

Monetary Adaptation to Planetary Emergency: Addressing the Monetary Growth Imperative

Christian Arnsperger
University of Lausanne

Jem Bendell
University of Cumbria

Matthew Slater
Community Forge

Occasional Paper #8, March 10th 2021
Institute for Leadership and Sustainability (IFLAS)
University of Cumbria, UK
www.iflas.info

Occasional Papers are released by IFLAS to encourage scholarly discussion of ongoing interdisciplinary research on important topics of either leadership or sustainability, as well as providing background for teaching. They provide a means for more extensive and contextual discussion of topics than is typically possible within journals of specific academic disciplines. Feedback on these papers helps inform further research, ahead of submissions to journals or books. Previous Occasional Papers are available via the [website](http://www.iflas.info).

Abstract

Background: The existence of a Monetary Growth Imperative (MGI) and its implications for economic stability, democracy and environmental sustainability have been put forward by environmental economists for around two decades but recently criticised as invalid. Given the urgency of the climate and ecological crisis alongside spiralling public and private debt, the MGI deserves closer attention.

Methods: For this review paper we analysed studies on the MGI, using a selective, iterative approach to the literature review.

Results: Our critical review of the research on the MGI revealed several full academic treatments of the argument and even a taxonomy of them, most of which have not been refuted. We articulate one of them in a new way, as well as two more which have not received academic treatment, before considering why it might be thought politically expedient that any MGI should be refuted, or at least seen to be refuted.

Conclusion: In any economy where money hoarding and accumulation is not curtailed, and where most of the money in circulation is issued by private banks as debt, with or without interest, there will be a system-wide scarcity of money available to people and organisations to service their debts – unless, that is, there is continual economic growth. To avoid the deleterious implications of a shortfall of money in an economy, policies are used to maintain economic growth, which is therefore a form of imperative on society. This MGI may be accentuated, at a system-wide level, by the practice of full-reserve re-lending of money. Interest is not the main driver of the imperative, but because it increases the transfer of money to those who are wealthy and more likely to hold that money in a stagnant form that is not available for debt servicing by others, interest charges may indeed exacerbate the MGI. We conclude that the debt-money system creates a competition for money between debtors and savers which is resolved through creation of more debt-money, which in turn drives growth and the resulting ecological and climate emergency.

Introduction

COVID-19 reflects a broader trend: more planetary crises are coming. If we muddle through each new crisis while maintaining the same economic model that got us here, future shocks will eventually exceed the capacity of governments, financial institutions, and corporate crisis managers to respond. Indeed, the 'coronacrisis' has already done so. (Kellerhof 2020)

As climate change becomes more frightening and combines with environmental degradation to make even coronavirus disease outbreaks more likely (Tolfson 2020), people are increasingly questioning the future of modern capitalism – even in the halls of power (World Economic Forum 2020). As part of this questioning, a number of activists since the late 20th and early 21st century have focused on the monetary system. Like each of us three authors, most of them initially accepted and repeated a simple argument pervading the literature on money and sustainability: because of the logic of compound interest, it was claimed, money created as bank debt constituted a structural growth imperative, because there could never be enough debt-money in circulation to pay both the principal and the interest. There was, in other words, an interest-debt-driven 'Monetary Growth Imperative' (MGI).¹

Then, after more than a decade, word spread throughout the activist as well as the academic sphere that this notion of interest-driven MGI had been debunked. Apparently bank debt money was not, as so many of us had long believed, an obstacle to addressing the ecological crisis and, in fact, the existence of an MGI itself was not important for understanding why the capitalist economy generates environmental degradation.

As both practitioners and scholars, we were intrigued and needed to take a closer look. Was it really the case that there was no intrinsic need to look at monetary mechanisms when seeking to adapt to planetary emergency? Upon closer inspection, we learned that there were in fact several different proposed mechanisms for an MGI, each leading down its own rabbit hole of intellectual pathways. Our endeavour to gain a clearer view of the MGI landscape took us on a journey of discovery and led to the theoretical and epistemological findings presented in this paper. Given the importance and complexity of this topic, we are sharing our findings in the form of an Occasional Paper of significant length, and invite feedback and collaboration for specific parts of our arguments to be the basis for journal submissions. Therefore, in addition to releasing this as a PDF download from the University of Cumbria, a live version of this document is available for comment at this [link](#).

Brief overview of the argument

The experience of a different way of life during lockdowns has increased the degree of attention to the field of 'degrowth', as evidenced by the recent popularity of books like *Less is More* (Hickel 2020) and *Doughnut Economics* (Raworth 2017). Meanwhile, governments have responded to the 2007/8 financial crisis and its aftermath by accelerating the rate at which they take on new debt. Our understanding is that these two trends are incompatible and that without structural changes to monetary systems, degrowth – or a steady-state economy – will be impossible. This is the inevitable result of the wealthy hoarding other people's debt (in the form of initially bank-created money that then gets pulled out of circulation) so that debtors, rather than repaying, are forced to borrow more. Our paper aims to explain this argument in detail and to encourage engagement with the necessary policy options to pursue a different path. We want to argue that any variant of capitalism that might theoretically be compatible

¹ The term MGI comes from the post-Keynesian school (see section 4 below) which postulates that money is, by nature, debt.

with steady-state, growth-agnostic, or degrowth policy objectives would need to not rely on bank issuance of debt-money as its prime means of exchange.

Degrowth economics stems in part from an environmental critique of how the constant expansion of economic activity, measured by the Gross Domestic Product (GDP) – which is tightly coupled to material throughput – has surged beyond planetary limits, as measured, for example, by the continuously regenerated availability of raw materials or the capacity of natural sinks to safely absorb industrial waste. Economic activity must decline because it is strongly correlated with energy use, carbon emissions and resource depletion, and it would be better if that decline were managed through policy (Kallis et al. 2020).

Some people contributing to the degrowth field assert that because money is created as debt, an MGI is inevitable and, consequently, the way almost all of the world's money is created must change to become compatible with a steady-state or degrowth economy (Bendell and Greco 2013; Trainer 2012: 592). Others have sought to demonstrate that ushering in a steady-state economy is possible even if most of the existing money system is left intact (Jackson and Victor 2015; Cahen-Fourot and Lavoie 2016). In recent years, it appears this latter view has either gained sufficient agreement, or sown sufficient doubt in the former view, for issues of monetary reform to slip down the degrowth agenda (McNeill Douglas 2019). Unfortunately, these conclusions taken at face value are compromising the work of the degrowth movement and of related strands of environmental and social justice activism. Furthermore, in light of the private- and public-debt implications of policy responses to Covid-19, it is increasingly essential for the MGI to be properly understood, and hence recognized as real, by advocates of sovereignty and democracy. To help with these crucial tasks, we will demonstrate two things in this paper: first, the established presentations of the MGI that lead to its being rejected or denied are actually flawed; and second, there is a correct version of the MGI that withstands rejection and even remains visible in the models of the very economists who deny the existence of an MGI.

From our past decades of reading, research, activism and professional engagement in initiatives seeking to develop economic alternatives to mainstream globalising neoliberal capitalism, we identified the monetary system as key to how societies function and change (Lietaer et al. 2012; Bendell and Greco 2013; Bendell and Slater 2017). Steady-state economics and degrowth economics are two fields that bring together scholars, activists, innovators and policy advisors who are interested in systemic economic change in order to address multiple social and environmental dilemmas (Kallis et al. 2020). In these fields, as we will see, the MGI has become widely contested and subsequently deprioritized, and this has important – and, to us, detrimental – implications for activism as well as for policy proposals.

Methodology and structure

This is an atypical review paper. We did not aim to comprehensively review all the literature published in one or all fields of scholarship that deal with the topic of an MGI. Instead, we sought to identify the literature that was most salient for our inquiry into whether an MGI exists or not. Therefore, we used databases, bibliographies of relevant works, and expert advice in order to identify literature that is well referenced as either establishing or debunking an MGI. As that reading identified new issues or caveats, we then looked specifically for research on these new items.

Our first step was to identify the kinds of arguments used by people who either propose or critique any form of MGI. We sought to understand the way they define the MGI, with attention to any assumptions that might arise due to the conceptual frameworks of their discipline and/or particular school of thought within economics. In that process we were particularly interested in work that offered a full technical treatment of the issue, rather than the numerous discussions offering only brief descriptions and making them sound self-evident. Second, we

focused in particular on the work of a few economists whose research has had a particular influence within the degrowth area, both among scholars and activists. Our aim was not to criticise their intention or their wider contributions to the field, but to convey our findings concerning the way in which their framing of the MGI hypothesis appeared to have been problematic and, we found, unhelpful to radical economic policy initiative and activism.

When analysing their work, our intellectual framework was influenced by critical social theory, which considers how unacknowledged ideology operates within all of us by shaping the assumptions we make about the meaning of concepts, and how our aversions or attractions to certain framings or findings arise from a sense of how they might align with incumbent power (Arnsperger 2008, 2010b; Bendell et al. 2017). Critical social theory is also informed by research that shows how scholars that are trained and work within establishment institutions are typically less critical of power in their questions, analysis and findings than the general public (Schmidt 2001). The result is that, whereas our discussion of relevant literature is not quite comprehensive, it hopefully helps move forward understanding of the MGI as well as the likely reasons why this topic has been widely misunderstood over the past decade. Although a more systematic and comprehensive literature review might add to this field of scholarship in future, this is not the purpose or intended contribution of the present paper.

The first section sets out the crucial context within which we are analysing the existence and reality of an MGI – namely, the steady increase in both public and private debt in virtually all countries of the globe. In section 2, we explain what a growth imperative is, and give examples. Next, section 3 looks at the original formulations of the MGI and finds them mostly inadequate, after which it proceeds to describe the most celebrated (post-Keynesian) refutation of the MGI. In section 4, we lay out the mechanisms we still find convincing, and we then explain in detail why the MGI is virtually impossible to eliminate from a capitalist debt-money system. Section 5 sets out how the ideological frameworks of some economists and their assumptions about capitalism, combined with a wish to reassure capitalist interests, may have meant that they sought to reject the MGI hypothesis rather than refine it. We recognise that this may be a controversial conclusion for some, who might also question the relevance of our analysis of the subjectivities of scholars as revealed in their texts. Accordingly, in section 6, we explain why critical transdisciplinarity should now replace more traditional assumptions about researcher objectivity, which are nowadays widely regarded as intellectually flawed and protective of privilege and power. We offer some conclusions for any scholar seeking to be relevant to a rapidly changing world where societies and knowledge systems are under stress. In the penultimate section 7, we put this topic into the context of increasing threats of societal disruption, breakdown and collapse, before finally, in section 8, offering an array of policy suggestions at local, national and international levels aimed at de-activating the MGI. While economists may spot that our style of communication, use of terms and analysis of the institutional contexts shaping researchers' approaches are not typical for economics, we invite them to focus instead on the potential insights coming from an economic anthropologist, a sociologist and an activist together attempting an assessment of the field of monetary economics.

1. The context of generalized and increasing indebtedness

A crucial context for our analysis is the threat to democracy, social wellbeing and environmental action that arises from both private and public indebtedness.

Total global sovereign debt rose from \$33tn to \$38tn in the immediate wake of the 2007/8 financial crisis; due to bailouts, interest charges, and the difficulties of repayment in an

economic slump, it had already snowballed to \$57tn by 2015.² These public debts, and the decline in tax revenues due to an economic slump, meant that an era of 'austerity' was introduced to many countries around the world. This has meant the privatisation of state-owned assets, as well as cuts to public spending on basic services and regulatory functions (Cahill and Saad-Filho 2017). These policies have had serious human consequences, increasing ill health and mortality in many countries (Tepe-Belfrage and Wallin 2016). They are also assessed by some as having had a negative impact on environmental protections and initiatives in certain parts of the world (Onyango et al. 2020). If we fast-forward to 2020, the IMF estimates that 'fiscal measures' during the pandemic alone will amount to an additional \$11.7tn in government debt (IMF 2020).

Given the magnitude of the new debts, the failure of post-2008 austerity to reduce past ones, and the mounting physical and political constraints on growth, one might ask how the new debts will be serviced. Some hope that governments endowed with monetary sovereignty could perhaps usefully spend new money into existence using the principles of Modern Monetary Theory (Kelton 2020), but this new paradigm is still far from being firmly entrenched and offers little respite for countries or regions (such as individual EU countries and many developing countries) that have no monetary sovereignty. Therefore, without fundamental monetary reform, much of the world is likely to follow Greece down the path of increasing privatisation of roads, police, military, ports, state broadcasters, and much of the remaining civil services, with all the dire consequences this entails (Fouskas and Dimoulas 2017). If we are to even begin addressing these sorts of dangers, one crucial condition is that the possibility of an MGI be reinstated, because the progressive fields of policy discussion and activism in areas like degrowth may have been unhelpfully confused in this area by economists who, while presenting themselves as critics of growth, are shying away from the anti- and post-capitalist implications of recognizing an MGI.

Although there will undoubtedly be efforts to 'return to growth', this growth will be constrained by diminishing resources and will accelerate the climate crisis. Prior to the 2020 pandemic, humanity had already been unable to reverse or even collectively slow the growth in carbon emissions, despite clear knowledge of the risks (Bendell 2018). There was a decline in carbon emissions in 2020 due to Covid-19, but it was not sustained as countries exited lockdowns (Harvey 2020). While many governments committed funds for green investments, they also put a lot of public funds into saving polluting industries and restarting consumption (Andrijevic et al. 2020; Allam 2020). Recent research from climatologists suggests that global warming of over 1.5 degrees above pre-industrial levels this decade is likely, and 2 degrees not long after (Huntingford et al. 2020). These are somewhat arbitrary levels rather than precise boundaries, chosen by scientists to indicate that warming above such levels produces increasingly catastrophic impacts on nature and human societies. Unfortunately, our financial system is driving us even further over the edge. According to the Bank of England, the financial firms in the City of London are complicit in setting us on the path to more than 3.5 degrees of warming above pre-industrial levels (Carney 2019).

This is all the more problematic because the trend of private indebtedness – the reliance of both households and businesses on credit – has also been rising sharply in most countries. In particular in the US, structurally high and growing mortgage and consumer debt (which lay at the root of the 2007/8 crisis) is considered to be the main 'engine' of economic growth, as the country's twin fiscal and trade/payment deficits are exerting a significant drag on the domestic economy (Varoufakis 2011). Recent data from the Organisation for Economic Co-operation and Development (OECD 2020a) show that US household debt (primarily mortgages and consumer loans) is around 100% of net disposable income for 2018, with even larger percentages, for instance, for the UK (148% in 2019) and for Switzerland (223% in 2018). At

² https://www.economist.com/content/global_debt_clock

the same time, households' average savings as a proportion of their disposable income tend to be quite low (in the UK, down to almost 0% in 2018/9 from 7% in 2009), while households' total financial assets per capita tend to go from moderate to rather large: in 2016 figures, US\$ 240,000 for the US, US\$ 143,000 in the UK and US\$ 242,500 for Switzerland.

Given the rising trend in domestic economic inequality in the US and the UK, as well as in numerous other parts of the world (see, for example, Dorling 2014; Milanovic 2018, 2019), this strongly suggests a phenomenon we will be focusing on in section 5 – namely, the majority of households have low assets (if any at all) and low savings (if any at all) while being strongly indebted, while a small minority of wealthy households have both huge assets and huge savings while carrying no debt but, on the contrary, having very large positive net worth.

In parallel, the corporate debts of non-financial firms suggest structural over-indebtedness that can only, it seems, be sustained through constantly rolled-over loans, with new loans serving to cover existing interest, but also a significant part of outstanding principal. Indeed, according to the OECD (2020b), if we look at the debt-to-surplus ratio – which provides “an indication of the capacity of non-financial corporations to meet the cost of interest and debt repayments with the operational profits generated” – we see that profits have been significantly leveraged into debts, yielding ratios (for the year 2015) that range from 3.1 in Germany to 6.1 in the UK and 7.7 in the US.

In a majority of countries, therefore, private debts are structurally high and rising, and they drive growth – because public deficits left to themselves prompt either recession (in the US) or austerity (in much of the rest of the world) – while, reciprocally, growth requires ever-renewed debts that, as we will see, can never all be repaid given the structurally inegalitarian, accumulation-driven dynamics of capitalism.

Therefore, the matter of what monetary system might be more compatible with rapid measures to adapt to climate-driven disruption, including deep adaptation to societal collapse,³ and furthermore, to mitigate emissions while avoiding both public and private debt fiascos, is an important and even crucial one. Since capitalism's entrenched inequalities make the situation structurally worse than it would be in a fairer system, the question really is whether capitalism is compatible with any serious effort to reduce the disruption from the environmental changes it is causing. We are continually disappointed when proposals for the reform of economies neglect even to mention the monetary system or, when they do, remain all too cursory and draw sketchy conclusions – at best – from the omnipresence of debt in capitalist credit-driven economies (e.g. Hickel 2020; Jones et al. 2020; Kallis et al. 2020). Of course, we could look at various aspects of monetary systems, alongside various elements that comprise modern capitalism, but in this paper we focus on the MGI because it has been either neglected or misinterpreted in recent years.

2. What is a growth imperative?

Economic growth remains the overriding policy goal of most governments around the world, even though they also measure other aspects of society such as health and wellbeing. Specifically, the idea of growth means a continuing, compounding increase of one or all countries' GDPs. Many arguments have been advanced for why growth is desirable (Daly 1977 refutes a long list of such arguments). Regardless of the reasons, GDP growth has since World War II become an overriding and unquestioned policy objective (Hickel 2020: 92-94).

³ Deep Adaptation is the term for an agenda and framework that is premised on the experience or anticipation of societal disruption or collapse, due to the direct or indirect impacts of environmental change (Bendell, 2018).

The ever-increasing circulation of money is now baked into all modern economies, so that they become dysfunctional as soon as growth cannot be maintained (Chzhen 2016). This means that growth is required for the economy to work properly.

Some commentators describe this situation as a growth imperative. Before continuing, we should state our understanding of the word “imperative”. *The Collins Dictionary* defines an imperative as “something that is extremely important and must be done”. There is a sense of compulsion and of a lack of choice, as something “must be done”. The definition does not specify the quality of the factor, such as its singular or non-contextual influence, or the values involved that make it so that something “must be done”. Therefore, a growth imperative would be a situation where an increase in GDP is required, due to various interrelated factors, in order to avoid situations which a population considers undesirable, such as bankruptcies and poverty. Therefore, an MGI would be a situation where the monetary system is a significant factor in making GDP growth necessary, in order to avoid the undesirable situations. It does not imply that the monetary system is necessarily the only factor “forcing” growth.

The organisation Positive Money identified several ways in which growth has become an intrinsic part of politics, calling them the 'sources of growth dependency'. They are: to maintain employment and living standards; to reduce poverty; to avoid addressing other political, social and economic problems head-on; to improve government finances; to address high private debt; and to address high public debt (Positive Money 2018).

But there are also other sources of growth dependency in economics, business and even culture:

- Growth is argued by some to make people feel better about life, with the moral consequences of societies allegedly becoming more tolerant and progressive (Friedman 2006).
- There is a widespread equating of growth with progress, which has become a fundamental aspect of modern identity, however problematic (Greer 2015: 41-42).
- Because old technologies are not as economically efficient, companies must continuously invest in order to compete (Douthwaite 1992: 36), resulting in cheaper goods and much greater consumption.
- Large companies tend to be more profitable because they have cheap access to capital and overcome high regulatory hurdles more efficiently. This leads to a tendency for companies to try to outgrow their competitors by producing and selling ever more. They are also encouraged, and frequently even obligated by law, to maximize shareholder value, which on average across an economy involves increased production (Smith 2010: 31).
- In the popular imagination, reinforced by media narratives, there is the idea that growth is good and failure to grow means stagnation, recession, unemployment, austerity, etc., making it extremely difficult for politicians to act otherwise.

Considering all this, it becomes clear that a societal transition away from growth would be very disruptive, would take a long time and would involve many winners and losers. It is incumbent, then, on those proposing a steady-state or degrowth economy, to propose the gentlest possible pathways as well as the most compelling arguments in order to be credible, or even to be heard.

While these factors may constitute a growth imperative, this paper is concerned with how GDP growth might be unavoidable because it arises from key structural elements in contemporary capitalist economies, such as the way money is issued. Many arguments have been put forward for an MGI but no single one of them has garnered very widespread support (see, for example, Larue 2020). Our concern, however, is that if an MGI does nevertheless exist, as

we will argue it does in this paper, then some fundamental, far-reaching and – dare we say – politically unpalatable changes to our economy might be required if a steady-state or degrowth economy is desirable, and some respectable scholars may be reluctant to stand up for such changes, and hence for the notion of an MGI that would underpin them.

3. The Monetary Growth Imperative (MGI) hypothesis

In advanced economies such as the UK, around 97% of the money we use is in the form of bank accounts (Bank of England 2014: 5), which means it was created when someone else borrowed it into existence. That borrower is currently paying interest on that money, and when the debt is repaid the money will disappear. This debt, being the liability of a bank, is guaranteed by the government and is trusted and used in the vast majority of payments, and for a long-term store of value.

The MGI hypothesis is not concerned with the other 3% of physical money, nor with the central-bank money used for interbank clearing. To remind the reader that for every dollar of money there exists a dollar of debt, this paper will sometimes refer to debt-money, meaning that temporary kind of money created on a bank's balance sheet. Debt-money, as opposed to other forms of money, is a source of profit for banks, as they can charge fees and interest on it, while having a government licence to create it, and it is much more elastic than commodity forms of money. On the other hand, it burdens debtors with what is effectively a rental charge on money, and it gives banks effective control over monetary policy, since they are the ones deciding, at a given interest rate, who gets new credit and how much.

Surprisingly, debt-money is not understood by most people, most journalists, most policymakers,⁴ or even most mainstream economists (Keen 2011: 6). According to the Bank of England, the popular perception of the function of banks obscures their role in money creation by being literally back to front: “Rather than banks receiving deposits when households save and then lending them out, bank lending creates deposits.” (Bank of England 2014: 14)

Even nowadays, while this basic insight that it is loans that make deposits (and not deposits that make loans) has received more and more publicity, it still regularly gets dismissed as something resembling a conspiracy theory. Most of the people who do understand how money is actually created are therefore beyond the pale of mainstream economics. Indeed, it was an independent economist, Richard Douthwaite, who (as far as we could find) in 1992 and again in 1999 first asserted the existence of an MGI:

Borrowers can only obtain enough money to pay their interest bills without reducing the amount of money in circulation if they, or other borrowers, borrow an adequate amount more. As a result, under the current money creation system, *the amount of money in circulation has to rise, year after year, by a sum at least equivalent to the amount being removed from circulation by the banks as a result of interest payments.* The amount removed is equal to the profits left to the banks after they have paid dividends to their shareholders in the country concerned, invested in new equipment and premises and met all their wages, salaries and other operating costs there. These profits will be held in accounts in the banks' own names and unless they are put back into circulation (by being spent or lent), the amount of money in circulation will fall. (Douthwaite 1999: 24, emphasis added)

⁴ See Positive Money's survey of UK MPs in 2017: <https://positivemoney.org/press-releases/mp-poll>

Apart from being the first academic statement of the popular MGI hypothesis, this is, rather surprisingly, also the most detailed and explicit. We will criticize it shortly, but we do need to take it as a point of departure. In our reading of academic and popular literature on this topic, the only other precise statement of an MGI that we came across was from an independent scholar, Paul Grignon: "... if the interest [is] re-lent at interest or *removed from circulation by hoarding*, there will be an inherent shortage [of money] with which to pay off the aggregate debt." (Grignon 2009⁵, emphasis added)

Apart from these two,⁶ all statements of the hypothesis we found were oversimplified and/or misleading. For example: "Banks loan only principal, but demand repayment of principal plus interest ... The only way each of these actors can achieve their goals is through the continuous creation of new money" (Farley et al. 2013: 280). The argument sounds similar to the preceding one, except for the fact that the authors seem to assume that the entirety of the interest repayments is somehow removed from the economy. Another example of oversimplification is from the popular philosopher Charles Eisenstein, whose book *Sacred Economics* states simply that "because debt is always greater than money supply, the creation of money creates a future need for even more money" (Eisenstein 2011: 79). He does not offer any explanation as to what mechanism operates here, but other statements in his book indicate that he adheres to the explanation that only principal repayments are covered by bank loans, not interest payments.

The following statement also oversimplifies in suggesting that what leaves circulation and needs replacing are interest payments:

When the loans are repaid, the new money is destroyed. However, the borrowers must repay the loans plus interest and the banks initially loaned out enough to repay only the principal. Either new government expenditures or new loans are required to pay back the interest. (Costanza et al. 2013: 42)

Jason Hickel describes the same mechanism, not as a driver of growth itself, but as a driver of competition: "Banks create the principal for all the loans they give, but they don't create the interest. There is always a deficit, always a scarcity." (Hickel 2000: 239)

As we indicated in the Introduction above, we ourselves have, in the past, accepted and repeated these same arguments linking the MGI to interest payments (Lietaer, Arnsperger, Brunnhuber and Goerner 2012: 99-103, Bendell and Greco 2013: 226). In fact, however, there exists a significant literature setting out a variety of mechanisms and explanations for the MGI that, over and above this rudimentary interest-payments argument, attempt to understand how debt-money leads to growth. Strunz et al. (2017) provide a helpful taxonomy of these attempts.

The post-Keynesian attempt to refute the MGI

The idea that growth can be *directly* caused by monetary policy is seen by post-Keynesians as running counter to one of their defining tenets. Also wanting to oppose the monetarist tenet according to which monetary expansion will automatically translate into inflation, post-Keynesians claim that the money supply responds to effective demand in the real economy, as famously expressed by Keynes when he wrote that "credit is the pavement along which production travels" (Keynes 1930: 219). In other words, they argue that monetary expansion happens not because credit is made more readily available, but because entrepreneurs anticipate rising effective demand and then borrow money into existence. While this is

⁵ Go to 34:50.

⁶ The only other academic publication describing an MGI in detail, by Binswanger (2009), portrays an entirely different mechanism.

undoubtedly an important insight, we do not see why it would preclude its antithesis. GDP growth is probably both the cause and the consequence of credit, through a variety of different causal mechanisms. In any case, it is from the post-Keynesian perspective that the strongest, if not the only, attempts to refute the MGI have come.

The post-Keynesians developed a very helpful way of modelling economies by distinguishing between stocks of money and flows of money – so-called ‘stock-flow consistent’ modelling (see, for example, Godley and Lavoie 2006). For example, in any given period, the asset on the banks’ balance sheet when a loan has been made is considered a stock, and the interest payment on it a flow. Post-Keynesians understand that repayments of principal will diminish the stock of debt, while repayments of interest will flow through the bank and back into the economy. The most prominent study in this direction is by Jackson and Victor (2015), who describe a stock-flow consistent model with banks and interest, debt-money, and zero growth. Their paper claims that “neither credit creation nor the charging of interest on debt create a ‘growth imperative’ *in and of themselves*.” (Jackson and Victor 2015: 32, emphasis added)

In order to make their model work with bank-issued debt-money as the main source of money in an economy, Jackson and Victor had to ensure not only that all interest payments were recirculated, but that all the pools in which money accumulates and stagnates were regularly drained: “Taxation is initially set so that government debt does not accumulate. Firms’ financing behaviour is determined in such a way as not to accumulate capital assets beyond those deemed necessary to satisfy expected demand.” (*ibid.*: 46)

These are conditions that do not reflect either current or normal situations in a capitalist economy. Therefore, the following conclusion offered appears a bold extension of their theoretical findings into real-world implications: “... the results in this paper suggest that it is not necessary to eliminate interest-bearing debt *per se*, if the goal is to achieve a resilient, stationary or quasi-stationary state of the economy.” (*ibid.*: 44, emphasis added)

The phrases we italicised above are crucial because they stress the theoretical nature of the finding, and that the universe of the model may not translate to the real world. Jackson and Victor are transparent enough in a number of caveats about what was lost in translation, such as:

We are therefore firmly of the opinion that monetary reform is an essential component of a sustainable economy ... Aside from the question of interest-bearing money, there exist several other incentives towards growth within the architecture of the capitalist economy ... Many of them are reliant on the existence of credit-based money systems. (*ibid.*: 44)

Viewing the money system in terms of stocks and flows explains very well why most of the simplistic MGI formulations that we ourselves, like many others, had previously espoused were simply wrong. Rather than using complex computer modelling to make this point, an independent scholar explained it elegantly a decade ago in one sentence: “... a simple loan of interest need not produce a shortage of money or cause unpayable debt if flow is 100%.” (Grignon 2011⁷) The question could then become the following: will flow ever be 100%, is that desirable, and if not, what might be the implications for policy? In addition, another important question is whether the reality of a less-than-100% flow of money from creditors back to debtors, even without interest being earned, means that there exists a growth imperative.

On the surface, economists critiquing the mistakes of proponents of the MGI hypothesis might look like a technical discussion, but we will describe below what the political implications have

⁷ Go to 5:37.

been. Jackson and Victor's 2015 paper became something of a landmark in the field, influencing the fields of degrowth and environmental economics towards de-prioritising the taking into consideration of the MGI. This is illustrated, for instance, by the agendas of the six biannual international degrowth conferences. We found references to the MGI in three of the four conferences up to 2014, and none in the two conferences from 2016 onward (Box 1).

Box 1: Likely mentions of MGI in the main International Degrowth Conferences

(<https://www.degrowth.info/en/conferences>)

Paris 2008

Sparse documentation available. Declaration doesn't mention debt or money.⁸

Barcelona 2010

Designing financial institutions for a shrinking or no-growth economy (Douthwaite 2010)

Venice 2012

Degrowth, Debts and Money Creation: the B plan?⁹

Leipzig 2014

Building a social and ecological economy through a social accounting model of banking¹⁰

Budapest 2016

No mention of MGI¹¹

Malmö 2018

2 sessions on money but MGI not mentioned¹²

Many people we have met in the degrowth fields have been telling us that the MGI has been disproven, and have written as much (see Larue 2020). However, upon closer inspection, the artificial economic system postulated in Jackson and Victor's FALSTAFF model, in which money hoarding and accumulation is explicitly chosen to not occur, thus making it possible to debunk a poorly articulated version of the MGI, appeared to us as rather problematic.

4. Unrefuted arguments in favour of an MGI

Strunz et al. (2017) describe a range of MGI arguments, rather than interrogating the various arguments and their respective justifications and refutations in detail. Although this approach is in many ways helpful, it can lead to an agnosticism concerning which analyses are more robust and what the implications are for people and planet. As social constructionists, we are interested in the ways that money is understood in both societies and scholarship. However, our attention to social construction aids a critical interrogation of the dominant ideas operating in society and academia, rather than framing the different arguments as primarily a matter of differing opinion or belief. Unfortunately, like many of the economists who do not conclude that the MGI definitely exists and requires attention, Strunz and his co-authors take the word "imperative" to mean a singular causal factor. We consider this to be an untenable assumption, as it is impossible to identify a singular causal factor in complex human systems. As a result, to expect the singling-out of single causal factors largely negates the existence of an MGI from the outset.

⁸ <http://degrowth.info/wp-content/uploads/2015/05/Declaration-on-Degrowth-EN.pdf>

⁹ http://decrecita.it/decrecita/wp-content/uploads/Degrowth_Venice_full_program.pdf

¹⁰ <http://degrowth.community/conference2014/scientific-papers/3636>

¹¹ <http://scriptum.degrowth.net/en/budapest2016/public/schedule>

¹² <http://degrowth.se/conference-program>

Reviewing the attempts to refute the various theories, we have arrived at our own preferred formulation of the MGI. In this section, we describe in our own words one mechanism which, as far as we are aware, is unrefuted, and we introduce two other related ones which we believe deserve attention.

Before diving in, we would like to make explicit a feature common to most MGI arguments, which is that aggregate debt-money is closely correlated with GDP growth. This means that an imperative to grow the money supply strongly implies a GDP growth imperative.

To put it in more detail: the transactions which make up GDP are the result of supply and demand seeking and finding each other (albeit never perfectly, since we are certainly not postulating a neoclassical equilibrium economy). More supply and more demand should equate directly to more transactions and higher GDP. When a debt is issued, the debtor typically spends the money, creating demand in the economy, and in order to repay their loan the debtor must supply the economy with something; thus, a debt enables first demand and then supply. Therefore – if we take the case of private debt held by a business (but we could also look at a household) – if an imperative exists for debt to grow, it seems certain that GDP must also grow, not merely by the amount of the debt, but by several times the amount, because only a small part of the business's turnover is profit which can be used to pay debt (just as only a part of a household's income can service debt over and beyond its other important expenses).

Why do businesses – to continue with this case – take on debt? As the post-Keynesians have pointed out, entrepreneurs might take on debt because they anticipate more demand. This is certainly not a monetary imperative. There is, however, another very common case where debt is issued, namely, when debtors fail to service existing debt. Refinancing, restructuring, moving debt from credit cards to overdrafts, rolling over debts (i.e. taking out a new loan to pay off an older loan), unpaid interest becoming new principal debt – all this amounts to an increase in net debt. This means, in turn, that if the debtors in aggregate are not able to earn enough money to service their debt (over and above securing their livelihood), then aggregate debt must increase. This directs the focus onto the *payability of debt* and the rate at which money flows through the economy, and more specifically *the parts of the economy where debtors can earn it*.

The ‘withdrawal from circulation’ mechanism

A careful reading of Douthwaite's passage quoted in the previous section reveals that while he did not make the stocks-and-flows error, he specifically blamed the practice of banks pulling some of their profits out of circulation, presumably to increase their liquidity ratio (see also Binswanger 2009: 725). This could lead to the view that the siphoning-off of only a part of bank profits would be sufficient to trigger mass default. In our opinion, there are numerous other ways in which money might fail to be available for debtors to earn. In order to argue this, we offer a broader explanation of what ‘out of circulation’ means, at least as far as debtors are concerned.

One important way that money disappears is when it is used to repay a loan, i.e. when it literally cancels out the corresponding bank liability. This kind of removal from circulation is absolutely healthy and balanced. What we are concerned about here, rather, is money that goes out of circulation *without, or before, extinguishing its corresponding debt*.

We would like to introduce a circulatory metaphor here. Sometimes money in an economy is compared to the circulation of the blood in a body, but this metaphor assumes that money circulates all the time. Imagine instead the whole water cycle, with its basic circuit, from the sea to the sky to the land to the rivers to the sea, but a lot of water is also locked away in the

Antarctic ice cap, in the groundwater, and in the deep ocean. All of the water is technically *in* the water cycle, all of it could nourish the crops, but often the crops go unnourished – the existence of drought is not evidence of lack of water but evidence of *held-up* water. The monetary ecosystem is similar. If principal debt and money are issued together, then enough money exists, by definition, to pay off all the principal debt. But the money does not necessarily flow *where it is most needed to repay debts*. Instead, much of it gets siphoned off and stagnates in great reservoirs, in a phenomenon economists call a lowered 'marginal propensity to consume'. In other words, the wealthiest people “have a greater propensity to leave their income sitting idly in a bank account ... thus contributing to deficient demand in the rest of the economy.” (Stratford 2020)

Stratford is alluding here to a general mechanism in capitalism called rent seeking. We are looking at a specific subcategory of this, having to do with what we will call the ‘hoarding’ or ‘accumulation’ of money in circuits or pools not accessible to the bulk of debtors. Personal savings accounts, as well as corporate cash holdings like those of large technology firms,¹³ but also (as we will see below) closed circuits of re-investments amongst the very wealthy, as well as widespread non-bank lending mechanisms, could be blocking circulation within the monetary system in a specific manner, with not enough money flowing back towards debtors, thus forcing the overall quantity of money to grow for debt-repayment reasons.

This argument is best articulated (in German) by Freydorf et al. (2012) and Wenzlaff et al. (2014), and as far as we know, it has not been refuted. Strunz et al. (2017) explain the arguments of Wenzlaff et al. (2014) and Richters and Simoneit (2017) as follows:

... the existence of positive interest rates alone is not sufficient to create a growth imperative. How creditors use the income they receive in the form of interest payments from debtors is crucial. If creditors fully consume their interest income, thereby re-injecting it into the economy, a stable cycle without growth may endure. So, positive interest rates as such do not necessarily yield permanent growth (...). However, if creditors tend to hoard their income rather than to consume it, (...) money is drawn from the cyclical interrelation of debtors, banks and creditors. In consequence, economic dynamics will eventually come to a standstill unless new money is fed into the economy. As this monetary growth takes place via investments, it is necessarily accompanied by real growth. (Strunz et al. 2017: 337)

Indeed, Freydorf et al. (2012) emphasize at the outset of their paper that (our translation) “the functioning of the money economy implies economic growth. The ‘necessity of growth’ is to be understood as the thesis that no socio-economic equilibrium is possible in the medium term without growth. This economic need for growth does not result from the money economy per se – nor from a positive interest rate level for loans alone – but from the combination of income-dependent savings rates and liquidity preferences.”

Some might argue that accumulating money is a good thing for degrowth and the environment, at least momentarily, if it means spending and consumption are deferred. We attempt to explain why this is not the case. Fig. 1 depicts spending and GDP as standing in a uniformly increasing, linear relationship.

¹³ Apple reported \$40bn cash or cash equivalents on its March 2020 balance sheet: <https://www.businesswire.com/news/home/20200430005960/en/>

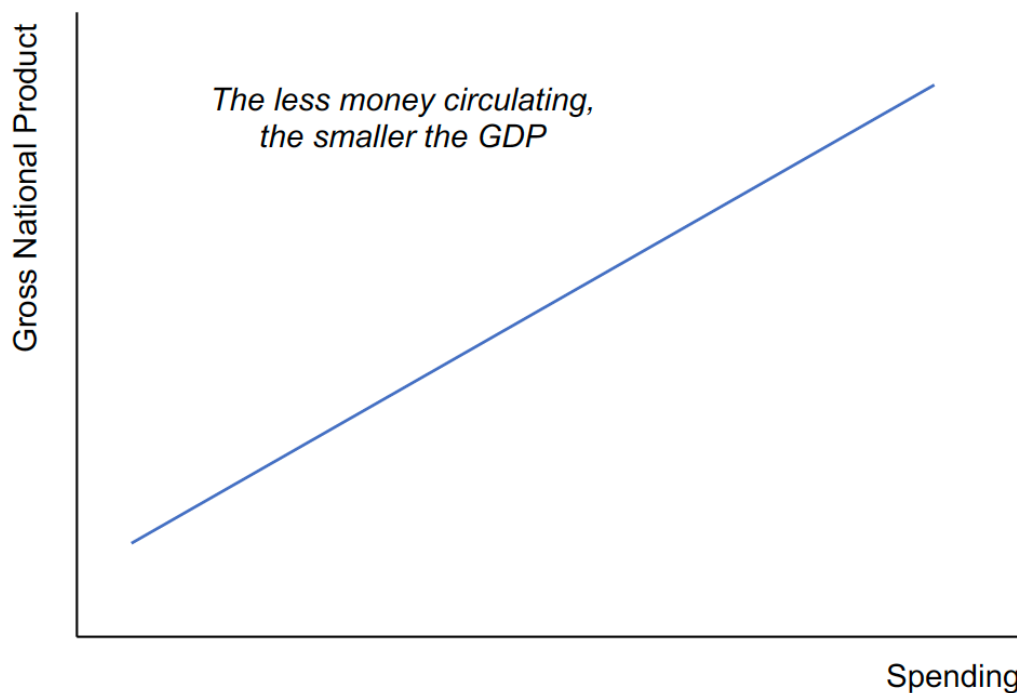


Fig. 1: GDP increases uniformly with spending.

This would only be true, however, for money which once issued circulated indefinitely because it had intrinsic value or was backed by valuable objects. It does not hold in the case where money is created as debt, which is supposed to return on a certain date to the bank balance sheet from which it came and extinguish its corresponding liability. Debt-money can be thought of as representing the first half of a swap, which exists only temporarily and vanishes when the swap is complete. When debt-money is prevented from returning 'home', pressure builds on the remaining money supply and the system starts to become leveraged or distorted. In other words, as more money leaves circulation, it becomes harder for debtors in aggregate to service their debts, so newer money is brought forward to service older debts, leaving future loans outstanding. Where does the process end?

If debt-money is like the first half of a swap, then the debtor has committed to completing the swap in the future. So every time a debt is deferred or extended because trade was slow, that means future GDP is required to compensate for it, and not just future GDP amounting to the value of the debt but several multiples of that – enough to generate a profit to the value of the debt. When this happens, we say that new debt 'locks in' future growth. This means that the above chart is only true above a certain level of spending, because when money is issued as debt, spending below a certain level means the economy must grow in order to avoid disruption, and the greater the shortfall in spending, the more new debt is needed to make it up, and the more future growth is locked in. The red line in Fig. 2 shows the range of (too low) spending that leads to locked-in future growth; this relationship is downward-sloping because the smaller the spending, the larger the need to 'make up' for it with future growth.

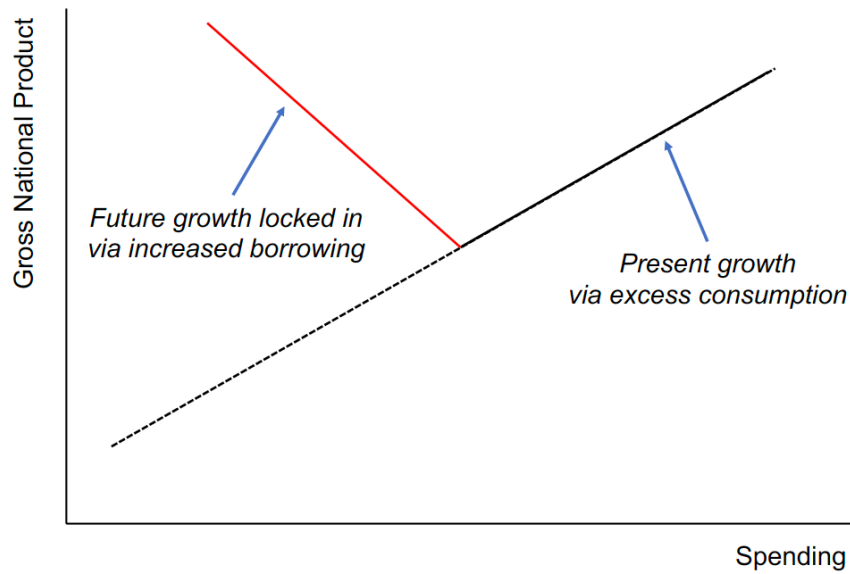


Fig. 2: As the shortfall in spending is made up by borrowing, future growth is locked in.

The curve is V-shaped: too much or too little spending results either in present growth or in future (not yet materialised but already locked-in) growth.

When confidence is high, people invest in the future by taking out loans, so the debt-money system grows. But when trade is slow, debt also grows as money is drawn down from the future to make up the shortfalls. However, this is not quite yet proof of a growth imperative, because if it were possible to constantly determine exactly the right level of spending relative to the amount of credit and to constantly direct that spending in the right amounts to every debtor, then the economy could sit in the 'sweet spot' shown in Fig. 3, right at the kink in the V. If this were the case, there might be no MGI.

However, as soon as this process of constant adjustment becomes less than optimal, discrepancies in either direction result in an MGI, hence in growth. Policy tools would somehow be needed not just to control the *aggregate amount* of spending, but to ensure the sales volume of *every debtor* was within parameters that enabled their debt to be serviced but did not encourage them to borrow more. It is hardly imaginable that this kind of macro- and microeconomic management could take place in a capitalist economy. Therefore, in a capitalist debt-money economy, the 'withdrawal from circulation' mechanism will structurally generate spending shortfalls, thus locking in future growth: this is the MGI.

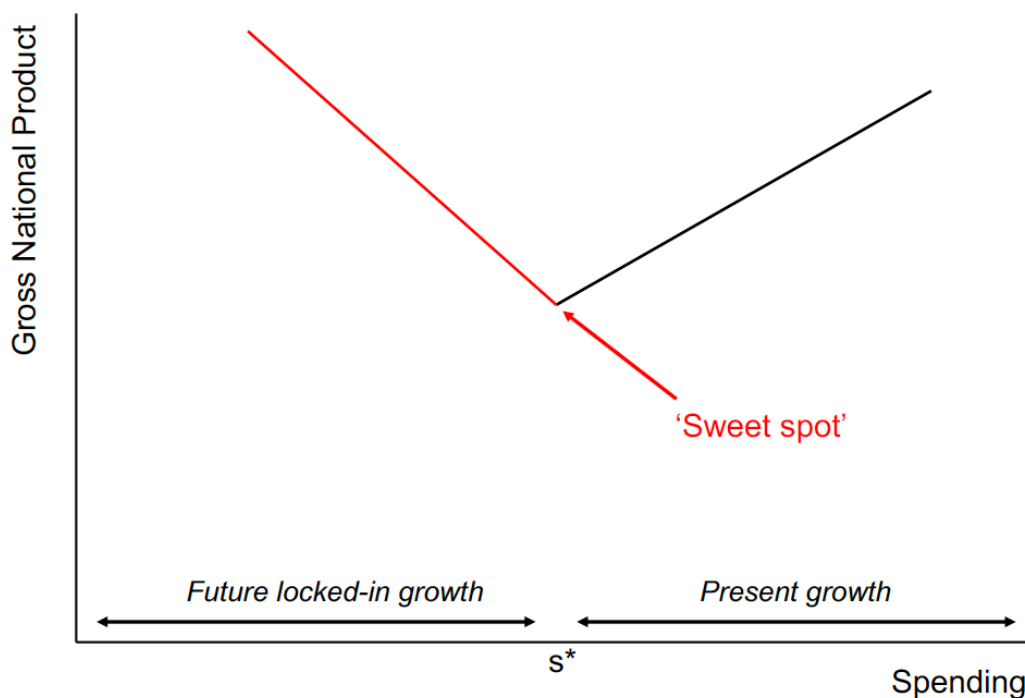


Fig. 3: Only at the 'sweet spot' is there no MGI.

'Intra-elite' re-investments

What has just been argued is that an MGI will exist as soon as too much money (initially created as debt-money by banks) is slowed down or 'congealed' for too long, so that the 'main-street' economy – which is made up of all the normal businesses and households who need to regularly scramble for sales, revenue or income to repay their debts and whose debts finance immediate and often essential expenses – is not receiving enough of it back, soon enough. This possibility of insufficient liquidity being spent back into the main-street economy is intrinsic to the very nature of debt-money in a capitalist system.

'Stagnant pools' of liquidity get created by the very nature of accumulation. They can take the form of massive liquidity hoarding or of savings accounts left fallow for long periods of time. 'Stagnant pools' can also be generated through what we will call 'intra-elite re-investments' on the part of those elites who either are not in debt or who incur debts only in order to make more money. The behaviour of such elites is not merely optional in capitalism – it forms part of its very essence, since accumulated money that does not circulate must become capital.

As explained by Tarver (2020),

Ultra-wealthy individuals invest in such assets as private and commercial real estate, land, gold, and even artwork. Real estate continues to be a popular asset class in their portfolios to balance out the volatility of stocks. While it's important to invest in these physical assets, they often scare away smaller investors because of the lack of liquidity and the higher investment price point. However, according to the ultra-wealthy, ownership in illiquid assets, especially ones that are uncorrelated with the market, is beneficial to any investment portfolio. These assets aren't as susceptible to market swings, and they pay off over the long term. For example, Yale's endowment fund has

implemented a strategy that includes uncorrelated physical assets, and it returned an average of 8.1% per year between June 2006 and June 2016.

In other words, the 1 percent mostly invest *in each other's assets*, buying and selling them to other members of the same wealthy elite (Warren Buffet is much more likely to buy some other billionaire's mansion than a small suburban house), and this creates a set of what we could call 'fenced-off' pools of money: to the extent it is not wired off to an offshore fiscal haven (Shaxson 2011), hoarded or put in a savings account, the money is not stopped from flowing altogether, but it flows only in a very restricted way between elite pools and very largely remains in them. This acts as a self-contained circuit whose contents no longer flow back into main street: for all intents and purposes, from the vantage point of the bulk of average debtors, the money has been siphoned off to a place where it has become inaccessible to them.

The extent of this mechanism is difficult to estimate because data in these areas are fairly hard to get by. According to *The Economist*, "family offices have become a force in investing, with up to \$4tn of assets—more than hedge funds and equivalent to 6% of the value of the world's stock markets."¹⁴

In a BBC article revealingly entitled 'Why the rich stay rich: They don't invest like the rest', journalist Bryan Borzykowski writes:

The wealthy have access to a swath of investments that most people don't even know exist. Closed-end funds — a long-term investment where money is typically tied up for at least five years — offer the very rich access to big returns and high yields. ... It's natural for wealthy individuals, many of whom made their money owning companies, to buy into other businesses. ... Though investors put their money at risk — 50% of startup companies go bust, said Rose — a wealthy investor usually makes 20 times to 50 times their initial investment on one or two companies that do succeed. ... Many high-net-worth people like parking their cash — often seven or eight figures — on pieces of property ... Some pool their money with others to buy commercial properties; others scoop up high-priced condos in London, New York and other global locales. Many hope to sell for a handsome profit, but in the meantime, they can live in these abodes when they travel. (Borzykowski 2014)

High-net-worth individuals have much easier access to bank credit than average main-street citizens, but they do not need to go into debt in order to live their lives according to the norms of society. They may borrow several times in a row, but this is not to finance past loans for whose repayment they found no funding. They are in fact a major source of revenue for the banking system. In that sense, they are closer to being part of the capitalist banking system than to being its clients and debtors. In any case, whether they themselves borrow a lot or not, something like US\$ 4tn being effectively gyrated around in 'fenced-off' liquidity pools represents a substantial draw on main-street opportunities for loan repayment.

This mechanism, as stated above, is part of the very structure of capitalism; it is intrinsic to it and not merely a matter of some rich people's choices or of their 'bad behaviour', whatever that may mean. 'Intra-elite' re-investment is one of the ways capital gets accumulated out of money that is not made available for loan repayments, thereby exacerbating the pressures for growth within a debt-based money system.

¹⁴ The Economist, December 15, 2018. Available at <https://www.economist.com/leaders/2018/12/15/how-the-0001-invest>

‘Twice Lent Money’

To better grasp the reality of the gap between actually circulating liquidity and potential liquidity withheld from circulation through accumulation, let us look at the work of Paul Grignon (2013, 2018), who takes the ‘withdrawal from circulation’ mechanism to another level. In doing so, Grignon offers another explanation as to why so little money might be available in relation to the debt which needs servicing. Not all loans come from banks that create the money on the spot. When that money can be deposited and re-lent on a secondary market through ‘non-bank’ institutions practicing full-reserve lending, debt multiplies without any new money at all being made available to pay it off.

Grignon coined the expression ‘Twice Lent Money’ to designate the case where the same dollar is saved, lent, spent and earned, saved, lent, spent and earned, etc. While that single dollar becomes the principal of many debts, it can only actually be used to pay a single one of those debts, after which it will most likely be re-lent. The only way these successive debts could all be unwound would be if the accumulation went into reverse, and each successive saver withdrew their money and spent it, so that each successive debtor could earn it and pay down their debt.

Grignon backs up this view with public data from the US Federal Reserve. In normal banking, the principal debt and the money needed to extinguish it are created at the same time, hence in the same quantity. At the time of the 2008 crash, however, total principal debt was 4 times more than all bank money and 24 times the actual money available to borrowers to pay it.¹⁵ This, he claims, can only be accounted for by multiple re-lending by non-banks, far over and beyond the initial bank loan. Note that non-bank lending includes not just things like mortgages, but also shadow banking. This non-bank lending has been increasing massively during the twenty-first century, so that it accounts for nearly two thirds of all lending (FDIC 2019), making it a significant factor in the monetary system and the existence of an MGI.

In light of this, we might wonder how post-Keynesian steady-state models have handled this massive non-bank lending and, if they have not, what other explanations they might be offering for the discrepancy between debt and the money available to pay it.

Meanwhile, Grignon continues to try to engage mainstream economists with this way of understanding debt and the growth imperative:

Conventional economics, which disregards the debt origin of money, views savings as assets, a store of wealth like wheat in a silo. But savings are, in reality, someone’s debt, a scheduled promise to extinguish this money. Savings held indefinitely are a destabilizing interruption of the credit cycle. If we fully recognize the debt origin of money, savings that are not available to be earned on time by the borrowers that created that money create Perpetual Debt. All is well when debt is growing, but when the supply of new bank credit slows down, for any reason, it can set off a hidden bomb of mathematically-induced defaults. (...) There is no recognition that the system’s stability depends on that bank credit being available to the general circulation as earnings, not secondary borrowing. (...) (Grignon 2013: 4-5)

We include the concept of Twice Lent Money here, along with the analysis that it may be a significant factor in the MGI, in order to invite greater attention to it from economists.

¹⁵

Charts can be found at <http://paulgrignon.netfirms.com/MoneyasDebt/MAD2020/livedebtgraphsFedstats.htm>

Further reflections

It appears that the earlier, simplistic formulations of the MGI, which all focused on interest, were mostly guilty of a shared stocks-and-flows fallacy, but they were basically correct in asserting that money 'left' the economy and that debtors, in aggregate, had to replace it by taking out new loans. What they weren't clear about was how the money left the economy, leaving readers to suppose that repaid interest just vanished along with the principle. Once we understand that any money which isn't being spent right now, is in a sense 'not in circulation' and is being 'accumulated', or 'hoarded' then the truth of what they said becomes apparent. This reconciles those early expressions with their debunkers like Jackson and Victor who showed that a debt-money system without capital accumulation would not need to grow.

One important research question is why the default rate is so sensitive to rates of GDP growth. If a difference of about 2% in GDP growth means the difference between an economy considered healthy and functioning and one that goes into 'recession' (where money circulation is reduced, with negative impacts on employment, businesses and households), this suggests to us that the business cycle wobbles around some payability-of-debt threshold. Is there some mechanism which keeps the ratio between debt and the ability to service it on a knife's edge? Given the lack of agreement amongst economists about how the business cycle works, this appears worth exploring.

All the early MGI formulations focused on interest as the mechanism requiring GDP growth, which implies that high interest would make matters worse and zero interest would solve the problem. But that may not be the case. Indeed, Grignon was emphatic about this matter as early as 2009, explaining in 'Money as Debt II' that

As long as all the coins [sic] taken in as interest are spent so that the borrowers can earn them, the same coins can be used to pay the interest over and over, the lender can profit by buying real things with his coin, *but the coin itself must be spent, not lent nor removed from circulation.* (Grignon 2009¹⁶, emphasis added)

Our assessment suggests that although interest rates might add to the problem by increasing accumulation and stagnation of money, even with low interest rates, debtors could still fail to make payments. Low rates are supposed in neoclassical economics to speed up the economy, but the last decade of recessions throws that mechanism into question. Low rates usually also lead to increased borrowing, which itself is an incentive to growth. Conversely high rates, while they would be expected to reduce the rate of (new) borrowing, also make debt harder to maintain. The problem is not the interest rate but the debt itself.

When asking ourselves whether the MGI is real, we need to realize how inseparable the question is from the degree to which money gets accumulated. Now we understand what Jackson and Victor's (2015) expression '*in and of themselves*' means when they write that "neither credit creation nor the charging of interest on debt create a 'growth imperative' *in and of themselves*". It means that only if one were to assume – highly unrealistically – that everyone behaved differently, or that money could not (as we argue it can be in section 5) be pulled out of circulation for long periods of time, would there be no MGI. In essence, they are claiming (trivially, it appears to us) that if some of the essential accumulation-generating properties of capitalism were somehow eliminated from capitalism, the latter could remain compatible with debt-money. Capitalism could then be shielded from the implications of a growth imperative, because any such imperative that existed would not be *monetary*. We disagree: within existing capitalist arrangements, there really is a growth imperative that is monetary. Without an awareness of this, we are falsely led to believe that steady-state, growth-

¹⁶ Go to 34:21.

agnostic or degrowth policies are possible in an economy still relying on bank-issued debt-money as its primary means of exchange. Any variant of capitalism that might theoretically be compatible with such policy objectives would need to no longer rely on bank issuance of debt-money for its prime means of exchange.

From a policy-making perspective, an MGI trilemma emerges, shown in Fig. 4.

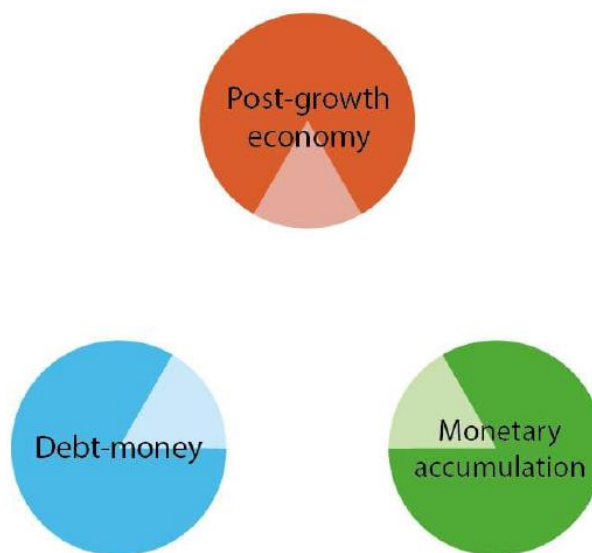


Fig. 4: The MGI trilemma.

The trilemma is as follows:

- In any debt-money system, money accumulation precludes degrowth.
- It is possible to have money accumulation and zero growth, but not in a debt-money system.
- It is (theoretically) possible for a debt-money system not to grow, as long as there is no money accumulation.

A more nuanced view of an imperative is needed, which recognises that the economy is a complex system, in which there are no independent variables that influence everything else in isolation, without context. As we explained earlier, the term “imperative” means that something “must be done”, but it does not mean that one specific variable has to be the sole factor involved in making that so. If such a standard were used to assess imperatives, then nothing would ever be considered an imperative, either in economics or the rest of life. When Jackson and Victor say there is no imperative arising from debt-money, per se, they appear to be applying an impossible bar to the concept of an imperative. As the debt-money system in the real world is embedded within a larger system which also encourages money hoarding and accumulation, their FALSTAFF model actually highlighted that in normal economies, this hoarding and accumulation generate an MGI from a debt-money system. Although the Jackson and Victor (2015) paper reads as an attempt to dismiss the imperative mechanism, upon closer reading it shows how welded monetary growth is to our economy.

Before progressing to discuss some implications, let us summarise what we see as unrefuted. In any economy where money hoarding and accumulation is not curtailed, the preponderance of money issued by private banks as debt, with or without interest, leads to a system-wide scarcity of money available to people and organisations to service their debts, unless there is continual economic growth. This monetary growth imperative may be accentuated, at a

system-wide level, by the practice of full-reserve re-lending of money that is issued initially by banks as debts. Therefore, increases in non-bank lending are not a remedy to the growth demands that arise because of bank-issued debt-money. Interest payments increase the transfer of money to those who are wealthy and more likely to hold that money in a stagnant form that is not available for debt servicing by others. Therefore, while interest charges may add to the growth imperative, they are not its original cause.

We recognise that this MGI is not quite of the nature touted by some who want to focus on compound-interest mechanisms. However, rather than saying, 'There is no monetary growth imperative *in and of itself*,' we emphasise that preventing growth in a debt-money economy would require absolute control over hoarded or accumulated money, in order to ensure that creditors in aggregate have access to enough liquidity to service their loans. Such ideas are highly antagonistic to capitalism, as they challenge a basic freedom of economic choice. With this in mind, we will provide some illustrative policy ideas towards the end of this paper.

5. Capitalism and debt-money

To today's incumbent elites, capitalism appears to be non-negotiable even before it is defined. This means that anyone who questions capitalism, either directly or by implication, risks being regarded as confused, outdated, irrelevant, impolite, extreme, or dangerous (Bendell and Doyle 2015). In order to remain acceptable to peers, funders and policymakers, environmental economists putting forward steady-state models could be inclined to frame these models as compatible with capitalism.

Ready definitions of capitalism in dictionaries and the Wikipedia entry (which, while perhaps academically rudimentary, are nevertheless indicative of mainstream understandings) stress the existence of private ownership of capital with the purpose of profit and *accumulation*. For instance: "Capitalism is based on the accumulation of capital, whereby financial capital is invested in order to make a profit and then reinvested into further production in a continuous process of accumulation ... economic activity is structured around the accumulation of capital."¹⁷

The centrality of accumulation to capitalism is why Marxist economist Minqi Li (2007, p. 29) commented that if a no-growth economy means not being able to accumulate capital, "then what's the point of being a capitalist?" If capitalism could survive the transition to a post-growth economy, then it would be a strange system indeed: capitalism without the capitalists (McNeill Douglas 2019: 30). Even Cahen-Fourot and Lavoie, who also built a model purporting to show that the MGI does not exist, note that "in our full stationary economy ... there is no accumulation of private wealth. Assuming private wealth is tantamount to capital in a broad sense, no further accumulation of capital by the private sector as a whole occurs... Consequently it would not be a capitalist system." (Cahen-Fourot and Lavoie 2016: 187) Other economists have chosen to emphasise the role of debt rather than capital accumulation as being foundational to capitalism. Some further refine the kinds of debt that are foundational, where it is "not [just] any debt, but debt that can be easily transferred from one investor to another, and preferably debt that is convertible into state money at any time." (Pistor 2019: 77)

A New Institutional argument is that the current debt-money system and capitalism evolved together: "It is precisely in the growth of private credit – serving trade and geographical expansion – that capitalism finds its origins" (Svartzman et al. 2020: 273) Svartzman and his colleagues continue by stating that "the generalisation of interest-bearing money issued

¹⁷

https://en.wikipedia.org/wiki/Capitalism#Capital_accumulation

by banks was 'not only a facilitator of exchange but a “transformative power” ... that entailed radically new relationships between creditors and debtors.’ (Svartzman et al. 2020: 274)

Debt has certainly been an enabler and a trait of capitalism as it has evolved up to this point. Without the ability to create new money through credit, every piece of gold and silver would have been used only once at a time, and it would have been immensely difficult to gather enough of it together in one place to finance large projects. The phenomenal economic growth of the last several hundred years would have been orders of magnitude slower. Tim Jackson sided with these definitions when he described the “basic features of capitalism, such as the creation of money as credit and the charging of interest on debt” (Jackson 2015).

However, is the *creation of money* as credit, rather than the creation of credit, a key aspect of capitalism per se? For credit instruments, such as bank-issued electronic deposits, to serve as ‘money’, they must be authorised as such by governments and enabled to circulate as seamless means of exchange, more or less interchangeable with the physical cash issued by either government mints or central banks (depending on the national system). The current debt-money system, where well over 95 percent of all money in circulation in OECD economies is bank-issued debt, is a conscious (or confused) choice on the part of governments, and it is qualitatively different to the forms of debt instrument that have been used as payment throughout the history of capitalism. That capitalism can exist without a bank-issued debt-money system is highlighted by recent histories of full-reserve banking in countries like Myanmar. Therefore, it is neither self-evident nor historically obvious that the creation of money as credit is a foundational aspect of capitalism. Instead, it would appear to be a choice of the economist to regard capitalism in that way – a choice some economists, like Jackson, have made.

Framing the MGI

Regarding the current bank-issued debt-money system as central to capitalism means that any scholar aiming to show that steady-state or degrowth economies are compatible with capitalism would necessarily have to dismiss the MGI. Jackson, who incidentally was somewhat of a latecomer when it came to giving monetary phenomena a more than cursory place in his discussion of ‘prosperity without growth’ (Arnsperger 2010a), realises this when he writes that “if an MGI were shown to be the case, it would certainly seem to rule capitalism out of any sustainable form of post-growth or steady-state economy.” (Jackson 2015)

This could explain why, despite all the caveats in his 2015 paper with Peter Victor, the conclusion they offered as the takeaway message was that the MGI had been disproved. The pair must have understood before they started what Steve Keen put so bluntly: “So why is [the MGI] wrong? In words, it’s because it confuses a stock (debt in dollars) with a flow (interest in dollars per year).” (Keen 2015).

As discussed above, in order to prove there need not be an MGI due a money system based on bank-issued deposits, Jackson and Victor (2015) had to model the economy in a way that restricted the kind of capital accumulation occurring in a normal capitalist economy. This limitation was found in other models:

A number of studies (Jackson and Victor, 2015; Cahen-Fourot and Lavoie, 2016) previously concluded that the monetary system does not contain a growth imperative. In particular, they find that interest-bearing debt and no-growth can theoretically co-exist under a *condition of zero net private savings*. (Positive Money 2020: 25, emphasis added)

Our problem is the following. Suppose Jackson and Victor’s alleged insight were to lead to government policies that disincentivise, restrict or prevent the use of money for storing value

through accumulation. This would emphatically *not* leave capitalism unchanged; it would fundamentally *change* our understanding not only of capitalism, but of money as a medium of exchange *and* as a store of value. Yet some have taken Jackson and Victor's study as a vindication of the possibility of maintaining the current system of bank-issued debt, despite the ecological crisis.

One example of how their conclusions had an impact in the field is a booklet on societal disruption from climate change. It explains that new research by Jackson and Victor (2015), among others, on the possibility of eliminating a 'growth imperative' from a market system, has resulted in modelling of an economy which does not grow, does not crash and yet retains many of our currently recognisable forms of capitalist organisation (McNeill Douglas 2019: 16).

Having done a similar study, Cahen-Fourot and Lavoie concluded:

Both endogenous money and our theoretical investigation show that growth imperatives are not to be found in the money creation process... Therefore, an economic system with a full-fledged financial system can exist without a monetary growth imperative. (Cahen-Fourot and Lavoie 2016: 167)

The sense that the debate was (nearly) over was reflected by Cahen-Fourot in a degrowth seminar: "I think degrowth would benefit from moving forward ... to stop considering this belief."¹⁸ Similarly, Jackson himself has also consciously attempted to shift the debate: "A more credible candidate for a growth imperative lies in the relentless pursuit of labour productivity." (Jackson 2015).

But we are less hasty to 'move forward'. We fear that sweeping statements which brush capital accumulation under the carpet as a determining factor for an MGI could mislead capitalists and activists alike, and give rise to shallow solutions that merely deflect or mask the problem.

Bridging capitalism and environmentalism?

As the title *Prosperity without Growth* suggests, Jackson has been trying to steer a course between the capitalist Scylla, with its limits to politically acceptable discourse, and the environmental Charybdis, with its physical limits to what can be extracted. For a moment, in 2009 when the book came out, it seemed possible. The book suggests that the drivers of growth are not structural, which would require the redesign of capitalism, but more incidental, thus requiring merely the changing of a few laws and ideas: "a faulty economics drives and is driven by a distorted *social* logic" (Jackson 2009: 204).

This was the kind of message that commissioners of the book, the UK Government's Sustainable Development Commission, needed to hear, along with attempts to redefine capitalism:

Is it still capitalism? Does it really matter? For those for whom it does matter, perhaps we could just paraphrase Star Trek's Spock and agree that it's 'capitalism, Jim. But not as we know it.' (Jackson 2009: 202)

The debunking of the MGI appears entirely consistent with this attempt to appease capitalism:

Scholars who rely on post-Keynesian economics' theory and methods (e.g. Cahen-Fourot and Lavoie 2016; Jackson and Victor 2015) argue that a 'monetary growth

¹⁸ <https://youtu.be/xyTLmsOarU?t=1040>

imperative' does not exist. As a result, this group tends to favour policies that do not challenge the foundations of the current monetary and financial system. (Svartzman et al. 2020)

Reporting on the latest models made with Victor, a decade after the jocularity of the 2009 Star Trek reference, Jackson seems to have less to offer capitalists:

The post-tax rate of profit from capital in the Base Case and GHG Reduction scenarios remain[s] fairly stable over the 50-year projection ... The share of income to capital remains within the historical norms associated with a capitalist economy in all three scenarios. (Jackson and Victor 2019: 311)

That turns out to be small comfort, however, as the chapter draws to its conclusion:

It is certainly conceivable that changes of this kind would necessitate some decline in the power of those who own capital assets, particularly where this power is concentrated in a few wealthy people. At the very least, it seems clear that the form of hypercapitalist society that characterises the early 21st century would have to change substantially. But none of this entirely excludes the possibility that some aspects of a capitalist society would survive. (Jackson and Victor 2019: 312)

Jackson's heroic efforts and intellectual honesty have not been lauded or even recognised by elites, and now he is mostly mentioned only by environmentalists and the Left. Unfortunately, the middle way seems no closer now than it was in 2009, and we argue this means it is time for more radical tactics. In that light, we hope that the MGI will be restated, and reinstated in a more credible form, along the lines we have discussed here, to make the point amongst activists and politicians as to how profound the needed changes are.

It is worth noting that more radical analysis has continued to exist over the decades – namely, the view that growth can only be stopped through radical, structural changes:

Daly, Jackson and the rest are mistaken to assume that we can get a sustainable 'steady state' economy or 'de-grow' the economy 'within a capitalist framework.' ... the idea of a steady-state or de-growing capitalism is based on spectacularly untenable assumptions, starting with the assumption that growth is optional rather than built into capitalism ... such pressures would prevail in any conceivable capitalism. (Smith 2010)

Why, then, has there been such unnecessary and unhelpful confusion about the MGI? Would it be fair to consider that people whose lifestyles and livelihoods are paid for by establishment institutions are less likely to directly challenge those institutions? Or that such people might prefer reaching conclusions that do not imply a need to organise and struggle in ways that risk their lifestyles and livelihoods? It appears to us that establishment economists would rather make an argument that capitalism could adapt to anything, than to recognise that a systemic abuse of power and privilege by the issuers of money compels people, undemocratically, to both compete amongst one another and increase their economic activity (e.g. by becoming ever busier, taking more risks, or putting more risks onto others) – all of which feeds climate change and systemic extractivity (Hickel 2020). The former position – that capitalism could adapt to anything – would turn the degrowth field towards research, education and communication; the latter position would mean looking at tactics for building contrarian political clout, disrupting banks' power and/or creating alternatives to capitalism and capitalist money.

6. Critical transdisciplinarity

Why have we pointed to the way assumptions about the nature of capitalism, as well as a pre-existing desire to not appear anti-capitalist, seem to have influenced the work of a number of significant economists in the steady-state and degrowth field? There are three key reasons.

The first reason is to bring attention to how economists who have the resources, training and status of the establishment can have outsized influence over social movements which critique that establishment. All three of us have witnessed the de-prioritisation of the MGI in discussions and campaigns because it was believed to have been debunked by Post-Keynesians. This meant, among other things, that discussions about the need for and means of organising to challenge the power of banks and to denounce the effects of capital accumulation may have been undermined.

A second reason is that it is not uncommon for scholars to reach and promote less radical conclusions than social or political movements. Scholars are generally less radical than the general public (Schmidt 2001). Becoming a socially or ecologically critical intellectual who dares to present him- or herself as informing militant and activist organisations requires major epistemic as well as emotional shifts (Arnsperger 2008, 2010b). Therefore, the same processes of seeking to make analyses and recommendations palatable to incumbent elites will be occurring elsewhere, including in fields of urgent concern such as public health and climate change. There is a bias towards the status quo, with the aim of seeking to sound reasonable within the current mainstream. Wishing to sound reasonable to power, or to avoid mistakes that might generate criticism from professional peers, restricts the boldness of one's analysis.

But perhaps the greatest barrier to radicalism amongst academics is the preference to see matters of oppression and exploitation as requiring more knowledge and education, rather than more organisation amongst people and more struggle against power. Academics and scholars tend to find it difficult and even excruciating to become 'existential activists' in the sense of Arnsperger (2009). Both organisation and struggle involve far more risks and emotionally difficult experiences (as well as highs) than being paid to read, write and teach about ideas. Therefore, there can be a tendency to promote the ideology of ideology – that ideas matter to an extent that they can be abstracted from their social context and considered to not be co-products of the power relations within which people exist.

A third reason is because we wish to establish the case for the skills of critical transdisciplinarity. The analysis in this paper suggests that there is a limited level of criticality in economics, like many fields of scholarship, whereby many concepts and frames are assumed and not unpacked for the ideological constructs that they are. Anthropologists who have studied academia, including the discipline of economics, can shed light on why this may be the case (Strathern 2005). One review of the ways academic disciplines are produced and maintained explains, without any intended judgement:

In academia disciplinary languages are developed at least in part with the goal of protecting knowledge and disciplinary identity from outside infringement. If knowledge would be universally understandable and easily available for everyone, the specialists in the disciplines would lose their authority and influence as the most important interpreters of their discipline's accumulated knowledge. (Krishnan 2009: 24).

The lack of meaningful engagement by economists with thinkers like Paul Grignon is an example of how this process of discipline construction and defence is problematic for humanity's ability to inquire, learn and unlearn.

Within economics, one way that the disciplinary defensiveness is maintained is through the promotion of the myth of objectivity. The implication is that some economists' analysis is better because they are less emotionally involved in the topic. This can mean that they do not question or state their values and intentions. In actual fact, it is the other way around: positing oneself as 'objective' is often a highly subjectively-driven endeavour attached to many concealed emotional hang-ups and denials, whereas it has become recognized as objectively true that our subjectivities are socially constructed, since childhood and into the specific profession we are working in. If we do not consider how our subjectivities influence our approach to research, shape what we are interested in, and affect our perception and our judgements on the validity, knowledge and appropriateness of conclusions, then our research should be regarded as flawed (Nelson and Nelson 1996; Arnsperger 2010b). One way to overcome the false myth of objectivity and develop critical subjectivity is to be trained in critical discourse analysis (Fairclough 2001). Analysing the language we ourselves use can help expose our own ideologies, and this can then help us become more lucid as to the framings of any academic discipline we look at.

Unfortunately, the most senior people in any academic discipline have tended to remain within that discipline in order to become senior, which means they have not left the discursive water within which they swim, and therefore risk more unacknowledged bias shaping their work than transdisciplinary scholars. One way to enable transdisciplinarity is for scholars to collaborate closely with non-academic activists, as they bring a focus on social systems which has not been structured by the categories and preoccupations of a particular discipline. This is one of the benefits the three of us reap from working together on the research for this paper. We claim that our ability not to be hampered by 'establishment shackles' in uncovering an actually existing MGI in capitalism stems from two transdisciplinary sources: first, while we would of course welcome an audience within academia, we are neither all academics nor all economists (only one of us is both), so that the main intended beneficiaries of our work are outside of academia; and second, we feel no need to balance out our professional interests in a way that would make us hesitate to indict capitalism, or aspects of it, and to draw anti- or post-capitalist conclusions from our MGI analysis.

7. Disruption, breakdown, collapse

Our concern with how the MGI has been falsely debunked is that it has influenced conversations and initiatives amongst activists and political movements, as described earlier. That is not a minor matter, but a paradigmatic one, as we shall explain. If we recognise the existence of an MGI then we realise how humanity has been trapped, repressed and exploited by monetary systems: en masse, we have been increasingly compelled to busy ourselves with more production, trade and consumption, whether we wanted that or not. That is a completely different starting point from an environmentalism that regards our environmental problems as arising from unchecked human behaviour, or even problems of human nature, such as addiction. Without awareness or acceptance of an MGI, environmentalism risks being stuck in a moralising discourse about using carrots or sticks to affect behaviour. In an essay on the ideology that has driven our exploitation of each other and nature (called the ideology of "escape"), one of us has recently challenged this anti-freedom paradigm of environmentalism:

Any meaningful environmentalism should be first and foremost a movement for our liberation from those systems of oppression that have been forcing us into the insanity of destroying the life-support system of ourselves and our families. Unless the monetary system changes, the ideology of e-s-c-a-p-e will continue to be fuelled during forthcoming societal disruption. However, because environmentalists have been trapped within the e-s-c-a-p-e ideology, they have framed the problem as one of side effects and accidents that need our better management and control. Honest

environmentalism must now involve the aim and effort for humans to be free to be able to connect to, honour and sustain our environments. Any other environmentalism is a lie. The atmosphere tells us that it is a lie, with the fact of 416ppm CO2 in June 2020. (Bendell 2020)

One can only imagine what a decade of activist discussion about liberating ourselves into environmental sustainability might have achieved. In addition, if the MGI had been foregrounded we might more easily have engaged with the social justice dimension because the arguments in this paper add to a growing body of evidence that economic inequality – caused by the compound effects of decades upon decades of capital accumulation – is harmful for human society, not only as a moral outrage, but systemically. It does that by showing how in a debt-money economy, unspent or accumulated money acts as a vacuum which sucks ever more new debt-money into being, and results in an increase in monetised economic activity – i.e. GDP growth – to justify that additional money.

While some steady-state or degrowth economists spent a decade trying to reassure the wealthy that their accumulated assets – which, as we have shown, underlie the capitalist economy's MGI – would not be socialised by this environmental agenda, these assets now face a greater risk of being naturally incinerated or blown away, seized by hungry mobs, or sinking underwater (Greenfield and Watts 2020). There is an argument that none of this matters very much because a climate catastrophe and peak energy will soon put a messy end to economic growth regardless of anything our governments do or not do (Servigne and Stevens 2020). Many believe humans face the loss of civilisation and progress, while others are worried about our own extinction (Bendell 2018). However, our view is that what we do about economic growth, and by extension emissions, biodiversity and social equity, matters both within our lifetimes and to our descendants. The greater our emissions, the greater the disruption to planetary systems, to species, to food sources and to the oceans, and the longer it will take them to recover and stabilise (Servigne and Steves 2020). Political choices we make now matter greatly for the long-term future of humanity. Instead of helping us reduce emissions and adapt to climate change, the financial system is amplifying crises and accelerating climate change and the collapse of our civilisation (Servigne and Stevens 2020). Therefore, what we do about monetary systems matters.

In particular, we need to face up to the socio-economic and political realities of the massive changes required to reduce harm in the face of disruption from ecological and climatic change. Simply put: the environmental predicament means that some people will need to make do with less consumables than they have now, while also discovering more leisure and community engagement. Climate change negotiations have already revealed a standoff between rich and poor nations, resulting in decades of inaction. Within countries, we have also seen an Australian government fall and social unrest in France leading to policy reversals due to the introduction of carbon taxes (Rootes 2014). It will be impossible to convince economically poor people to either cooperate with or co-lead political programmes towards reducing climate change and adapting to the damage, without the rich first contributing far more. In the context of a shrinking economy, if the rich refuse to reduce their accumulated money, it will result in destitution for everybody else, with predictable disruption. A debt-money system makes these problems more acute, because it means that if the economy stops growing, while savings are maintained, then the various impacts of recession kick in, such as unemployment, bankruptcies, foreclosures, and ultimately, poverty.

Reversing GDP growth means somehow reducing the accumulated money and its counterpart, the accumulated debt. The practical answer would be to use the money of the rich to pay off the debts of the poor either by the rich employing or donating to the poor, or having their money confiscated; capitalism, meanwhile, is still gouging the poor to heap money on the rich. When economic contraction is forced, capitalist systems have channelled the

impact towards the poor. The Covid-19 lockdown has been a textbook example, as many larger and better-connected businesses have been able to take advantage of government support (Blundell et al. 2020).

When the disruption and breakdown of societies is likely, inevitable or already underway, a debt-money system will cause unnecessary harm because of the MGI. Given that the response to Covid-19 has created massive public and private debt at levels not seen since World War II, the financial system which captures savings and makes them unavailable for debt repayments is likely to generate pressure towards what Herman Daly called 'uneconomic growth' (growth that cause human harm and ecological degradation) at the very time when growth should no longer be an option. Unless every single debtor is constantly kept in the close neighbourhood of their 'sweet spot' as defined in section 5 – and we know that a capitalist economy with unregulated markets and no power for governments to issue and distribute currency directly to citizens cannot perform this prodigious fine-tuning feat – there will either be too much spending (generating present growth that will lead to further debt) or too little (locking in future growth). The traditional means of growing, taxing and privatising to service these debts will be highly problematic.

Instead, fresh thinking on the matter of how national and local governments, networks of businesses and grassroots communities all issue money will be needed. It is our view that far-reaching monetary adaptation is needed to cope with the coming planetary emergencies, including the climate crisis. It may not be possible to avert a collapse, but it should be possible not to exacerbate problems with a money system designed for the bygone era of constant, indiscriminate economic expansion. Therefore, scholars, activists and policymakers who are alive to the risks of societal disruption and collapse should consider the importance of the current monetary system in their future efforts. The support of entrepreneurs, corporate executives and investors will be critical to any transformation of the monetary system.

8. Policy implications

There is an urgent need for discussion of policy innovations outside of the current paradigm. Unfortunately, the de-prioritisation of the MGI has meant that relevant policy proposals are few. For example, the Capital Institute includes "Test Sovereign Money" in its list of policy proposals (Fullerton 2020). However, this is tied to a suite of suggestions for what to fund with that money, and does not explain the innovation with the aim of addressing the MGI (Fullerton 2020). The proposals in the book *Doughnut Economics* include a rethinking of economic growth, but it argues that there is an addiction to growth, rather than a systemic requirement for it, and therefore proposes negative interest as a way to discourage growth (Raworth 2017: 275-276). In contrast, Positive Money's monetary reform campaign has kept the MGI in focus (Svartzman et al. 2020).

The types of solutions we have in mind are about how to ensure debt is payable without driving the destruction of societies or the environment. Note that these ideas are selected only for their potential to mitigate the MGI, and that many other policies are needed to transform economies to enable bold carbon emissions mitigation, drawdown and adaptation. Below our proposals include those which would free up accumulated money for creditors to earn, and those which would reduce dependence on debt-money.

- While debt-money could be made sufficient for circulation and productive investments linked to ecological transition but nothing more, interest-free or debt-free money could be issued in sufficient quantities to meet the (growing) needs of savers. The latter could be issued directly by the state, in the form of digital cash from either central banks or government treasuries (Positive Money 2013, and see below), or even by local

governments (Varoufakis 2020) if done according to common standards to maintain confidence and equivalence of value (Slater et al. 2018). It could also be issued by banks or other corporations, which raises concerns about their privilege and power in doing so (Slater and Bendell 2017).

- Different currencies for accumulation and for circulation would give governments much more flexibility around monetary policy. These currencies need not have a 1:1 fixed exchange rate.
- Credit clearing systems offer a way of making payments without the medium of exchange driving economic growth, with other benefits also accruing to members. There are many examples, largely overlooked by both the fields of monetary economics and environmental economics. One is the Slovenian government running a credit clearing system for some decades, which is claimed to have saved the economy in at least two crises (Fleischman et al. 2000).
- Monetary reserve ratios could be reintroduced for banks, enabling credit creation to be (strongly) restricted by government policy. Governments could issue credit guidance (Monserand 2019: 11) to banks as in wartime, to ensure funding for sectors which helped respond to public challenges (Bezemer et al. 2018).
- In principle, negative interest rates should reduce the aggregate accumulation of money, making aggregate debt more payable. However, we should note that the last decade of ultra-low rates has not prevented the richest from accumulating faster than ever. Further research is needed to examine how the widespread use of negative interest rates will affect the behaviour of individuals, companies and financial institutions in ways that might affect the MGI.
- A national plan could be drawn up to create more local, not-for-profit banks, owned by, and mandated to serve, local communities and local businesses (Werner 2017).¹⁹
- A national plan for the creation of local liquidity networks (see, for example, Slater and Jenkin 2016) could facilitate trade with interest-free mutual credit, organised by local governments or other bodies, to reduce the demand for bank-debt money.²⁰
- A new international agreement on the forgiveness of both public and private debt when more than the equivalent of the principal has already been repaid (see, for example, the Jubilee 2000 campaign²¹).
- A new international agreement on international reserve currencies could replace the hegemony of the US dollar as demand for the dollar drops along with a fall in demand for oil. The new regime should be focused on avoiding any direct or indirect incentive for economic growth. This could include revisiting Keynes's idea of an International Clearing Union, proposed at Bretton Woods in 1944.

For economists who work within a paradigm that does not recognise an MGI, many of these proposals might appear peculiar. To help shift the conversation, influential economists need to return to the matter of an MGI and draw policymaker attention to the problem.

We broadly support Modern Monetary Theory (MMT) as a way of transferring political power back from the private to the public sphere. MMT is not so much a set of policy proposals as a way of understanding the monetary system that permits much more government spending without being excessively 'hawkish' about the deficit and the debt (Kelton 2020; Arnsperger et al. 2021). While the supporters of MMT often see it as a way to finance the transition to a low-carbon economy (Arnsperger 2020), from the perspective of degrowth some caveats are in order. Firstly, such a transition is often viewed by politicians as a means to reviving GDP growth, albeit 'sustainable', 'green' or 'decoupled' growth (Dunphy 2019), which is arguably not a transition at all. Secondly, at the end of the proposed transition, the resulting economy

¹⁹ The Public Banking Institute is campaigning for this in the USA: <http://publicbankinginstitute.org>

²⁰ See <http://creditcommons.net> for more details.

²¹ See https://en.wikipedia.org/wiki/Jubilee_2000

might be either not feasible or not very green, as the oil lobby is only too keen to point out (Mills 2019).

There has been increasing discussion about central banks creating digital versions of physical cash, rather than relying on electronic bank-deposits as the only means of electronic fiat currency (BIS 2018). These are being described as Central Bank Digital Currencies (CBDCs), although government treasuries, tax offices or mints could issue these electronic forms of cash (Varoufakis 2020). They could either provide accounts directly to citizens or via payment company intermediaries. One approach is where a central bank or government agency could issue money in the same way cash is issued – as interest-free liabilities of circular commitments. Depending on the way the currency and accounts interface with the existing payments infrastructure, each unit of this new money could be a new asset without a corresponding liability, and therefore capable of settling multiple debts. Conversely, it could also be saved without depriving debtors of the opportunity to repay what they borrowed.

CBDCs would likely give governments a stronger role in monetary policy and payments infrastructure. At this early stage in the design process, economic and policy possibilities are numerous and opportunities to mitigate the MGI abound, which is why we give them some attention here before concluding. One significant option is that if these forms of currency are established, then a government could pass regulations to replace bond sales with simple issuance of electronic cash as a means of financing its deficit and public spending. A government could then consider approaches to its financing that do not require greater economic growth, or restricting itself to what the financial and bond markets consider credible. Therefore, in this way, CBDCs present a threat to the profitability of banks, in issuing loans and trading in bonds, as well as to their global power, through the way they influence government policies through bond and foreign exchange markets. The power of international banks may be the reason why, despite the idea for CBDCs originating in the UK (Positive Money 2013), it has been China that led the way in experimenting with the release of CBDCs at the city level during 2020. As they are also considering ways to make the Chinese CBDCs a monetary instrument for international trade, the geopolitical interests are significant.

For these reasons, there will likely be negative publicity campaigns against CBDCs in an attempt to protect incumbent power. Important issues, such as offline transactions, privacy and inalienable transaction rights, must be upheld with CBDCs, just as they should be upheld, but are not, with the current systems of electronic payments provided by the private banking systems (such as Visa, Worldpay, BACS, SWIFT and so on). Given how dire the situation is with the environment, it would be tragic if the efforts of incumbent power and geopolitical fears led to misinformation campaigns that slowed the exploration of this potential tool for reducing the MGI. However, just because CBDCs could provide a means for reducing the MGI does not mean that they will, unless the political will emerges. Therefore, all these ideas need intensive policy activism and advocacy to push them onto political agendas. Sadly, the environmental predicament and the financial implications of the pandemic mean that societies have very little time to achieve necessary revolutions in monetary policy.

In addition to promoting awareness of these needed policy changes, we would encourage members of the public to also take direct, personal action on monetary issues, such as:

- Using and creating alternatives to debt-money as a medium of exchange (Greco 2001), for example, through the use of barter networks, mesh credit and various local currency systems²²

²² This is our term for payment networks in which members vouch for each other individually, allowing promises to be relayed between strangers.

- Using and creating real alternatives to debt-money as a store of value, bearing in mind that the energy consumption of proof-of-work cryptocurrencies like Bitcoin is highly problematic and that stablecoins derive their value ultimately from bank deposits
- Developing ways to invest savings in local businesses, with the potential of non-monetary returns, such as through the issuance of community shares²³
- Participating in the recently commenced 'Money Rebellion',²⁴ a campaign to encourage citizens to resist or default on bank debt in order to force attention to the need for systemic reform in the face of environmental catastrophe.

Perhaps there might be uncommon allies for such systemic changes in the monetary system. With an MGI, the current system of money issued as debt by private banks is creating a systemic economic risk linked to the impacts of ecological breakdown. These impacts come in many forms and are increasing. Therefore, perhaps an argument could be found that institutional investors, especially pension funds, could benefit from the kinds of monetary reform policies that we offer here. At the very least, it would not seem consistent with their fiduciary duty towards savers and investors for fund managers to not seriously examine the above ideas, with a view to aligning their political influence accordingly.

Conclusion

Economics is a discipline which prides itself in being relevant to policy. To be valid for policy discussion, reasons for rejecting the hypothesis of a Monetary Growth Imperative (MGI) occurring in the real economy should be both factual and implicative: factual, as they should present the MGI hypothesis accurately, in full context, and show that it cannot possibly occur in the real economy; and implicative, by showing clearly why focusing on debt-money would be problematic for intended policy aims.

After reviewing much of the research and commentary that has rejected the plausibility of an MGI, we have found that none of it presented the MGI hypothesis accurately or was definitively able to reject it *as a feature of the real economy as it exists today*. Nor did the authors involved explain why it is counterproductive to focus on debt-money in policy innovation aimed towards either a steady-state or a degrowth economy. For instance, we have yet to come across a clear statement by any debunker of the MGI about why reducing the ability of banks to create debt-money when they issue loans would be bad for people, business, government or the economy. We have also yet to read a clear explanation of why seeking to reduce banks' capacity to issue debt-money should necessarily sideline other matters of interest to steady-state or degrowth economics, or why these other matters are necessarily more important than an MGI. In other words, why should all models that seek to assess the latitudes for degrowth or stationarity start out by presupposing a debt-money system?

Given the lack of truly valid factual or implicative criticism of the MGI, we wondered in our paper whether the criticisms that do exist might have arisen, in part, from the fact that an MGI does not sit well within the conceptual frameworks that some economists prefer when they consider possibilities for steady-state or degrowth policies. We also noted that economists, like any professional, have assumptions about how they might be regarded for their conclusions, which could lead them to avoid findings that are seemingly problematic to apply in our society. Given the risk of disruption to economies and governments from the huge levels of debt from Covid-19 responses and the increasing disruption and risk of societal breakdown from the ecological and climate crisis, we conclude that far bolder and transdisciplinary work is needed on economics in general, and monetary systems in particular. If efforts to address

²³ See <https://communityshares.org.uk>

²⁴ See <http://moneyrebellion.earth>

global dilemmas like pandemics and climate chaos do not include monetary adaptation, these efforts should not be considered sufficient to meet the depth, scale and urgency of our shared planetary predicament.

Acknowledgements

We are grateful to David Barnes, Graham Barnes, Susana Martin Belmonte, Paul Grignon and James Magnus-Johnston for their insightful comments and suggestions on much earlier drafts of this paper. We carry sole responsibility for any remaining shortcomings. Many thanks to Luisa Lapacciana for illustrating Figure 4 and to Jonathan Leighton for editing. Research costs were privately funded by Jem Bendell.

References

- Aglietta, M., (2018) *Money: 5,000 Years of Debt and Power*. Verso.
- Allam, Z., (2020) "Vital COVID-19 economic stimulus packages pose a challenge for long-term environmental sustainability". *Surveying the Covid-19 Pandemic and its Implications*, 2020: 97–105. Elsevier Public Health Emergency Collection.
DOI: [10.1016/B978-0-12-824313-8.00007-3](https://doi.org/10.1016/B978-0-12-824313-8.00007-3)
- Andrijevic, M., Schleussner, CF., Gidden, M., McCollum, D. L., Rogelj, J., (2020) "COVID-19 recovery funds dwarf clean energy investment needs". *Science*, 370(6514): 298-300.
Available at <https://science.sciencemag.org/content/370/6514/298.summary>
- Arnsperger, C., (2008) *Critical Political Economy: Complexity, Rationality and the Logic of Post-Orthodox Pluralism*. Routledge.
- Arnsperger, C., (2009) *Éthique de l'existence post-capitaliste: Pour un militantisme existentiel*. Cerf.
- Arnsperger, C., (2010a) "Monnaie, dette et croissance sans prospérité: Portée et limites du 'tournant' jacksonien". *Etopia – Revue d'écologie politique* 8: 109-116.
- Arnsperger, C., (2010b) *Full-Spectrum Economics: Towards an Inclusive and Emancipatory Social Science*. Routledge.
- Arnsperger, C., (2020) "Financer la transition vers la décroissance en Suisse: Pour en finir avec le 'mythe du déficit public'". *Moins! Journal romand d'écologie politique*, Issue 50, December 2020, pp. 24-25.
- Arnsperger, C., Morvant-Roux, S., Servet, J.-M., Tiran, A., (2021) "Money creation as a foundational tool for convivialism". In A. Caillé and F. Adloff (eds.), *A Convivialist Future*. Transcript Verlag. Forthcoming.
- Bank of England, (2014) "Money creation in the modern economy" (by Michael McLeay, Amar Radia and Ryland Thomas). *Spring Quarterly 2014 Q1*.
Available at <http://bankofengland.co.uk/-/media/boe/files/quarterly-bulletin/2014/quarterly-bulletin-2014-q1.pdf>
- Bendell, J., (2018) "Deep Adaptation: A map for navigating the climate tragedy".

Available at <http://lifeworth.com/deepadaptation.pdf>

Bendell, J., (2020) "The collapse of ideology and the end of escape". Available at <http://jembendell.com/2020/06/28/the-collapse-of-ideology-and-the-end-of-escape/>

Bendell, J., Doyle, I. (2014) *Healing Capitalism*. Greenleaf.

Bendell, J., Greco, T., (2013) "Currencies of transition". In M. Macintosh (ed.), *The Necessary Transition: The Journey Towards the Sustainable Enterprise Economy*, chapter 14. Greenleaf.
Available at http://base.socioeco.org/docs/tnt_bendell.pdf

Bendell, J., Slater, M., (2017) "Thwarting an Uber future for complementary currencies: Open protocols for a credit commons". Available at <http://matslats.net/thwarting-uber-future-platform-cooperatives-credit-commons>

Bendell, J., Sutherland, N., Little, R., (2017) "Beyond unsustainable leadership: Critical social theory for sustainable leadership". *Sustainability Accounting, Management and Policy Journal* 8(4): 418-444.
Available at <https://doi.org/10.1108/SAMPJ-08-2016-0048>

Bezemer, D., Ryan-Collins, J., van Lerven, F., Zhang, L., (2018) "Credit where it's due: A historical, theoretical and empirical review of credit guidance policies in the 20th century". University College London, Institute for Innovation and Public Purpose, working paper 2018-11.
Available at <http://ucl.ac.uk/bartlett/public-purpose/publications/2018/nov/credit-where-its-due>

Binswanger, M., (2009) "Is there a growth imperative in capitalist economies? A circular flow perspective". *Journal of Post Keynesian Economics* 31(4): 707-727.

BIS, (2018) "Central bank digital currencies". Bank for International Settlements.
Available at <https://www.bis.org/cpmi/publ/d174.pdf>

Blundell, R., Costa Dias, M., Joyce, R., Xu, X., (2020) "Covid-19 and its inequalities". *Fiscal Studies* 41(2): 291-319.
Available at <https://onlinelibrary.wiley.com/doi/10.1111/1475-5890.12232>

Borzykowski, B., (2014) "Why the rich stay rich: They don't invest like the rest". [On-line] *BBC Worklife*, 02.05.2014.
Available at <https://www.bbc.com/worklife/article/20140501-how-the-rich-stay-rich>

Cahen-Fourot, L., Lavoie, M., (2016) "Ecological monetary economics: A post-Keynesian critique". *Ecological Economics* 126: 163-168.
DOI: [10.1016/j.ecolecon.2016.03.007](https://doi.org/10.1016/j.ecolecon.2016.03.007)

Cahill, D., Saad-Filho, A., (2017) "Neoliberalism since the Crisis". *Critical Sociology* 43(4-5): 611-613.
Available at <https://doi.org/10.1177/0896920517699153>

Carney, M., (2019) *Treasury Select Committee hearing on the Bank of England Financial Stability Report* [Online].
Available at: <http://bankofengland.co.uk/events/2019/october/tsc-hearing-on-the-financial-stability-report>

Chzhen, Y., (2016) "Unemployment, social protection spending and child poverty in the European Union during the Great Recession". *Journal of European Social Policy* 27(2): 123-137.

Available at <https://doi.org/10.1177/0958928716676549>

Costanza, R., Alperovitz, G., Daly, H.E., Farley, J., Franco, C., Kubiszewski, I., Schor, J., Victor, P., (2013) *Building a Sustainable and Desirable Economy-in-Society-in Nature*. United Nations Division for Sustainable Development.

Daly, H., (1977) "A catechism of growth fallacies". *Steady-State Economics*, chapter 5. Island Press.

Dorling, D., (2014) *Inequality and the 1%*. Verso.

Douthwaite, R., (1992) *The Growth Illusion*. Lilliput Press.

Douthwaite, R., (1999) *The Ecology of Money*. Green Books.

Available at http://feasta.org/documents/moneyecology/pdfs/chapter_one.pdf

Douthwaite, R., (2010) "Designing financial institutions for a shrinking or no-growth economy". Second Conference on Economic Degrowth for Ecological Sustainability and Social Equity, Working Group 2 'Stirring Paper'.

Available at <https://www.degrowth.info/en/catalogue-entry/designing-financial-institutions-for-a-shrinking-or-no-growth-economy/>

Dunphy, S., (2019) "European Green Deal is our new growth strategy, says EU". *European Scientist*, 12.12.2019.

Available at <http://europeanscientist.com/en/environment/european-green-deal-is-new-growth-strategy>

Eisenstein, C., (2011) *Sacred Economics*. North Atlantic.

Available at <http://sacred-economics.com/wp-content/uploads/2012/01/sacred-economics-book-text.pdf>

Farley, J., Burke, M., Flomenhoft, G., Kelly, B., Murray, D., Posner, S., Putnam, M., Scanlan, A., Witham, A., (2013) "Monetary and fiscal policies for a finite planet". *Sustainability* 5(2802–2826).

Available at <http://dx.doi.org/10.3390/su5062802>

Fairclough, N., (2001) *Language and Power*. Longman.

FDIC, (2019) "Bank and nonbank lending over the past 70 years". *FDIC Quarterly* 13(4).

Available at <http://fdic.gov/bank/analytical/quarterly/2019-vol13-4/fdic-v13n4-3q2019-article1.pdf>

Fleischman, T., Dini, P., Littera, G., (2000) "Liquidity-saving through obligation-clearing and mutual credit: An effective monetary innovation for SMEs in times of crisis". *Journal of Risk and Financial Management* 13(12).

Available at <https://www.mdpi.com/1911-8074/13/12/295>

Freydorf, C., Kimmich, C., Koudela, T., Schuster, L., Wenzlaff, F., (2012) *Wachstumswänge in der Geldwirtschaft*. Zwischenbericht der Wissenschaftlichen Arbeitsgruppe Nachhaltiges Geld, Berlin.

Available at

<http://geld-und-nachhaltigkeit.de/publikationen/wachstumszwaenge-in-der-geldwirtschaft-2/>

Friedman, B. J., (2006) *The Moral Consequences of Economic Growth*. Vintage.

Fouskas, V. K., Dimoulas, C., (2017) "Imperial bondage: Austerity in Greece 2008-2018". In R. Sturm, T. Griebel, T. Winkelmann (eds.), *Austerity: A Journey to an Unknown Territory*, pp. 191-212. Nomos.

Fullerton, J., (2020) *Finance for a Regenerative World, Act IV: Agenda for Genuine Financial Reform*. Capital Institute.

Available at <https://capitalinstitute.org/finance-for-a-regenerative-world/>

Godley, L., Lavoie, D., (2006) *Monetary Economics: An Integrated Approach to Credit, Money, Income, Production and Wealth*. Palgrave-Macmillan.

Greco, T. H., (2001) *Money: Understanding and Creating Alternatives to Legal Tender*. Chelsea Green.

Available at http://monetary-freedom.net/reinventingmoney/Greco-Understanding_creating_alternatives_legal_tender.pdf

Greenfield, P., Watts, J., (2020) "JP Morgan economists warn climate crisis is threat to human race". *The Guardian*, 21.02.2020.

Available at <http://theguardian.com/environment/2020/feb/21/jp-morgan-economists-warn-climate-crisis-threat-human-race>

Greer, J. M., (2015) *After Progress: Reason and Religion at the End of the Industrial Age*. New Society Publishers.

Grignon, P., (2009) *Money as Debt II: Promises Unleashed*.

Available at <https://youtu.be/28V7A15x8jQ>

Grignon, P., (2011) *Money as Debt III: Evolution Beyond Money*.

Available at <https://youtu.be/3P7izAUe3ZM>

Grignon, P., (2013) "Proposed new metric: the Perpetual Debt Level". Paper presented at the World Economics Association conference on the Political Economy of Economic Metrics, 28th January to 25th February, 2013.

Available at

<http://paulgrignon.netfirms.com/MoneyasDebt/MAD2020/livedebtgraphsFedstats.htm>

Grignon P., (2018) "What is 'Sovereign Money' and why do people think it's a good idea?".

Available at

http://paulgrignon.netfirms.com/MoneyasDebt/MAD2016/sovereign_money_ideas.pdf

Harvey, F., (2020) "'Surprisingly rapid' rebound in carbon emissions post-lockdown". *The Guardian*, 11.07.2020.

Available at <http://theguardian.com/environment/2020/jun/11/carbon-emissions-in-surprisingly-rapid-surge-post-lockdown>

Hickel, J., (2020) *Less is More: How Degrowth Will Save the World*. Penguin.

Huntingford, C., Williamson, M. S., Nijssen, F. J. M. M., (2020) "CMIP6 climate models imply high committed warming". *Climatic Change* 162: 1515–1520.

Available at <https://doi.org/10.1007/s10584-020-02849-5>

- IMF, (2020) *Fiscal Monitor: Policies for the recovery*. Available at <http://imf.org/en/Publications/FM/Issues/2020/09/30/october-2020-fiscal-monitor>
- Jackson, T., (2009) *Prosperity Without Growth: Economics for a Finite Planet*. Earthscan.
- Jackson, T., (2015) "Commentary on 'Marxism and Ecology: Common Fonts of a Great Transition Initiative'". Available at <http://greattransition.org/commentary/tim-jackson-marxism-and-ecology-john-bellamy-foster>
- Jackson, T., Victor, P., (2015) "Does credit create a 'growth imperative'? A quasi-stationary economy with interest-bearing debt". *Ecological Economics* 120: 32-48. DOI: [10.1016/j.ecolecon.2015.09.009](https://doi.org/10.1016/j.ecolecon.2015.09.009)
- Jackson, T., Victor, P., (2019) *Managing without Growth: Exploring Possibilities*. Edward Elgar.
- Jones, A., Taylor, N., Hafner, S., Kitchen J., (2020) "Finance for a future of sustainable prosperity". *AREA Journal* (Royal Geographic Society), 14 May 2020. Available at <https://rqs-ibq.onlinelibrary.wiley.com/doi/10.1111/area.12631>
- Kallis, G., Paulson, S., D'Alisa, G., Demaria, F., (2020) *The Case for Degrowth*. Polity Press.
- Keen, S., (2011) *Debunking Economics*, 2nd edition. Zed Books.
- Keen, S., (2015) "The principal and interest on debt myth". *Forbes.com*, 30 March 2015. Available at <http://forbes.com/sites/stevekeen/2015/03/30/the-principal-and-interest-on-debt-myth-2>
- Kellerhof, T., (2020) "A green reboot after the pandemic". Club of Rome, 24 March 2020. Available at <http://clubofrome.org/impact-hubs/climate-emergency/a-green-reboot-after-the-pandemic>
- Kelton, S., (2020) *The Deficit Myth: Modern Money Theory and How to Build a Better Economy*. John Murray.
- Keynes, J. M., (1930) *A Treatise on Money*. Harcourt Brace. Available at <http://archive.org/details/in.ernet.dli.2015.150075/mode/2up>
- Krishnan, A., (2009) "What are academic disciplines? Some observations on the disciplinarity vs. interdisciplinarity debate". ESRC, National Centre for Research Methods, Working Paper 03/09. Available at http://eprints.ncrm.ac.uk/783/1/what_are_academic_disciplines.pdf
- Larue, L., (2020) "The ecology of money: A critical assessment", *Ecological Economics* 178. Available at <https://doi.org/10.1016/j.ecolecon.2020.106823>
- Li, M. (2007) *Capitalism with Zero Profit Rate? Limits to Growth and the Law of Tendency for the Fate of Profit to Fall*. Working Paper, University of Utah, Department of Economics.
- Liettaer, B., Arnsperger, C., Goerner, S., Brunnhuber, S., (2012) *Money and Sustainability: The Missing Link*. Triarchy Press.

McNeill Douglas, R., (2019) "Could capitalism survive the transition to a post-growth economy?". In John Foster (ed.), *Facing up to Climate Reality*, pp. 15-34. Green House & London Publishing Partnership.

Milanovic, B., (2018) *Global Inequality: A New Approach for the Age of Globalization*. Harvard University Press.

Milanovic, B., (2019) *Capitalism, Alone: The Future of the System That Rules the World*. Harvard University Press.

Mills M. P., (2019) *The 'New Energy Economy': An Exercise in Magical Thinking*. Manhattan Institute.

Available at <https://www.manhattan-institute.org/green-energy-revolution-near-impossible>

Monserand, A., (2019) "Degrowth in a neo-Kaleckian model of growth and distribution? A theoretical compatibility and stability analysis". Centre d'Economie de l'Université de Paris Nord (CEPN), Working Paper 2019-01.

Available at <https://hal.archives-ouvertes.fr/hal-02012632/document>

Nelson, J.A., Nelson, K.Y., (1996) *Feminism, Objectivity and Economics*. Routledge.

OECD, (2020a) "Household debt".

Available at <https://data.oecd.org/hha/household-debt.htm>

OECD, (2020b) "Non-Financial corporations debt to surplus ratio".

Available at <https://data.oecd.org/corporate/non-financial-corporations-debt-to-surplus-ratio.htm>

Onyango, V., Gazzola, P., Wood, G., (2019) "The effects of recent austerity on environmental protection decisions: Evidence and perspectives from Scotland". *Management of Environmental Quality* 30(5): 1218-1234.

Available at <https://doi.org/10.1108/MEQ-01-2019-0025>

Pistor, K., (2019) *The Code of Capital: How the Law Creates Wealth and Inequality*. Princeton University Press.

Positive Money, (2013) *Sovereign Money: An Introduction* (by Ben Dyson, Graham Hodgson and Frank van Lerven).

Available at <https://positivemoney.org/our-proposals/sovereign-money-introduction/>

Positive Money, (2018) *Escaping Growth Dependency*.

Available at <https://positivemoney.org/publications/escaping-growth-dependency>

Positive Money, (2020) *The Tragedy of Growth* (by David Barmes and Fran Boait).

Available at <http://positivemoney.org/wp-content/uploads/2020/05/Positive-Money-Tragedy-of-Growth-Digital-Single-Pages.pdf>

Raworth, K., (2017) *Doughnut Economics: Seven Ways to Think Like a 21st-Century Economist*. Random House.

Richters, O., Simoneit, A., (2017) "Consistency and stability analysis of models of a monetary growth imperative". *Ecological Economics* 136: 114-125.

Available at <https://doi.org/10.1016/j.ecolecon.2017.01.017>

- Rootes, C., (2014) "A referendum on the carbon tax? The 2013 Australian election, the Greens, and the environment". *Environmental Politics* 23(1): 166-173.
Available at <http://tandfonline.com/doi/abs/10.1080/09644016.2014.878088>
- Schmidt, J., (2001) *Disciplined Minds: A Critical Look at Salaried Professionals and the Soul-battering System that Shapes Their Lives*. Rowman & Littlefield.
- Servigne, P., Stevens, R., (2020) *How Everything Can Collapse*. Polity.
- Shaxson, N., (2011) *Treasure Islands: Uncovering the Damage of Offshore Banking and Tax Havens*. Palgrave-Macmillan.
- Slater, M., Jenkin, T., (2016) *The Credit Commons: A Money for the Solidarity Economy*. Available at <http://creditcommons.net/credit-commons.pdf>
- Slater, M., Bendell, J., (2017) Thwarting an Uber Future for Complementary Currencies: Open Protocols for a Credit Commons. Available at <https://matslats.net/thwarting-uber-future-platform-cooperatives-credit-commons>
- Slater, M., Bendell, J., Cave, D., (2019) "Local Future Tax Credits: Towards a tool for local government to finance itself and help adapt to the climate emergency". University of Cumbria, Institute for Leadership and Sustainability (IFLAS), Occasional Paper 4.
- Smith, R., (2010) "Beyond growth or beyond capitalism". *Real World Economics Review* 53. Available at <http://paecon.net/PAEReview/issue53/Smith53.pdf>
- Strathern, M., (2005) "Anthropology and interdisciplinarity". *Arts and Humanities in Higher Education* 4(2): 125-135.
Available at <https://doi.org/10.1177/1474022205051961>
- Stratford, B., (2020) "The threat of rent extraction in a resource-constrained future". *Ecological Economics* 169.
Available at <https://doi.org/10.1016/j.ecolecon.2019.106524>
- Strunz, S., Bartelowski, B., Schindler, H., (2017) "Is there a monetary growth imperative?". In P.A. Victor and B. Dolter (eds.), *Handbook on Growth and Sustainability*, pp. 326-355. Edward Elgar.
Earlier draft version available at https://www.ufz.de/export/data/global/67091_DP_05_2015_Strunzetal.pdf
- Svartzman, R., Ament, J., Barmes, D., Erikson, J. D., Farley, J., Guay-Boutet, C., Kosoy, N., (2020) "Money, interest rates and accumulation on a finite planet – Revisiting the 'monetary growth imperative' through institutionalist approaches". In R. Costanza, J.D. Erickson, J. Farley and I. Kubiszewski (eds.), *Sustainable Wellbeing Futures: A Research and Action Agenda for Ecological Economics*, pp. 266-283. Edward Elgar.
Available at <http://elgaronline.com/view/edcoll/9781789900941/9781789900941.xml>
- Tarver, E., (2020) "Six investing mistakes the ultra wealthy don't make". [On-line] *Investopedia -- Wealth Management*, 26.02.2020.
Available at <https://www.investopedia.com/articles/investing/093015/6-investing-mistakes-ultra-wealthy-dont-make.asp>
- Tepe-Belfrage, D., Wallin, S., (2016) "Austerity and the hidden costs of recovery: Inequality and insecurity in the UK households". *British Politics* 11: 389-395.
DOI: [10.1057/s41293-016-0038-0](https://doi.org/10.1057/s41293-016-0038-0)

Tolefson, J., (2020) "Why deforestation and extinctions make pandemics more likely".
Nature 584: 175-176.
Available at <http://nature.com/articles/d41586-020-02341-1>

Trainer, T., (2012) "De-growth: Do you realise what it means?". *Futures* 44.
Available at <http://degrowth.org/wp-content/uploads/2012/11/Trainer-2012.pdf>

Varoufakis, Y., (2011) *The Global Minotaur: America, Europe and the Future of the Global Economy*. Zed Books.

Varoufakis, Y., (2020) "Why the Bank of England should give everyone a free account".
Wired, 09.11.2020.
Available at <https://www.wired.co.uk/article/future-economy-yanis-varoufakis>

Wenzlaff, F., Kimmich, C., Richters, O., (2014) *Theoretische Zugänge eines Wachstumszwangs in der Geldwirtschaft*. Universität Hamburg, ZÖSS Discussion Paper 45.
Available at <https://EconPapers.repec.org/RePEc:zbw:cessdp:45>

Werner, R., (2017) "Shifting from central planning to a decentralised economy: Do we need central banks?".
Available at <http://professorwerner.org/shifting-from-central-planning-to-a-decentralised-economy-do-we-need-central-banks/>

World Economic Forum, (2020) The Great Reset. <https://www.weforum.org/great-reset>