld: transcript. Retrieved from http://dx.doi.org/10.14361/9783839434772 https://doi.org/10.14361/9783839434772

Dierksmeier, C., & Seele, P. (2018). Cryptocurrencies and Business Ethics. *Journal of Business Ethics*, *152*(1), 1–14. https://doi.org/10.1007/s10551-016-3298-0

Dietsch, P. (2017). Normative dimensions of central banking: How the guardians of financial markets affect justice. In L. Herzog (Ed.), *Just financial markets?: Finance in a just society* (pp. 231–249). Oxford, United Kingdom, New York, NY: Oxford University Press.

Dietz, R. (2015). Ökonomik als Kulturwissenschaft: Ökonomischer Fundamentalismus vs. Simmels Relativismus. *Zeitschrift Für Kulturphilosophie*, *1-2*, 171–178.

Dietz, R. (2016). *Geld und Schuld: Eine ökonomische Theorie der Gesellschaft* (Fünfte, überarbeitete Auflage). Marburg: Metropolis-Verlag.

Dow, S. C. (2013). Methodology and Post-Keynesian Economics. In G. C. Harcourt & P. Kriesler (Eds.), *The Oxford handbook of post-Keynesian economics* (pp. 79–99). Oxford, New York: Oxford University Press. https://doi.org/10.1093/oxfordhb/9780195390759.013.0003

Drakopoulos, S. A. (2016). Economic crisis, economic methodology and the scientific ideal of physics. *The Journal of Philosophical Economics*, *X*(1), 28–57.

Duczynski, P. (2008). On the Empirics of the Non-Neutrality of Money: Cross-Country Evidence. *Indian Economic Review*, *43*(1), 1–15.

Dworkin, R. (1985). *A matter of principle*. Cambridge Massachusetts: Harvard University Press.

Easterly, W., Islam, R., & Stiglitz, J. E. (2001). Shaken and Stirred: Explaining Growth Volatility. In B. Pleskovic & N. H. Stern (Eds.), *Annual World Bank Conference on Development Economics // Annual World Bank Conference on Development Economics, 2000* (pp. 191–211). Washington, D.C.: World Bank. Retrieved from http://siteresources.worldbank.org/DEC/Resources/28040_shaken_and_stirred.pdf

Eichengreen, B. (2008). *Globalizing Capital: A History of the International Monetary System (Second Edition)*. Princeton: Princeton University Press. Retrieved from http://gbv.eblib.com/patron/FullRecord.aspx?p=483542

Eucken, W. (1959). *Die Grundlagen der Nationalökonomie* (7th ed.). *Enzyklopädie der Rechts- und Staatswissenschaft: I*. Berlin: Springer.

Evans, A. J. (2015). What is the Latin for 'Mayonnaise'? A Response to Bagus, Howden and Gabriel. *Journal of Business Ethics*, *131*(3), 619–623. https://doi.org/10.1007/s10551-014-2299-0

Fisher, I. (1935/2007). *100%-Geld*. Kiel: Gauke, Verl. für Sozialökonomie.

Fontan, C., Claveau, F., & Dietsch, P. (2016). Central banking and inequalities: Taking off the blinders. *Politics, Philosophy & Economics*, *15*(4), 319–357. https://doi.org/10.1177/1470594X16651056

Forrester, J. W. (2014). *Grundzüge einer Systemtheorie: (Principles of systems)* (Nachdr. der Ausg. 1972). Wiesbaden: Gabler.

Friedman, B. M. (2019). Money Supply. In M. Vernengo, E. Perez Caldentey, & J. R. J. Barkley (Eds.), *The New Palgrave Dictionary of Economics* (Vol. 37, pp. 1–10). London: Palgrave Macmillan; Palgrave Macmillan UK. https://doi.org/10.1057/978-1-349-95121-5_875-2

Friedman, M. (1962/2002). *Capitalism and freedom* (40. anniversary ed, [Nachdr.]). Chicago, Ill., Lonson: University of Chicago Press.

Friedman, M. (1970). *The counter-revolution in monetary theory*. London: Institute of Economic Affairs.

Friedman, M. (1987). Quantity Theory of Money. *The New Palgrave: A Dictionary of Economics (Edited by John Eatwell, Murray Milgate, and Peter Newman)*, *Volume 4*, 3–20. Retrieved from https://miltonfriedman.hoover.org/objects/56865/quantity-theory-of-money?ctx=4c31d740-dfb2-4b8e-b16c-f69ec1a60605&idx=87

Friedman, M., & Schwartz, A. J. (1969). The Definition of Money: Net Wealth and Neutrality as Criteria. *Journal of Money, Credit, and Banking*. (1), 1–14. https://doi.org/10.2307/1991373

Friedman, M., (1962). Should there be an independent monetary authority? In: Leland, B.Y. (Ed.), *In Search of a Monetary Constitution.* Harvard University Press, Cambridge, MA, pp. 219–243.

Galbacs, P. (2015). *The Theory of New Classical Macroeconomics: A Positive Critique* (2015 edition). Cham: Springer.

Gaus, G. F. (2009). The Moral Foundations of Liberal Neutrality. In T. Christiano & J. Christman (Eds.), *Contemporary Debates in Political Philosophy* (pp. 79–98). Oxford, UK: Wiley-Blackwell. https://doi.org/10.1002/9781444310399.ch5

Gilányi, Z. (2015). A brief note on Mathias Binswanger's model. *Journal of Post Keynesian Economics*, *37*(4), 590–596. https://doi.org/10.1080/01603477.2015.1049927

Godley, W., & Lavoie, M. (2016). *Monetary Economics: An Integrated Approach to Credit, Money, Income, Production and Wealth* (2nd ed.). London: Palgrave Macmillan UK.

Goodhart, C. (2019). Monetary Base. In M. Vernengo, E. Perez Caldentey, & J. R. J. Barkley (Eds.), *The New Palgrave Dictionary of Economics* (pp. 1–5). London: Palgrave Macmillan; Palgrave Macmillan UK. https://doi.org/10.1057/978-1-349-95121-5_997-1

Goodhart, C. A. E. (1989). *Money, information, and uncertainty* (2nd ed.). Houndmills, Basingstoke, Hampshire: Macmillan.

Graeber, D. (2011). *Debt: The first 5,000 years*. Brooklyn, N.Y.: Melville House.

Grass, R.-D., & Stützel, W. (1988). *Volkswirtschaftslehre: Eine Einführung auch für Fachfremde* (2, überarbeitete Aufl.). *Reihe Volkswirtschaft*. München (Allemagne): Franz Vahlen.

Grinberg, R. (2012). Bitcoin: An Innovative Alternative Digital Currency. *Hastings Science & Technology Law Journal*. (4), 159–208.

Gulamhuseinwala, I., Bull, T., & Lewis, S. (2015). FinTech is gaining traction and young, high-income users are the early adopters. In *The Journal of Financial Perspectives* (pp. 16–23): Ernst & Young.

Gygi, F. (1970). Die schweizerische Wirtschaftsverfassung. *Zeitschrift Für Schweizerisches Recht*, 89(II), 259–389.

Hayek, F. A. (1931). *Prices and Production*. London: George Routledge.

Hayek, F. A. v. (1976/1990). *Denationalisation of money: The argument refined : an analysis of the theory and practice of concurrent currencies* (3rd ed.). London: Institute of Economic Affairs.

Hellwig, M. F. (2014). Financial Stability, Monetary Policy, Banking Supervision, and Central Banking. *SSRN Electronic Journal.* Advance online publication. https://doi.org/10.2139/ssrn.2475780

Hicks, J. R. (1989). *A market theory of money* (Reprint). Oxford: Clarendon Press.

Hoeller, P., Fournier, J.-M., Fall, F., & Bloch, D. (2015). *Finance and Inclusive Growth*. *OECD Economic Policy Papers: Vol. 15*. Retrieved from http://www.oecd-ili-brary.org/docserver/download/5js06pbhf28s.pdf?expires=1438092179&id=id&accname=guest&checksum=34142829F90C52CBCA34C1BFEDD8D194 https://doi.org/10.1787/2226583x

Homann, K., & Bloome-Drees, F. (1992). *Wirtschafts- und Unternehmensethik*. Göttingen: UTB.

Homann, K., & Pies, I. (1994). Wirtschaftsethik in der Moderne. Zur ökonomischen Theorie der Moral. *Ethik Und Sozialwissenschaften*, *5*(1), 3–12.

Howe, R. H. (1915). *The Evolution of Banking: A study of the development of the credit system.* Chicago: C. H. Kerr & Company.

Howitt, P. (2019). Money Illusion. In M. Vernengo, E. Perez Caldentey, & J. R. J. Barkley (Eds.), *The New Palgrave Dictionary of Economics* (Vol. 3, pp. 1–3). London: Palgrave Macmillan; Palgrave Macmillan UK. https://doi.org/10.1057/978-1-349-95121-5_1195-2

Huber, J. (2011). *Monetäre Modernisierung: Zur Zukunft der Geldordnung* (2., aktual. Aufl.). Marburg: Metropolis.

Hudson, M. (2014). *The bubble and beyond: Fictitious capital, debt deflation and global crisis* (New ed. with index, list of exhibits and 2 bonus chapters). Dresden: ISLET.

Hudson, M. (2015). *Killing the host: How financial parasites and debt destroy the global economy*. Baskerville: ISLET.

Huerta de Soto, J. (2006). *Money, bank credit, and economic cycles* (1st English ed.). Auburn, Ala.: Ludwig von Mises Institute.

Hülsmann, J. G. (2008). *The ethics of money production*. Auburn: Ludwig von Mises Institute.

Hülsmann, J. G. (2013). *Krise der Inflationskultur: Geld, Finanzen und Staat in Zeiten der kollektiven Korruption* (1. Aufl.). *Edition Lichtschlag*. München: FBV.

Ingham, G. (2005). *The nature of money* ([Reprint]). Cambridge: Polity.

Irmen, A. (2011). *Ist Wirtschaftswachstum systemimmanent?* (Discussion paper series No. 509). University of Heidelberg, Departement of Economics. https://doi.org/10.11588/HEIDOK.00011538

Johnson, R. (2015). Capitalism's growth imperative: an examination of Binswanger and Gilányi. *Journal of Post Keynesian Economics*, *37*(4), 597–622. https://doi.org/10.1080/01603477.2015.1049928

Jordà, Ò., Schularick, M., & Taylor, Alan, M. (2014a). *The great mortgaging: Housing finance, crises, and business cycles*. *NBER Working Paper Series: Working Paper 20501*. Retrieved from http://www.nber.org/papers/w20501

Jordà, Ò., Schularick, M., & Taylor, Alan, M. (2014b). *Betting the house*. *NBER Working Paper Series: Working Paper 20771*. Retrieved from https://www.nber.org/papers/w20771

Kareken, J. H., & Wallace, N. (1980). Introduction. In J. H. Kareken & N. Wallace (Eds.), *Models of Monetary Economics* (pp. 1–9). Minneapolis: Federal Reserve Bank of Minneapolis.

Kay, J. A. (2015). *Other people's money: The real business of finance* (First US edition). New York: PublicAffairs.

Keen, S. (2011). *Debunking economics: The naked emperor dethroned?* : 2nd ed. London, UK: Zed Book.

Keynes, J. M. (1936/2010). *The general theory of employment, interest, and money*. Mansfield Centre, CT: Martino Pub.

King, J. E. (2019). Post Keynesian Economics. In M. Vernengo, E. Perez Caldentey, & J. R. J. Barkley (Eds.), *The New Palgrave Dictionary of Economics* (Vol. 21,

pp. 1–12). London: Palgrave Macmillan; Palgrave Macmillan UK. https://doi.org/10.1057/978-1-349-95121-5_1634-2

King, R. G., & Levine, R. (1993). Schumpeter Might be Right. *The Quarterly Journal of Economics, 108*(3), 717–737.

Kis, J. *State neutrality* (WZB Discussion Paper No. SP IV 2012-801). Retrieved from Social Science Research Center Berlin (WZB) website: http://hdl.handle.net/10419/72456

Kohn, D. L. (2009). *Monetary Policy Research and the Financial Crisis: Strengths and Shortcomings.* Federal Reserve. Federal Reserve Conference on Key Developments in Monetary Policy, Washington, D.C. Retrieved from http://www.federalreserve.gov/newsevents/speech/kohn20091009a.htm

Koo, R. C. (2011). The world in balance sheet recession: causes, cure, and politics. *Real-World Economics Review*, *December 2011*(58), 19–37.

Kotlikoff, L. J. (2010). *Jimmy Stewart is dead: Ending the world's ongoing financial plague with limited purpose banking*. Hoboken, N.J.: Wiley.

KPMG Iseland (2016). *Money Issuance: Alternative Monetary Systems*. A report commissioned by the Icelandic Prime Minister's Office. Retrieved from https://assets.kpmg.com/content/dam/kpmg/is/pdf/2016/09/KPMG-MoneyIssuance-2016.pdf

Lavoie, M. (2019). Modern monetary theory and post-Keynesian economics. *Real-World Economics Review*, *89*, 97–108. Retrieved from http://www.paecon.net/PAEReview/issue89/Lavoie89.pdf

Lawson, T. (2009). The current economic crisis: Its nature and the course of academic economics. *Cambridge Journal of Economics*, *33*(4), 759–777. https://doi.org/10.1093/cje/bep035

Layard, P. R. G. (2011). *Happiness: Lessons from a new science.* (New ed.: fully rev. and updated.). Penguin psychology. London: Penguin Books.

Leaven, L., & Valencia, F. (2008). *Systemic Banking Crises: A New Database* (IMF Working Paper No. 08/224).

Leaven, L., & Valencia, F. (2012). *Systemic Banking Crises Database: An Update* (IMF Working Paper No. 12/163).

Ledoit, O. (2011). *The Redistributive Effects of Monetary Policy* (Working Paper Series No. 44). Retrieved from University of Zurich website: http://ssrn.com/abstract=1958202

Lee, F. S. (2016). Heterodox Economics. In M. Vernengo, E. Perez Caldentey, & J. R. J. Barkley (Eds.), *The New Palgrave Dictionary of Economics* (Vol. 22, pp. 1–7). London: Palgrave Macmillan; Palgrave Macmillan UK. https://doi.org/10.1057/978-1-349-95121-5_2487-1

Liang, Q., & Cao, H. (2007). Property prices and bank lending in China. *Journal of Asian Economics*, *18*, 63–75. https://doi.org/10.1016/j.asieco.2006.12.013

Lopez, J. C., Babcic, S., & De La Ossa, A. (2015). Advice goes virtual: how new digital investment services are changing the wealth management landscape. In *The Journal of Financial Perspectives* (pp. 156–165): Ernst & Young.

Lovett, F., & Whitfield, G. (2016). Republicanism, Perfectionism, and Neutrality. *Journal of Political Philosophy*, *24*(1), 120–134. https://doi.org/10.1111/jopp.12067

Lucas, R. E. (1980). Two Illustrations of the Quantity Theory of Money. *American Economic Review*, *70*, 1005–1014.

Macfarlane, L., Ryan-Collins, J., Bjerg, O., Nielsen, R., & McCann, D. (2017). *Making money from making money: Seignorage in the modern economy*. Retrieved from New Economics Foundation (NEF) website: http://neweconomics.org/2017/01/making-money-making-money/

MacKenzie, D. A. (2006). *An engine, not a camera: How financial models shape markets*. *Inside technology*. Cambridge, Mass.: MIT Press.

Mankiw, N. G. (2011). *Makroökonomik: Mit vielen Fallstudien* (6., überarbeitete und erweiterte Auflage). Stuttgart: Schäffer-Poeschel.

Martin, F. (2014). *Money: The unauthorized biography; from coinage to cryptocurrencies* (First Vintage Books ed.). New York, NY: Vintage Books.

Mayer, T. (2015). *Die neue Ordnung des Geldes: Warum wir eine Geldreform brauchen* (3., aktualisierte Auflage). München: FinanzBuch-Verl.

McCallum, B. T. (2004). *Long-Run Monetary Neutrality and Contemporary Policy Analysis*. Retrieved from Trepper School of Business website: http://repository.cmu.edu/tepper/291

McLeay, M., Radia, A., & Ryland, T. (2014). Money creation in the modern economy: 2014. *Bank of England Quarterly Bulletin*. (Q1). Retrieved from https://www.bankofengland.co.uk/quarterly-bulletin/2014/q1/money-creation-in-the-modern-economy

Meadows, D. H., & Wright, D. (2011). *Thinking in systems: A primer* ([Nachdr.]). White River Junction, Vt: Chelsea Green Pub. Retrieved from http://www.loc.gov/catdir/enhancements/fy0905/2008035211-b.html

Menger, C. (1923). *Grundsätze der Volkswirtschaftslehre* (2. Aufl.). Wien: Freytag.

Meyer, C., & Hudon, M. (2018). Money and the Commons: An Investigation of Complementary Currencies and Their Ethical Implications. *Journal of Business Ethics*, *132*(4), 603. https://doi.org/10.1007/s10551-018-3923-1

Meyer, M. (2018). The Right to Credit. *Journal of Political Philosophy*, *26*(3), 304–326. https://doi.org/10.1111/jopp.12138

Minsky, H. P. (1986/2008). *Stabilizing an unstable economy* (New ed.). New York, NY: McGraw-Hill.

Minsky, H. P. (1992). *The Financial Instability Hypothesis* (The Jerome Levy Economics Institute of Bard College Working Paper No. 74). Retrieved from http://dx.doi.org/10.2139/ssrn.161024

Mises, L. (1924/2005). *Theorie des Geldes und der Umlaufsmittel* (2. Aufl.). Berlin: Duncker & Humblot. https://doi.org/10.3790/978-3-428-51882-1

Moreira, T. B. S., Tabak, B. M., Mendonça, M. J., & Sachsida, A. (2016). An Evaluation of the Non-Neutrality of Money. *PloS One*, *11*(3), e0145710. https://doi.org/10.1371/journal.pone.0145710

Niehans, J. (1990). *A history of economic theory: Classic contributions, 1720-1980*. Baltimore: Johns Hopkins University Press.

Niepelt, D. (2018). *Reserves for All? Central Bank Digital Currency, Deposits, and their (Non)-Equivalence* (CESifo Working Papers No. 7176). Retrieved from CESifo website: http://www.cesifo-group.de/DocDL/cesifo1_wp7176.pdf

Nussbaum, M. (2003). CAPABILITIES AS FUNDAMENTAL ENTITLEMENTS: SEN AND SOCIAL JUSTICE. *Feminist Economics*, *9*(2-3), 33–59. https://doi.org/10.1080/1354570022000077926

Nussbaum, M. C. (2016). Economics still needs philosophy. *Review of Social Economy*, *74*, 229–247. https://doi.org/10.1080/00346764.2015.1044843

Officer, L. H. (2019). Gold Standard. In M. Vernengo, E. Perez Caldentey, & J. R. J. Barkley (Eds.), *The New Palgrave Dictionary of Economics* (Vol. 32, pp. 1–10). London: Palgrave Macmillan; Palgrave Macmillan UK. https://doi.org/10.1057/978-1-349-95121-5_1102-2

Palazzo, B., & Palazzo, G. (2011). 1. Business Ethics im angloamerikanischen Sprachraum. In M. S. Aßländer (Ed.), *Handbuch Wirtschaftsethik* (132-137). Stuttgart: J.B. Metzler.

Palivos, T. (2004). Optimal monetary policy with heterogeneous agents: a case for inflation. *Oxford Economic Papers*, *57*(1), 34–50. https://doi.org/10.1093/oep/gpi007

Patinkin, D. (1949). The Indeterminacy of Absolute Prices in Classical Economic Theory. *Econometrica*, *17*(1), 1–27.

Patinkin, D. (1965). *Money, interest, and prices.* (2nd ed.). New York: Harper & Row.

Patinkin, D. (2019). Neutrality of Money. In M. Vernengo, E. Perez Caldentey, & J. R. J. Barkley (Eds.), *The New Palgrave Dictionary of Economics* (Vol. 28, pp. 1–11). London: Palgrave Macmillan; Palgrave Macmillan UK. https://doi.org/10.1057/978-1-349-95121-5_957-2

Patinkin, D., & Steiger, O. (1989). In Search of the "Veil of Money" and the "Neutrality of Money": A Note on the Origin of Terms. *The Scandinavian Journal of Economics*, *91*(1), 131–146.

Patten, A. (2012). Liberal Neutrality: A Reinterpretation and Defense *Journal of Political Philosophy*, *20*(3), 249–272. https://doi.org/10.1111/j.1467-9760.2011.00406.x

Pesek, B. P., & Saving, T. R. (1967). *Money, wealth and economic theory*: Collier-MacMillan.

Polleit, T., & von Prollius, M. (2014). *Geldreform: Vom schlechten Staatsgeld zum guten Marktgeld*. München: FBV.

Putnam, H., & Walsh, V. (2012). Introduction. In H. Putnam & V. Walsh (Eds.), *The end of value-free economics* (pp. 1–5). London, New York: Routledge, an imprint of the Taylor & Francis Group.

Rajan, R. (2010). *Fault lines: How hidden fractures still threaten the world economy*. Princeton, N.J.: Princeton University Press.

Raz, J. (1986). *The Morality of Freedom*. New York: Oxford University Press.

Reinhart, C. M., & Rogoff, K. S. (2009). *This time is different: Eight centuries of financial folly*. Princeton: Princeton University Press.

Rheinberger, H.-J. (1997). *Toward a History of Epistemic Things: Synthesizing Proteins in the Test Tube*. Stanford: Stanford University Press.

Richters, O., & Siemoneit, A. (2019). *Wachstumszwang eine Übersicht* (ZOE Discussion Papers No. 3). Bonn: Institut für zukünftsfähige Ökonomien. Retrieved from http://hdl.handle.net/10419/201503

Romer, C. D., & Romer, D. H. (1998). *Monetary policy and the well-being of the poor* (NBER Working Paper Series No. 6793). Retrieved from NATIONAL BUREAU OF ECONOMIC RESEARCH website: https://www.nber.org/papers/w6793.pdf

Romer, D. (2006). *Advanced macroeconomics* (3rd ed.). Boston, Mass.: McGraw-Hill.

Roscoe, P. (2016). Performativity Matters: Economic Description as a Moral Problem. In I. Boldyrev & E. Svetlova (Eds.), *Enacting Dismal Science* (pp. 131–150). New York: Palgrave Macmillan US. https://doi.org/10.1057/978-1-137-48876-3_6

Rossi, S. (2007). *Money and payments in theory and practice*. *Routledge international studies in money and banking: Vol. 39*. London, New Yok: Routledge.

Rothbard, M. N. (1983/2008). *The mystery of banking* (2nd ed.). Auburn, Ala.: Ludwig von Mises Institute. Retrieved from https://mises.org/library/mystery-banking

Ryan-Collins, J., Greenham, T., Werner, R., & Jackson, A. (2014). *Where does money come from: A guide to the UK monetary and banking system* (Second edition, Reprinted.). London: New Economics Foundation.

Ryan-Collins, J., Werner, R. A., & Castle, J. (2016). A half-century diversion of monetary policy? An empirical horse-race to identify the UK variable most likely to deliver the desired nominal GDP growth rate. *Journal of International Financial Markets, Institutions and Money*, *43*, 158–176. https://doi.org/10.1016/j.intfin.2016.03.009

Schlichter, D. S. (2014). *Paper Money Collapse: The Folly of Elastic Money, 2nd Edition*: John Wiley & Sons.

Schmidt, J. (2012). Sparen - Fluch oder Segen? Anmerkungen zu einem alten Problem aus Sicht der Saldenmechanik. In M. Held (Ed.), *Jahrbuch Normative und institutionelle Grundfragen der Ökonomik: Bd. 11. Lehren aus der Krise für die Makroökonomik* (pp. 61–85). Marburg: Metropolis.

Schnabl, G. (2017). *Die Verteilungseffekte der Geldpolitik der Europäischen Zentralbank destabilisieren Europas Demokratien* (Austrian Institute Paper No. 18). Retrieved from Austrian Institute of Economics and Social Philosophy website: https://ssrn.com/abstract=3089589

Schumpeter, J. A. (1954/1986). *History of economic analysis* (New ed.). London: Allen & Unwin Publishers.

Schweizerische Eidgenossenschaft. (2016). *Botschaft zur Volksinitiative «Für krisensicheres Geld: Geldschöpfung allein durch die Nationalbank! (Vollgeld-Initiative)»*. Retrieved from https://www.admin.ch/opc/de/federal-gazette/2016/8475.pdf

Schweizerische Eidgenossenschaft. (2018). Volksabstimmung vom 10. Juni 2018: Vollgeld-Initiative. Retrieved from https://www.admin.ch/gov/de/start/dokumentation/abstimmungen/20180610/VollgeldInitiative.html

Schweizerische Nationalbank [SNB] (2016). Monetary aggregate definitions. Retrieved from https://www.snb.ch/en/mmr/reference/gemenge_definition/source/gemenge_definition.en.pdf

Schweizerische Nationalbank [SNB] (2018). SNB data portal. Retrieved from https://data.snb.ch/en

Selgin, G. (1987). The Stability and Efficiency of Money Supply Under Free Banking. *Journal of Institutional and Theoretical Economics (JITE) / Zeitschrift für die gesamte Staatswissenschaft*, *143*(3), 435–456.

Serletis, A., & Koustas, Z. (2019). MONETARY NEUTRALITY. *Macroeconomic Dynamics*, *23*(06), 2133–2149. https://doi.org/10.1017/S1365100517000621

Sidrauski, M. (1967). Rational Choice and Patterns of Growth in a Monetary Economy. *The American Economic Review*, *57*(2), 534–544.

Silva, T. C., Tabak, B. M., & Tetzner Laiz, M. (2019). *The Finance-Growth Nexus: the role of banks* (Working Papers No. 506). Retrieved from Banco Central do Brasil website: https://www.bcb.gov.br/pec/wps/ingl/wps506.pdf

Simmel, G. (1907/2004). *The philosophy of money* (3rd enl. ed.). London, New York: Routledge. Retrieved from http://search.ebscohost.com/login.aspx?direct=true&scope=site&db=nlebk&db=nlabk&AN=116394

Simmel, G. (1907/2009). *Philosophie des Geldes* (Nachdr. [der Ausg.] Leipzig, Duncker & Humblot, 1907, 2., verm. Aufl.). Köln: Anaconda.

Sinclair, T. J. (2009). Let's Get It Right This Time!: Why Regulation Will Not Solve or Prevent Global Financial Crises. *International Political Sociology*, *3*(4), 450–453. https://doi.org/10.1111/j.1749-5687.2009.00086_2.x

Smith, A. (1759/2012). *Theory of moral sentiments, or, an essay towards an analysis of the*. [S.l.]: Hardpress Publishing.

Smith, A. (1776/2012). *An Inquiry into the Nature and Causes of the Wealth of Nations*. [S.l.]: Hardpress Publishing.

Smithin, J. (2013). Requirements of a Philosophy of Money and Finance. In J. Pixley & G. C. Harcourt (Eds.), *Financial Crises and the Nature of Capitalist Money* (pp. 19–30). London: Palgrave Macmillan UK.

Steinemann, H., & Löhr, A. (1991). *Grundlagen der Unternehmensethik*. Stuttgart: Schäffer-Poeschel.

Steinmann, H., & Löhr, A. (1992). Die Diskussion um eine Unternehmensethik in der Bundesrepublik Deutschland. In H. Lenk & M. Maring (Eds.), *Wirtschaft und Ethik* (pp. 235–252). Stuttgart: Reclam.

Stützel, W. (1978/2011). *Volkswirtschaftliche Saldenmechanik: Ein Beitrag zur Geldtheorie* (Nachdruck der 2. Aufl. von 1978). Tübingen: Mohr Siebeck.

Swiston, A. (2008). *A U.S. Financial Conditions Index: Putting Credit Where Credit is Due* (IMF Working Paper No. 161). Retrieved from International Monetary Fund website: https://www.imf.org/external/pubs/ft/wp/2008/wp08161.pdf

Tahzib, C. (2018). Survey Article: Pluralist Neutrality. *Journal of Political Philosophy*, *26*(4), 508–532. https://doi.org/10.1111/jopp.12169

Thiago Christiano Silva, Benjamin Miranda Tabak, Marcela Tetzner Laiz (2019). *The Finance-Growth Nexus: the role of banks* (Working Papers No. 506). Retrieved from Banco Central do Brasil website: https://www.bcb.gov.br/pec/wps/ingl/wps506.pdf

Thielemann, U. (1999). Die Entfaltung integrativer Wirtschaftsethik in der Kritik. In H. G. Nutzinger (Ed.), *Wirtschafts- und Unternehmensethik einer neuen Generation. Zwischen Grundlagenreflexion und ökonomischer Indienstnahme.* (pp. 117–152). München: Hampp Verlag.

Tily, G. (2012). *Keynes's monetary theory of interest* (BIS Paper No. 65c). Retrieved from Bank for International Settlements website: https://ssrn.com/abstract=2078944

Tobin, J. (1965). Money and Economic Growth. *Econometrica*, *33*(4), 671–684.

Tobin, J. (2019). Money. In M. Vernengo, E. Perez Caldentey, & J. R. J. Barkley (Eds.), *The New Palgrave Dictionary of Economics* (Vol. 22, pp. 1–15). London: Palgrave Macmillan; Palgrave Macmillan UK. https://doi.org/10.1057/978-1-349-95121-5_2742-1

Treleaven, P. (2015). Financial regulation of FinTech. In *The Journal of Financial Perspectives* (pp. 114–121): Ernst & Young.

Turner, A. (2012). *Economics after the crisis: Objectives and means*. *Lionel Robbins lectures*. Cambridge, Mass.: MIT Press.

Turner, A. (2014). *Escaping the Debt Addiction: Monetary and Macro-Prudential Policy in the Post Crisis World*. Frankfurt. Retrieved from Centre for Financial Studies website: https://ineteconomics.org/uploads/downloads/Paper-Escaping-Debt-Addiction.pdf

Ulrich, P. (1993). *Transformation der ökonomischen Vernunft: Fortschrittsperspektiven der modernen Industriegesellschaft* (3., revidierte Aufl.). Bern: P. Haupt.

Ulrich, P. (2000). Replik zu den Kritiken zum Hauptartikel des Autors: "Integrative Wirtschaftsethik: Grundlagenreflexion der ökonomischen Vernunft": Integrative Wirtschaftsethik im Rationalitätenkonflikt. *Ethik Und Sozialwissenschaften*, *11*(4), 631–642.

Ulrich, P. (2002). *Der entzauberte Markt*. Freiburg: Herder.

Ulrich, P. (2008a). *Integrative economic ethics: Foundations of a civilized market economy*. Cambridge, New York: Cambridge University Press.

Ulrich, P. (2008b). Auf der Suche nach der ganzen ökonomischen Vernunft: Der St. Galler Ansatz der integrativen Wirtschaftsethik. In W. Kersting (Ed.), *Moral und Kapital: Grundfragen der Wirtschaft-s und Unternehmensethik* (pp. 61–75). Paderborn: Mentis.

van Parijs, P. (2003). *Real freedom for all: What (if anything) can justify capitalism?* (Repr). *Oxford political theory*. Oxford: Clarendon Press.

Velde, F. R., & Weber, W. E. (2019). Commodity Money. In M. Vernengo, E. Perez Caldentey, & J. R. J. Barkley (Eds.), *The New Palgrave Dictionary of Economics* (Vol. 97, pp. 1–6). London: Palgrave Macmillan; Palgrave Macmillan UK. https://doi.org/10.1057/978-1-349-95121-5_185-2

Vosselman, E. (2014). The 'performativity thesis' and its critics: Towards a relational ontology of management accounting. *Accounting and Business Research*, *44*(2), 181–203. https://doi.org/10.1080/00014788.2013.856748

Wallace, N. (2019). Fiat Money. In M. Vernengo, E. Perez Caldentey, & J. R. J. Barkley (Eds.), *The New Palgrave Dictionary of Economics* (Vol. 91, pp. 1–9). London: Palgrave Macmillan; Palgrave Macmillan UK. https://doi.org/10.1057/978-1-349-95121-5_454-2

Watson, M. (2014). *Uneconomic Economics and the Crisis of the Model World*. London: Palgrave Macmillan UK. https://doi.org/10.1057/9781137385499

Weber, B. (2019). *Libra: A new competitor among international currencies?* (SUERF Policy Note No. 85). Retrieved from SUERF The European Money and Finance Forum website: https://www.suerf.org/policynotes/6729/libra-a-new-competitor-among-international-currencies

Weber, M. (1904/2009). *Die protestantische Ethik und der Geist des Kapitalismus*. Köln: Anaconda.

Werner, R. (2002). A Reconsideration of the Rationale for Bank-Centered Economic Systems and the Effectiveness of Directed Credit Policies in the Light of Japanese Evidence. *Japanese Economy*, *30*(3), 3–45. https://doi.org/10.2753/JES1097-203X30033

Werner, R. (2005). *New paradigm in macroeconomics: Solving the riddle of Japanese macroeconomic performance*. Houndmills, Basingstoke, Hampshire, New York: Palgrave Macmillan.

Werner, R. (2007). *Neue Wirtschaftspolitik* (1. Aufl.). München: Franz Vahlen.

Werner, R. (2012). Towards a new research programme on 'banking and the economy' — Implications of the Quantity Theory of Credit for the prevention and resolution of banking and debt crises. *International Review of Financial Analysis, 25,* 1–17. doi:10.1016/j.irfa.2012.06.002

Werner, R. (2014). Can banks individually create money out of nothing? - The theories and the empirical evidence. *International Review of Financial Analysis*, *36*, 1–19. https://doi.org/10.1016/j.irfa.2014.07.015

Werner, R. (2016). A lost century in economics: Three theories of banking and the conclusive evidence. *International Review of Financial Analysis*, *46*, 361–379. https://doi.org/10.1016/j.irfa.2015.08.014

Wray, L. R. (2019). Modern Money Theory. In M. Vernengo, E. Perez Caldentey, & J. R. J. Barkley (Eds.), *The New Palgrave Dictionary of Economics* (Vol. 34, pp. 1–13). London: Palgrave Macmillan; Palgrave Macmillan UK. https://doi.org/10.1057/978-1-349-95121-5_3007-1

Yermack, D. (2013). *Is Bitcoin a Real Currency? An Economic Appraisal* (NBER Working Paper Series No. Working Paper 19747). Retrieved from NATIONAL BUREAU OF ECONOMIC RESEARCH website: http://www.nber.org/papers/w19747

Zelmanovitz, L. (2016). *The ontology and function of money: The philosophical fundamentals of monetary institutions*. *Capitalist thought: studies in philosophy, politics, and economics*. Lanham, Maryland: Lexington Books.

Zhang, B., Wardrop, R., Rau, R., & Gray, M. (2015). Moving mainstream: benchmarking the European alternative finance market. In *The Journal of Financial Perspectives* (pp. 60–77): Ernst & Young.

Curriculum Vitae

Personal Data

Name	Urs Christian Mauchle
Date of Birth	January 31st, 1984
Nationality	Swiss

Work Experience

Since 2021	Chairman of the Board of Directors and Co-Owner Erich Keller AG, Sulgen
Since 2011	Lecturer for Economics and Systemic Management OST Eastern Switzerland University of Applied Sciences
03/2011 – 03/2012	Consultant for Organisational Development bwv its GmbH, St.Gallen
12/2003 – 09/2004	Head of Finance and Administration GHG Marthaheim, St.Gallen

Education

2022	Ph.D. in Organizational Studies and Cultural Theory University of St.Gallen
2011	Teacher in Business Eduction University of St.Gallen
2010	M.A. in Marketing, Services and Communication Management University of St.Gallen
2007	B.Sc. in Business Administration OST Eastern Switzerland University of Applied Sciences
2003	Certified Commercial Employee and Vocational Baccalaureate Municipality of Gossau SG