INSTITUTE FOR GLOBAL PROSPERITY

UNTIL DEBT NO LONGER TEAR US APART: USING CAUSAL LOOP DIAGRAMS TO STUDY HOUSEHOLD OVERINDEBTEDNESS AND POSSIBLE INTERVENTIONS

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Abstract

Since neo-liberal policies led to deregulation of financial markets and privatisation of many public services in the late 1900s, household debt has reached new limits. In the aftermath of the recent Covid-19 pandemic, household debt is expected to grow even further and with it the number of overindebted households. Household overindebtedness is problematic for myriad reasons, including the adverse impacts on people's health, wellbeing, and social relations, as well as on the economic stability necessary to ensure other aspects of prosperity. In this study, I aim to uncover some of the dynamics that cause household debt to escalate and to analyse the impact that three potential interventions (Universal Basic Services, interest rate ceilings, and debt jubilee) might have on overindebtedness. I used causal loop diagrams – a systems thinking tool – to map out different elements and dynamics associated with household debt. I then studied how each intervention would affect those elements and dynamics. I found that there are several reinforcing feedback loops within the household indebtedness system which cause households debts to spiral. These loops concerned the effect of continuous debt servicing costs, financial deficits, interest rates, creditworthiness, emotional distress and cognitive overload, and self-control and impulsiveness. The three interventions all targeted one or more of these effects, but none of them was sufficient in addressing all causes of overindebtedness. The findings therefore imply that policymakers and researchers should adopt a systems approach to the household debt crisis in order to develop sustainable, effective policies.

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List of Abbreviations

CLD	Causal loop diagram
IGP	Institute for Global Prosperity
UBS	Universal Basic Services

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1. Introduction

The Covid-19 pandemic has had many tragic consequences, including severe economic malaise. Lockdowns and other restrictions caused many to suffer blows in income - though many others were able to save more than ever. Consequently, economic inequalities have deepened and as many have found themselves diving deeper into debt, calls have arisen to offer those who are worst off a helping hand (Ben-Ishai, 2020).

Households were financially vulnerable even before the Covid-19 pandemic defied the world. Many countries in the Global North have seen tremendous increases in household debt since the rise of neoliberalism in the 1970s and financial deregulation in the 1990s (Glassman & Filsinger, 2021; Hohnen & Hansen, 2021). Household debts are not necessarily problematic, as long as economic, political and social circumstances enable households to repay their debts with ease (Soro et al., 2021). However, many households in the Global North have reached a state of over-indebtedness: their income and debts are out of balance and they are regularly unable to pay their bills (Almenberg et al., 2021; Burton, 2020; Soro et al. 2021). To these households, debt presents many negative externalities, such as stress, shame, poverty, and social exclusion (Sweet, 2018). On a larger scale, debt increases socio-economic inequality because lower-income households are particularly vulnerable to 'debtfarism' (Soederberg, 2014) and the power relations of debt enable the rich to explore the poor for profit (Lea, 2021; Sweet 2018). Moreover, because household debt has grown to become the lifeblood of the economy (Graeber, 2021), household overindebtedness can dangerously destabilise economies, which can have devastating consequences for prosperity (Montgomerie, 2019).

The aim of this study is to explore household overindebtedness and potential solutions to the household debt crisis from a systems perspective. The questions I aim to answer are: 1) How does household overindebtedness develop?; and 2) How might Universal Basic Services (UBS), interest rate ceilings and debt jubilee address household overindebtedness? By doing so, I hope to provide new insights of and inspire new approaches to household overindebtedness.

In Chapter 2, I elaborate on the topic of household debt. I describe how household debt has grown to become problematic and which problems arise from the indebtedness – and over-indebtedness – of households. These topics provide a background for a introduction of the different solutions that have been suggested to resolve household indebtedness and its negative consequences. I focus in particular on the three solutions that I consider in my analysis: UBS, interest rate cap, and debt jubilee. In Chapter 3, I explain my main methodology – systems thinking and causal loop diagrams (CLDs). I also elaborate on my data collection methods. In Chapter 4, I present my results with CLDs as useful visuals. Chapter 5 constitutes a discussion, in which I explain the implications of my results on policy regarding household debt.

2. Literature Review

2.1.The Rise of the Debt Economy

To understand why it is important to address proposed solutions to the household debt burden, it is imperative to understand how we got here an why current levels of household debt are a problem first. Household debt did not use to be as ubiquitous and problematic as it is nowadays. In countries in the Global North, household debt grew as financialisation and liberalisation of

economies prevailed. Household debt is now such an important driver of these economies, that one can now refer to them as 'debt economies' (Montgomerie, 2019). When and how exactly economies transformed into debt economies is country-dependent. Nonetheless, it is safe to say that political, social and economic circumstances in the 1970s sparked a shift in economic policy in many countries in the Global North (Debt Collective, 2020).

Critics of the current handling of household debt often point to the rise of neoliberal capitalism as the catalyst for the accumulation of household debt (Debt Collective, 2020; Graeber, 2021). Neoliberal capitalism refers to many things, but can be summarised as follows: "Neoliberalism is a form of capitalism that asserts that human well-being is synonymous with entrepreneurialism, that the "free" market is the best way to organize an economy, and that the state should exist only to protect private property" (Debt Collective, 2020, p. 49). Or, as David Graeber (2021) metaphorically puts it: "We were all to think of ourselves as tiny corporations […]" (p. 377). Hence, under neoliberalist policy, economies were designed around private interests, rather than public interests.

Two countries that spearheaded the shift towards neoliberalism, were the United States and the United Kingdom (Poppe et al., 2016). Both countries endured the economic plagues of the 1970s: oil crises, recession, stagflation and unemployment were commonalities across the Global North. In the United Kingdom, this economic detriment caused unrest among its population. Up until that point, the British had built and benefitted from an impressive and successful welfare state. However, economic turmoil caused underlying discontent to bubble to the surface. Workers questioned the extent to which the welfare state addressed their real needs and went on strike (Cottam, 2018). Neoliberals took the crises as an opportunity to criticise the welfare state for its extensive costs and for the dominant role of the state. They argued that a privatised market could be more efficient at providing a welfare state, albeit a 'watered-down' version (Cottam, 2018).

As a result, public services such as housing and care were increasingly privatised, causing the United Kingdom and the countries that followed suit to become residual welfare states (Glassman & Filsinger, 2021). Moreover, austerity policies, such as the ones that were reinforced after the Great Recession, led to even more cuts in public spending. Consequently, households were left to finance their own needs. Wage stagnation and cuts in welfare benefits caused an even larger strain on household budgets (Glassman & Filsinger, 2021). Efforts to upkeep a certain standard of living and consumption while wages were stagnating, led to an increasing dependence on debt (Poppe et al., 2016). As of today, poor households in the United Kingdom spend 75% of their monthly income on basic necessities alone (Coote & Percy, 2019). This, combined with their low incomes, makes them incredibly financially vulnerable and susceptible to overindebtedness (Lea, 2021).

Growing household overindebtedness also goes hand in hand with deregulation of financial markets and the 'democratisation of credit' (Filipović et al., 2016; Hohnen & Hansen, 2021). In the United States, calls for emancipation from various corners of society resulted in credit being made accessible to everyone. This presented perverse opportunities to marginalised groups. Their exclusion from financial services had previously put a strain on their economic security. Now, they could use new-found credit opportunities to finance new goods and services. Financial institutions saw this excitement as an opportunity to target credit-unexperienced marginalised groups with credit under exploitative terms (Appel et al., 2019).

Thus, although democratisation of credit and financial inclusion presented people with new opportunities in terms of economic security, these developments also exposed many more people to the dangers of debt and credit and increased the prevalence of indebted households. Today, household debt has become normalised. This, in combination with increasing ease of access to credit due to the digitalisation of finance, has caused household indebtedness – and overindebtedness – to grow to tremendous hights (Burton, 2020; Hohnen & Hansen, 2021).

2.2.Debt and Prosperity

To understand why the household debt crisis is worrying, it is useful to know how debt impacts people, societies, and the planet. As I will argue below, debt can be both beneficial and detrimental to well-being and prosperity. Which effect ensues depends on our handling of debt.

2.2.1. Perks of Debt

Before discussing the harm that debt and indebtedness cause, it is important to recognise the benefits and necessity of debt. Credit has always played an important role in the existence of humanity and the development of societies (Graeber, 2021; Harari, 2018). This is, inter alia, because credit makes investment and innovation possible. Its function is similar to that of money or coinage, but there is one perk specific to debt: its temporal feature. Harari (2018) argues that, because of its physicality, "money [can] represent and convert only things that actually [exist] in the present" (p. 27). Because we have a fixed amount of money at any given moment, we can only use that amount or less in that moment. If you take only a €20 bill to the grocery store, you will not be able to spend more than €20 on your shopping. What credit allows us to do, is to "[…] build the present at the expense of the future" (Harari, 2018, p. 27). If we are confident that we will receive a steady stream of income in the future, we can comfortably decide to take out a loan to finance a purchase in the present; we can afford purchases now by paying for them with our future money. Essentially, credit allows us to do the opposite of saving. We use both credit and savings to smooth consumption over periods of lower and higher income. In economic terms, we need credit to maximise household lifetime utility (Bialowolski & Weziak-Bialowolska, 2021).

Famous economic theories that describe debt as a tool to smooth consumption over time are the permanent income hypothesis (Friedman, 1957) and the life-cycle hypothesis (Modigliani & Brumberg, 1954). However, these theories imply that individuals have the option to choose to smooth out their consumption. In reality, this is not always the case. Montgomerie (2019) explains: "Debt was once an option, a choice, something that could be managed with buoyant incomes and that would deliver wealth gains. Today debt is a necessity and, for many people, the prospect of ever being free from debt is very unlikely" (p. 4). Whereas in the era of Friedman, Modigliani and Brumberg households could rely on steady employment, rising wages and inflationary pressure on their debts, households today are forced to finance ever-growing debts with stagnant wages (Leclaire, 2021). Moreover, their decision to borrow is not necessarily based on long-term visions on their budgets. Instead, many households turn to credit in a desperate attempt to make ends meet (de Almeida et al., 2021);

this has little to do with expected future earnings. Thus, although there are definitely benefits of credit, the extent to which we are now dependent on debt is undesirable.

2.2.2. Debt's Consequences on Humans

One of the ways in which debt negatively impacts humans, is through perpetuating and amplifying inequalities. The creditor-debtor relationship that forms the foundation of debt is built around a certain power dynamic (Kirwan, 2019). In our day and age, the creditor holds power over the debtor (Graeber, 2021). Because debt is such a critical part of our economies, these power relations are reflected in larger economic systems, forming an "uneven substance of society" (Kirwan, 2019, p. 1). To be more specific, Leclaire (2021) distinguishes between profit-earning households and wage-earning households. Profit-earning households are wealthy households, who can employ debt to finance the purchase of assets that will guarantee them extra income streams, such as apartments or stocks. They might therefore also function as creditors. Wage-earning households, on the other hand, are more likely to employ debt to finance basic needs and consumption. They are debtors only. In the current, unequal system, wage-earning households transfer increasing proportions of their incomes to profit-earning households through debt relations (Lecalire, 2021). Thus, wealth is transferred from the poor to the wealthy through systems of debt, which increase socio-economic inequalities. This effect is amplified by the fact that low-income households are much more dependent on debt to finance their basic needs than wealthy households are (Sweet, 2018).

Other consequences of debt that have been elaborately discussed in the literature about overindebtedness are health problems. A growing body of research has recognised the adverse impact of debt on people's mental and physical health (Sweet et al., 2018). The psychological consequences of debt include anxiety, depression, psychological distress, decreased level of wellbeing, and increased risk of suicidal ideation and self-harm (Bialowolski & Weziak-Bialowolska, 2021; Brown et al., 2005; Hojman et al., 2016; Meltzer et al., 2011; Richardson et al., 2013; Sweet et al., 2018). Part of these consequences stem from 'neoliberal subjectivity' (Sweet, 2018): the powerful moral component of neoliberalism as an ideology pushes people into holding themselves accountable for their debts. Consequently, they are more likely to think of themselves negatively, which is linked to many of the mental health outcomes mentioned earlier (Sweet, 2018). This same neoliberal morality is also linked to being stigmatised and socially excluded: others are also inclined to hold individuals accountable for their own financial detriment, causing shame and embarrassment among debtors, who might then isolate themselves from the rest of the world or be rejected and excluded by others (Gathergood, 2011; Sweet et al., 2018)

Physical health outcomes that have been linked to financial debt include obesity, hypertension, lower life expectancy, and poor sleep quality (Münster et al., 2009; Song et al., 2020; Sweet et al., 2013; Walsemann et al., 2016). Especially when faced with financial hurdles, escalating levels of debt, and difficulty with repayment, debtors are susceptible to the negative mental and physical consequences of debt (Bialowolski & Weziak-Bialowolska, 2021). Although some physical health outcomes are a consequence of debt-related mental health issues (e.g. unhealthy eating habits during periods of depression or anxiety), others are a direct effect of being indebted. When an individual suffers high debt servicing costs, for

example, they might be less inclined to seek medical attention in case of physical adversities because they are hesitant to incur any more costs (Sweet, 2020).

2.2.3. Debt's Consequences on the Planet

In addition to the harmful impact of indebtedness on humans, debt is at the root of environmental degradation. Although the environmental impact of debt is not further addressed in this study's analysis, I do feel obliged to discuss this issue here because of its urgency.

Debt is intrinsically linked to economic growth because debt finances consumption and consumption drives economic growth (Graeber, 2021). Moreover, economic growth is a requirement for debt's existence, because credit is "[…] founded on the assumption that our future resources are sure to be far more abundant than our present resources" (Harari, 2018, p. 27). Economic growth, however, has been linked to environmental degradation and other ecological crises. The Club of Rome, an international group of multi-disciplinary experts, published the Limits to Growth report in 1972 (Meadows et al., 1972). In this report, the group explained how exponential growth of certain aspects of humanity (e.g. pollution, industrialisation, consumption of non-renewable resources) would ultimately lead to collapse and overshoot. Such collapse and overshoot was later defined as planetary boundaries by Rockström et al. (2009). Essentially, these findings imply that because Earth's resources are finite, economic growth that is reliant on those resources simply cannot be infinite (Arrow et al., 1995). If we ignore this physical law and keep pursuing economic growth, this will have dire consequences on the planet, its ecosystems, and ourselves (Raworth, 2017).

Thus, continuous consumption fuelled by debt contributes to economic growth and its detrimental impact on our planet.

2.3. Solutions to the Household Debt Crisis

The previous paragraphs demonstrate why household debt presents significant problems to prosperity. These issues drive some people to come up with solutions to the household debt crisis. Examples of interventions aimed at improving the situation of indebted households and individuals include debtors' unions (Debt Collective, 2020), money education and debt advice (e.g. Money A+E), and UBS. The latter is not aimed at indebted households specifically, but its effects should positively impact any vulnerable household, specifically those on the lowest incomes (Institute for Global Prosperity [IGP], 2017). For others, the need to address household indebtedness stems from a macro-economic point of view. They fear that if current trends in household debt persist, this will eventually put a strain on overall economic activity. Because economies are so dependent on household debt, they are vulnerable to any issues arising from overindebtedness (Leclaire, 2021). Such macro-economic motivations might elicit different solutions to the household debt-crisis than moral motivations that are centred around the household. In this study, I will focus on three interventions that fit the latter more than the former: UBS, interest rate ceilings, and a debt jubilee.

2.3.1. Universal Basic Services

UBS were proposed by the IGP in 2017 (IGP, 2017). The concept of UBS has been concisely defined by Büchs (2021) as "[…] an unconditional provision of public services that address

needs satisfaction to everyone in society" (p. 1). Whereas households are now limited to their own ability to pay for public services due to liberalisation, privatisation, and financialisation of markets, UBS aim to reverse that fact (Coote & Percy, 2020). Under UBS, public services are paid for by public funds and everyone should have free and equal access to these services. After all, "[w]hat [public services] have in common is that they are everyday essentials that everyone needs to live a decent life" (Coote & Percy, 2020, p. 2).

Depending on the country, some public services are already provided universally. Public sectors like healthcare and education enjoy some level of universality in many countries. For UBS, these services require expansion. This can be done by improving the quality of services that already exist, but also by tapping into other areas of public service provision (Coote & Percy, 2020). Other types of care, such as social care and childcare, basic housing or shelter, mobility and transportation, food and nutrition, and information and digital connectivity are some examples of services that most people need, but not everyone can currently afford (Coote & Percy, 2020; IGP, 2017).

UBS have not been suggested as a solution to the household debt crisis specifically. However, its effects on household debt are potentially quite significant. The implementation of UBS will drastically reduce the cost of living for many households (Coote & Percy, 2020). The most vulnerable households in particular, who spend the majority of their income on essentials (Lea, 2021), will be relieved of a heavy financial burden. Because they endure much lower expenses, they can direct larger amounts of their income to their savings, which makes them more financially resilient. Moreover, they do not have to take out credit to finance their basic needs when they are low on cash, because these needs are already taken care of. Essentially, by reducing households' dependence on credit to finance their basic needs, UBS should make an end to "credit-based social security" (Glassman & Filsinger, 2021). I will discuss these dynamics in more detail in Chapter 4.2.1.

2.3.2. Interest Rate Ceiling

Households with poor financial positions pose a larger default risk to lenders. Conventional lenders will charge these households high interest rates to offset that risk (Chmeliková & Redlichová, 2020; Kolios, 2021). Alternatively, high-risk households are blacklisted and kept from accessing conventional credit. They might then turn to alternative financing services, like payday lenders (Lee et al., 2019). However, these lenders are often known to charge exorbitant interest rates and fees on very short-term loans. In the United States, for example, consumers are charged up to 400% APR for a two-week loan (Zinman, 2010). In simpler terms, this means that they have to pay about $15 for every $100 they borrow. When a household struggles to repay such loans – which is very likely – it racks up enormous amounts of debt quickly. As a result, it is likely to resort to repeat borrowing to refinance its debts (Zinman, 2010). If a household does not have access to legal alternative financial services, its prospects are even worse: loan sharks are often a last resort and they are by no means interested in protecting consumers from any harm (Saunders, 2021).

High interest rates, no matter who charges them, increase a household's debt servicing costs and therefore make it more difficult for the household to repay its debts (Anderloni et al., 2012). To restrict the effect of high interest rates, many governments choose to set a maximum legal interest rate (Madeira, 2019): an interest rate ceiling. The aim of interest rate ceilings is

to protect desperate, inattentive or naïve consumers from expensive, predatory loans (Madeira, 2019). This can include payday loans, but also commercial 'buy now, pay later' schemes. Loan sharking, however, is illegal and unregulated (Saunders, 2021). Hence, for those in extremely dire positions, interest rate ceilings might not do much. In this study, I will discuss interest rate ceilings as a cap on all interest rates for simplicity.

2.3.3. Debt Jubilee

A debt jubilee is essentially a widespread cancellation of debts. The concept has been around for millennia, . The jubilee represents a fresh start for everyone. This idea has inspired campaigns such as the Jubilee 2000 campaign, which called for cancellation of the sovereign debts of countries in the Global South. The Rolling Jubilee, an initiative of the US-American network Strike Debt, led to a successful cancellation of $12 million worth of debt (Appel et al., 2019). In 2021, the Debt Collective came up with the Biden Jubilee 100 campaign to entice US President Biden to cancel all student debt within the first 100 days of his presidency (Debt Collective, n.d.). However, these were all single-use campaigns. None of them proposed systemic debt cancellation solutions.

Nonetheless, some have developed proposal for modern debt jubilees of some kind. One example is Steve Keen's Modern Jubilee, which would entail that all households receive a fixed sum of money that should be spent on repaying their debts (Keen, 2012). Those who are indebted will be able to decrease their debt levels and those who are not indebted simply receive extra cash. Another example is the modern debt jubilee proposed by Klamer et al. (2020), who argue for the creation of public-private cooperative banks that serve critically indebted households and individuals. Debtors can approach these banks to arrange debtor-friendly debt restructuring and their debts will be cancelled after a fixed period. In this study, however, I have chosen to use Johnna Montgomerie's (2019) proposal for debt cancellation – or abolishment of household debts.

Montgomerie's idea is pretty clear. In short, "[t]he plan is to develop a comprehensive package of debt cancellation measures that targets key loci of harmful debt, to provide relief to people and, by extension, to create uplift in economy and society" (p. 9). She argues that if banks could be bailed out using public money after the financial crisis in 2008, then it should also be possible to bail out households. The fact that economies rely so much on household debt only makes her case stronger, she write. After all, this dependency means that big groups of indebted households are also 'too big to fail'. Thus, Montgomerie advocates for a household debt cancellation fund with which some debts can be re-financed through long-term programmes and others can be cancelled after negotiated settlements with lenders. For the sake of this study, I will interpret these practices as simply cancelling debts, either partially or wholly. Importantly, only some debts are cancelled in Montgomerie's plan: housing debt, student debt, old debt (from the period 1997-2007), high-cost debt (from the period 2008-2018), discharged debt, and fees, penalties, and charges. According to her, these debts are the most harmful and cancelling them will shift societies towards a more prosperous future.

3. Methodology

3.1. Systems Thinking

This study will deploy systems thinking to investigate the development of household overindebtedness. Systems thinking is a skill set (Arnold & Wade, 2015). It allows us to better understand the root causes of the behaviours of complex systems, which ultimately enables us to develop policies that lead to more desirable system behaviours and outcomes (Arnold & Wade, 2015). One of the tools within systems thinking that aids in developing such policies, is the identification of leverage points. Meadows (1999) defines leverage points as "[…] places within a complex system (a corporation, an economy, a living body, a city, an ecosystem) where a small shift in one thing can produce big changes in everything" (p. 1). These leverage points can range from changes in certain parameters (e.g. taxes, interest rates), to changes in the strength of reinforcing and balancing feedback loops (see Chapter 3.1.1.), to paradigm shifts and transcendencies (Meadows, 2008). However, before diving deep into systems jargon, it is important to understand what a system is first.

Meadows (2008), who was a pioneering systems thinker, defined a system as follows: "A system is a set of things […] interconnected in such a way that they produce their own pattern of behavior over time". Such behaviour can be dynamic, adaptive, self-preserving, goal-seeking, or even evolutionary. According to her, a system should contain each of the following: 1) elements; 2) interconnections; and 3) a purpose or function. I argue that the creation and perpetuation of household debt can therefore be thought of as a system. The purpose of the system is the hardest to determine (Meadows, 2008). Different actors and elements within the system can have different purposes. From a household's perspective, the purpose of debt is to finance its expenses when its funds are lacking. From a lender's perspective, however, the purpose of household debt might be to make a profit (Lea, 2021; Sweet, 2018). Considering the different purposes at play, I would argue that the overall purpose of the household debt system is to facilitate economic growth – whether this is in the interest of households or not. The elements and interconnections within household overindebtedness will be discussed in detail in Chapter 4.

The key to systems thinking is the idea that a system is more than the sum of its parts (Meadows, 2008). The way in which different elements in a system interact creates synergies that can be worth studying to fully grasp the nature of complex problems, in this case the issue of household overindebtedness. Consequently, systems thinking enables a holistic view on a problem, with the potential of discovering holistic solutions.

3.1.1. Causal Loop Diagrams

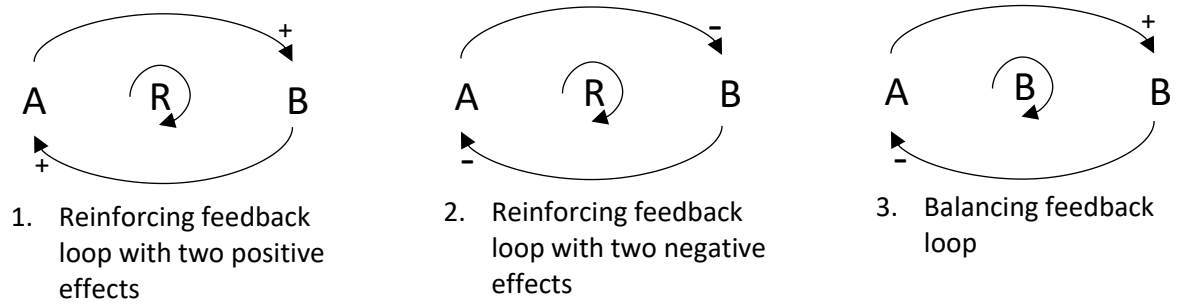
The system dynamics or systems thinking tool that is used in this study, is the CLD. A CLD is a conceptual representation or model of a system. In a CLD, the key variables within the system and the ways in which they connect and interact are visualised. CLDs are an excellent tool for explorative studies, because they present an insightful snapshot of a wider system without requiring the data and resources that are necessary for quantitative models (Waterlander et al., 2020). CLDs offer two important insights: the feedback structures that underly the system and the leverage points that can be used to find systemic interventions (Videira et al., 2014). Because CLDs are conceptual models, they cannot predict what would occur if a certain event

were to take place; rather, CLDs allow us to derive hypotheses about what would occur (Videira et al., 2014).

The connections in CLDs mainly imply direct causation or influence (Waterlander et al., 2020). Connections between variables are drawn using arrows, which carry either a positive sign (+) or a negative sign (-). A positive link implies that the two linked variables move in the same direction: an increase in one variable will cause an increase in the other. A negative link implies that the two variables move in opposite directions. When drawing the connections in a system, the feedback loops will become evident. Such feedback loops can either be reinforcing or balancing. A feedback loop is reinforcing "[…] when tracing the effect of a change around the loop reinforces the initial change" (Videira et al., 2014, p. 61); a feedback loop is balancing when the initial change is opposed through the loop. To determine whether a loop is balancing or reinforcing, one can simply count the number of negative relationships within the loop: if this number is even, the loop is reinforcing; if it is odd, the loop is balancing (Bala et al., 2017). Essentially, reinforcing loops indicate sources of perpetual growth, whereas balancing loops can be considered self-correcting or goal-seeking (Bala et al., 2017; Videira et al., 2014). Figure 1 shows how these feedback loops are visualised in a CLD.

Figure 1

Different Feedback Loops and Their Notations



1. Reinforcing feedback loop with two positive effects
2. Reinforcing feedback loop with two negative effects
3. Balancing feedback loop

Feedback loops are essential to understanding how the different interventions analysed in this study affect the system. Sahin et al. (2020) explain: "These feedback loops can be used to identify if an intervention is able to create a system-wide change or if there is a need to improve or introduce a new solution" (p. 2). For example, there could be a dominant reinforcing feedback loop in a system, which exacerbates a problem within the system. By signalling this reinforcing loop, researchers can identify effective interventions that can turn the loop into a balancing one, counteract the reinforcing effect of the loop, or that prevent someone from entering the loop (Meadows, 2008).

Hence, these feedback loops can be used to study the possible effect of certain interventions. By using the information about the three interventions discussed in Chapter 3.3., I demonstrated their effect within the system of households indebtedness in Chapter 4.2. Knowing which elements are targeted by each intervention helps to understand which feedback loops are affected by them and how this effect ripples through the whole system.

3.2. Data Collection

The CLDs of household overindebtedness in this study were informed by expert literature. To find literature that was relevant to household overindebtedness and appropriate to include in the CLDs, I conducted a literature search using common methods of database searching. The databases I used were Web of Knowledge and Scopus because they are two of the most comprehensive databases of academic literature. I searched for theoretical and empirical studies, both qualitative and qualitative, on the determinants of unsustainable or problematic household debt. I used three search entries to find as much relevant literature as possible:

- (unsustainable OR problem*) AND ("household debt" OR "consumer debt"))
- (household OR consumer) AND over*indebtedness
- determinant* AND debt AND (household OR consumer)

Additionally, I consulted some academic textbooks about economics as well as David Graeber's *Debt* – one of the most comprehensive books about the history of debt – to get a grasp of credit relations.

3.2.1. Inclusion Criteria

To establish whether a source was worthy of inclusion in this study, I adopted the following criteria:

1. The source concerns household debts, in particular consumer financial credit and/or priority debt.
2. The source describes household debt dynamics, e.g. factors that cause debt, factors that amplify indebtedness, consequences of debt.
3. The source was published after 2008, so that lessons learnt from the financial crisis could be considered.
4. The source is written in English or in Dutch.
5. The source stems from an academic journal or publisher; grey literature can be considered credible if published by a reliable organisation.

3.2.2. Search Results

The literature search yielded 795 studies in total, including duplicates. I evaluated the titles and abstracts of each of these studies, using the abovementioned criteria. This resulted in a selection of 125 studies, of which I then compared the full text to abovementioned criteria. Of these studies, 41 met all the criteria. However, only 29 of these studies were ultimately included in the CLDs because I could not incorporate every single finding: the abundance of elements affecting household debt forced me to be selective in order not to overcrowd the CLDs.

3.3. Constructing Causal Loop Diagrams

There are two primary parts that make up a CLD: the variables and the connections or relationships between the variables (Sedlacko et al., 2014). Composing a CLD therefore starts

with an exploration of the variables that make up the system (Waterlander et al., 2020). More specifically, I followed the steps for developing CLDs as described by Bala et al. (2017):

1. Define the objectives and the problem.
2. Identify the primary, secondary, and tertiary elements of the system.
3. Define the causal relationships, starting with the primary elements and moving down towards the tertiary elements.
4. Identify the closed feedback loops.
5. Identify the character (balancing or reinforcing) of these feedback loops.

In this study, the main question to elicit the right variables within the system around unsustainable debts was: What factors explain the dynamics in the growth of unsustainable debts? Consequently, the system was complemented with the three interventions described above by asking: "How does [insert intervention] influence the dynamics in the growth of unsustainable debts?". These questions capture the objectives and the problem that I am studying, in addition to eliciting the system's elements and interconnections.

These questions were therefore central to the thematic analysis of the literature that I found. I based my analysis on Kim and Andersen (2012), who propose a systematic method to create CLDs based on qualitative data. Before deciding on the right elements in the system, Kim and Andersen (2012) suggest coding the different themes in the literature. Within these themes, it then becomes easier to recognise the relevant variables and the relationships between them. The similarities and differences between the coded text segments allow for clear identification of the appropriate elements (Xia et al., 2021).

Hence, I identified the elements and relationships within the system through coding the literature. Once I had defined these elements and relationships, I started drawing the elements and their connections using pen and paper. This allowed me to easily trace the feedback loops in the system and the nature of those loops. As soon as I had confidently finished the CLD on paper, I digitalised it using Microsoft Powerpoint. Finally, in accordance with Kim and Andersen's (2012) proposal, I verified each relationship in the system by linking it to my data. Thus, I made sure to include references to the right sources for each connection, to ensure the validity of the system.

3.4. Scope and Limitations

3.4.1. Scope

In many systems, it is possible to endlessly list elements that make up the system (Meadows, 2008). Therefore, it is useful to determine the scope of the system of interest before devising CLDs. In this analysis, I determined the scope in part by studying the units of analysis in the literature. I did so through the thematic analysis as described above, in line with Kim and Andersen (2012). One of the main issues of scope, in this case, concerned the scale of household debt. I could either develop a CLD around one household and how its debts escalate (micro-scale), or around all households and how their collective debts might escalate (macro-scale). Much of the literature presented its arguments in household scale (i.e. households as a collection of individual units), but the implications of many of the findings could be interpreted

at both a micro and a macro level. Employment, for example, can affect household debt as a macro-variable, but it can also affect an individual household. Ultimately, I decided to zoom in on the individual household in the CLDs because I felt that it would better demonstrate the causes and consequences of indebtedness for a household, thus humanising its impact.

Another matter of scope was that of types of debt. Household debt is most commonly thought of as the result of bank loans. However, many different types of household debt exist. Student debt, for example, can pose a tremendous burden on households. Governments are important creditors, because they collect fines and taxes from households, which are not always paid immediately. In some countries, households are more likely to borrow from friends or family than from banks (Glassmann & Filsinger, 2021), which renders them indebted to people that they are close to. Others do not have easy access to credit because of their poor financial position and have to make use of alternative financing services, such as payday loans (Lee et al., 2019). Finally, the number of households struggling with priority debts is growing. These debts include abovementioned and other government debts, but also utility providers. Essentially, priority debt means a household is in arrears.

In this study, I have decided to focus on consumer financial debt and priority debt as indicators of overindebtedness. These debts are were common in preliminary literature searches and do not rely as much on socio-economic status as, for example, mortgage debt. Additionally, consumer credit is often thought to be the debt category in which debt problems first occur (Hohnen & Hansen, 2021; Lea, 2021). Moreover, there are several interactions between consumer financial debt and priority debts that complicate debt dynamics and that are interesting to study. For example, households might make use of credit to finance other debts (Burton, 2020; Kolios, 2021) or have to repay financial debts before being able to repay priority debts (Gathergood, 2012; Leclaire, 2021; Sweet, 2020).

3.4.2. Limitations

One of the main limitations of this study is the lack of multiple perspectives. CLDs are a useful tool for participatory purposes, as multiple experts or stakeholders can provide different perspectives on a system. Waterlander et al. (2020), for example, developed CLDs of the determinants of obesity using working groups that contained academic experts on those determinants. Sahin et al. (2020) conducted expert workshops to develop a CLD to understand the complexity of the Covid-19 pandemic. The experts in these studies were able to debate and critically assess the determinants, interconnections, and feedback loops in their respective CLDs. In this study, I constructed the CLDs myself. The elements, connections and feedback loops included (and not included) in the CLDs are there as a result of my interpretation of the literature. Hence, the resulting CLDs are subject to my personal biases. Nonetheless, nearly all the variables and connections that I included are backed up by the literature.

4. Results

4.1. Household Debt: A Causal Loop Diagram

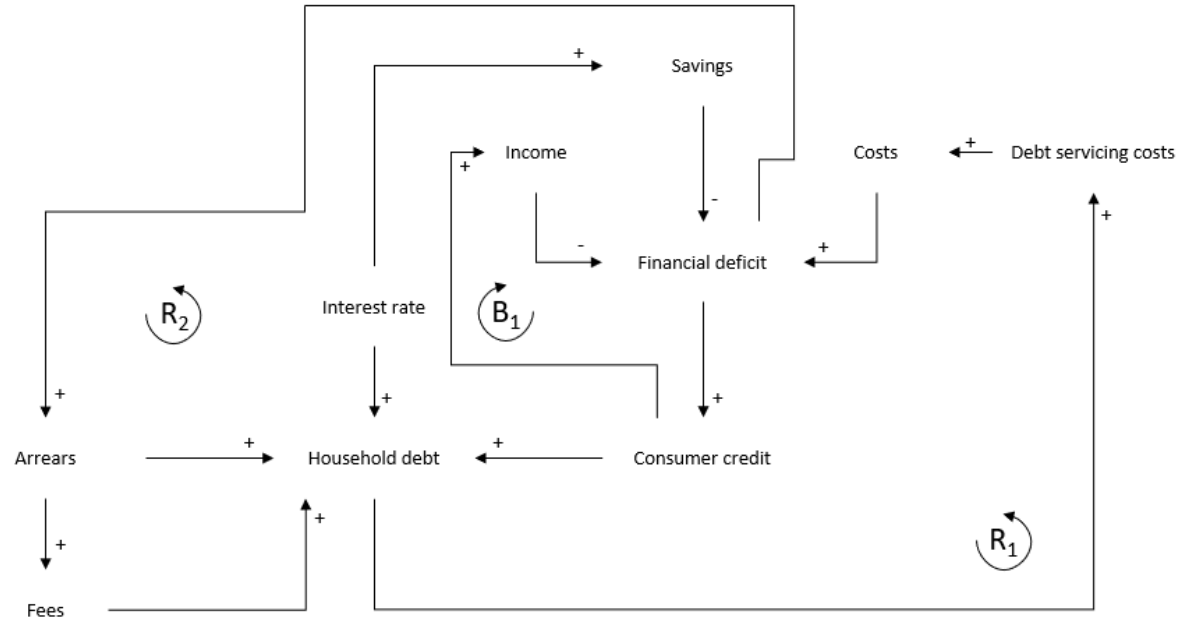
4.1.1. Core Dynamics: Variables and Links

Figure 2 presents the core dynamics of household debt. This model includes only the variables that are truly necessary to elicit the existence and persistence of household debt. Although

many variables were discussed in the literature, I included the "Financial deficit" variable myself. This variable essentially captures what was referred to as "budget shortfall" by Kirwan (2019) or, to an extent, "financial vulnerability" by Anderloni et al. (2012). This variable is key to household debt: when a household is not able to cover all its expenses with its income and savings – thus experiencing a financial deficit – debt is inevitable. Many studies, however, skipped this essential step. Researchers drew direct links between income-related variables and debt, for example. Based on the literature, I felt that those direct connections did not fully capture the system dynamics, which is why in included "Financial deficit".

Figure 2

Causal Loop Diagram of Household Debt: Core Dynamics



What becomes evident in the core model, is that debt is primarily a budgetary issue. A household becomes indebted when its expenses encroach on or exceed its income (e.g. salary, profits, dividends) and savings. As shown in the diagram, such financial deficits can cause households to have to choose to miss essential payments (e.g. gas, electricity, rent, taxes), which renders them indebted (Sweet, 2020). Possible penalties and other fees associated with these debts will further worsen a household's total debt (Bechlioulis & Brissimis, 2021; Lea, 2021). Alternatively – or simultaneously – a household might try to finance its budgetary gap by using credit (Scott & Pressman, 2013). This can be achieved through bank loans or, if a household's financial situation is very precarious, through alternative financial services, like payday loans (Lee et al., 2019). These loans, too, add to a household's debt, in addition to interest and fees.

Because balance between income and expenses is crucial to the household's financial stability, shocks in either one of these variables can shake up its position significantly (Anderloni et al., 2012). In many cases, overindebted households have had to endure a shock of some kind that caused them to spiral into debt (Arestis et al., 2021; Glassmann & Filsinger, 2021; Scott & Pressman, 2013). These shocks can be income-related, such as unemployment,

wage cuts, divorce (e.g. divorcing the only employed person in the household), or retirement without a solid retirement plan. Other shocks are cost-related, such as sudden health issues, funerals, unexpected repairs, or a new-born (Lea, 2021) – though the latter entails continuous expenses for a lifetime. When experiencing a shortage in cash at the time of the shock, households might turn to credit (Hyytinen & Putkuri, 2018).

This realisation is core to the understanding of overindebtedness. Because adverse life events are such an important factor in causing overindebtedness, nearly anyone can become overindebted, no matter someone's socio-economic status. After all, everyone is susceptible to adverse life events. Nonetheless, some households are more vulnerable than others. Low-income households endure high costs of living in combination with low incomes, which leaves them little financial space (Lea, 2021). High-income households, on the other hand, have more opportunities and capacity for saving or investing than low-income households do (Kolios, 2021). By doing so, they are in the position to mitigate their financial risks and prepare for potential financial shocks; they can sell off any assets – such as a house or a car – to finance their debt servicing costs. This does not mean that all high-income households have well-managed budgets and low-income households do not. However, it does mean that financially responsible high-income households will be less vulnerable to financial shocks than financially responsible low-income households are.

4.1.2. Core Dynamics: Feedback Loops

There are three feedback loops in Figure 2 that are worth discussing: two reinforcing loops and one balancing loop. The latter, marked B_1, is essential to understanding why households take out credit and become indebted. When a household experiences a financial deficit, it might turn to borrowing ("Consumer credit"). Consequently, this credit can be thought of as one-time supplementary income. This, in turn, temporarily reduces the financial deficit as it allows the household to finance any uncovered expenses. Credit therefore serves as a quick-fix for financing expenses in the short-term, which the balancing loop demonstrates. However, depending on the financial resilience of the household, this effect might be overruled by the feedback loop R_1, which includes the costs of credit and its effects.

The argument behind reinforcing feedback loop R_1 runs as follows: when a household experiences financial deficits, it might turn to borrowing ("Consumer credit") to finance its budgetary gap. This causes the household to have debt. The household will then need to repay this debt over time, resulting in debt servicing costs. These costs increase the household's expenses, which in turn increase the household's financial deficit (Anderloni et al., 2012). If the household has not increased its income in the meantime, this situation can escalate and the household can end up in a vicious cycle of debt (Hohnen & Hansen, 2021; Lea, 2021). Moreover, even if the household makes some extra income, its situation does not improve if this much of this income goes towards interest payments to maintain past debts (Scott & Pressman, 2013). Importantly, the gravity of this feedback loop depends on the interest rate on and the longevity of the loan: high interest rates and short-term loans will greatly increase the loop's effect (Lee et al., 2019).

The second reinforcing feedback loop in Figure 2, marked R_2, covers a similar pattern. In this case, however, the loop includes a different effect of financial deficits. If a household experiences a financial deficit, it can occur that it has to miss certain payments, such as rent,

electricity bills, or council taxes ("Arrears") (Burton, 2020; Lea, 2021). These missed payments cause the household to become indebted to non-financial creditors, and arrears are an important part of total household debt (Burton, 2020). Considering the fact that these debts also need to be repaid, they increase the household's debt servicing costs. Again, this leads to a larger financial deficit, which concludes the loop. In this case, the effect of the loop is amplified by the penalties and fees that a household incurs on missed payments (Bechlioulis & Brissimis, 2021; Lea, 2021).

4.1.3. Extended Dynamics of Debt: Variables and Links

Extensive analysis of the literature yielded many different variables that affected or were affected by household debt. Figure 3 shows the full CLD of debt dynamics, including the most relevant of these variables. These variables can broadly be divided into five themes: dispositional factors, mental health factors, socio-economic factors, behavioural or cognitive factors, and economic or financial factors. Dispositional factors were fairly common in the literature and related to people's own responsibility for their overindebtedness. These factors included impulsiveness, risk-taking behaviour, low levels of conscientiousness, lack of self-control, lack of self-efficacy, greed, overoptimism, and materialism (Anderloni et al., 2012; Burton, 2020; de Almeida et al., 2021; Ferreira et al., 2021; Gathergood, 2012; Hyytinen & Putkuri, 2018; Kuhnen & Melzer, 2018; Ladas et al., 2014; Ottaviani & Vandone, 2011, 2018; Lea, 2021; Sotiropoulos & d'Astous, 2013). Impulsiveness and lack of self-control were most commonly discussed. Both of these elements were cited as causes of debt, but also as consequences, because they are affected by the various mental health issues that arise from indebtedness (de Almeida et al., 2021; Ferreira et al., 2021). These mental health issues are represented by the elements "Emotional distress" and "Cognitive overload" in Figure 3.

An important variable in this CLD, is "Access to credit", which I classified as a socio-economic variable. Access to credit was discussed by various authors (Arestis et al., 2021; Burton, 2020; Filipovic et al., 2016; Hohnen & Hansen, 2021; Kolios, 2021; Lee et al., 2019) and is important in explaining whether and how households can acquire credit. Not every household can borrow from any financial institution and loan terms can differ tremendously for households of different risk levels. Easy access to credit (financial inclusion) can aid households in financing their budget gaps but also poses tremendous risks for financially vulnerable households. Simultaneously, difficult access to credit makes it harder for households to meet their financial commitments, causing different types of problems. Hence, the variable is essential to explaining the complex dynamics in the system.

In addition to "Access to credit", I added "Likelihood of seeking loan" as an economic variable, although its characteristics are not clearly attributable to any of the four abovementioned categories. Aside from a pragmatic need for credit, which is captured by the "Financial deficit" variable, there are other factors that determine whether a household will indeed turn to credit to solve its financial problems. Such factors include the dispositional factors that I mentioned earlier, but also attitudes towards borrowing and risk (Almenberg et al., 2021; de Almeida et al., 2021; Brown et al., 2013; Pattarin & Cosma, 2012; Schooley & Worden, 2010) and access to credit. Attitudes towards borrowing have not been included in Figure 3 because the factor would be exogenous, but future systems research might include the factor for its cultural and social components (Almenberg et al., 2021). "Access to credit",

however, complements the current system and adds another layer of complexity to the system's dynamics.

A variable that can be behavioural or cognitive, is "Money management skills". This factor was discussed in the literature as an important determinant of household's financial vulnerability (Anderloni et al., 2012; de Almeida et al., 2021; French & McKillop, 2016; Lea, 2021). In Figure 3, I have therefore linked it to "Financial deficit". "Money management skills" covers the household's financial literacy and budgeting skills; financial literacy as a sole indicator of indebtedness was contested in the literature (Kirwan, 2019; Lea, 2021). Essentially, money management skills allow the household to regulate spending, save up, and make budgets (Lea, 2021). I included this variable, because it demonstrates the importance of financial literacy and financial management in anticipating shocks and mediating risks. Nonetheless, the literature did not describe in more detail the connection between management skills and other elements in the system. Hence, "Money management skills" merely functions as an exogenous factor in Figure 3.

Two obvious economic variables that are intrinsically linked to each other, are "Creditworthiness" and "Risk of default". These two variables were discussed by Burton (2020), Chmelíková & Redlichová (2020), Kolios (2021), Kukk (2019), and Schooley and Worden (2010). Creditors need to be reassured that the household will not default before establishing a loan. Hence, risk of default is an important indicator in determining whether a household is creditworthy. Income (from employment or other sources, such as assets) negatively influences risk of default, meaning that high-income households will have lower risk of defaulting, higher credit scores, and increased access to credit (Kolios, 2021).

Finally, there is one more important variable that I would classify as an economic variable: "Basic necessities". Various authors discussed necessary expenditures in one way or another (Arestis et al., 2021; Burton, 2020; Kirwan, 2019; Lea, 2021; Sweet, 2020). This variable includes everything a household needs to get by, such as housing, electricity, and food, but also taxes, childcare, and transportation. Essentially, "Basic necessities" includes all the things that a household needs to direct income to every month. Hence, it adds to the household's expenses. A household can decide not to pay for some of these necessities when in need, but, as will be discussed below, this can have dire consequences. After all, necessities are necessities for a reason.

4.1.4. Extended Dynamics of Debt: Feedback Loops

In Figure 3, I have marked six more interesting feedback loops that resulted from the additional variables and links (see Appendix A-I for diagrams in which each loop is highlighted individually). Four of these loops are reinforcing; two are balancing. Reinforcing loop R_3 covers the dynamics related to self-control and impulsiveness. As I discussed above, these two factors can be both consequences and causes of overindebtedness. This argument is explained by loop R_3. Imagine, for example, that a household – or the individual(s) making the financial decisions for the household – has little self-control. This can then lead to the household being more impulsive and therefore more likely to turn to credit (Gathergood, 2012; Ottaviani & Vandone, 2018). Hence, a household with little self-control will have larger debts, which can lead to adverse mental health outcomes. Emotional distress and cognitive overload, resulting from living under immense financial pressure, can affect the household's self-control capacity

negatively, thus closing the loop (de Almeida et al., 2021). Interestingly, self-control as a dispositional factor can therefore be considered a cause of indebtedness, yet it becomes a situational factor when it is a consequence of indebtedness (Ferreira et al., 2021).

Loop R_4 is the longest loop in the system. Starting from "Financial deficit", I have already shown that financial deficits can cause households to be in arrears in my discussion of R_2. Additionally, I have described that these arrears increase a household's total debt. Continuing R_4 from there, it becomes evident that having debts negatively impacts a household's access to credit because it is considered a riskier borrower: its debts increase its risk of defaulting, which reduces its credit score or creditworthiness (Burton, 2020; Chmelíková & Redlichová, 2020; Kukk, 2019). This, in turn, decreases the likelihood of seeking credit as well as the amount of credit that the household can use. The household then cannot use enough credit to complement its income, which increases its financial deficit. To summarise, having household debt limits a household's access to credit, resulting in a larger financial deficit and more debts.

Interestingly, there are two reinforcing loops within R_4, which amplify its effect. Loop R_5 is less visible in Figure 3 due to a discontinuity in the diagram. For a clearer image of R_5, please refer to Appendix H. In short, R_5 indicates that having little income increases risk of default, hence it decreases creditworthiness. Lower-income households therefore have less access to credit and are less able to complement their income with credit. Based on the system, this will then increase their risk of default, thus completing the loop. However, there is no mention of this effect in any of the literature, so R_5 needs to be heavily scrutinised. Nonetheless, if this loop does occur, it reinforces R_4 by exponentially impacting risk of default, creditworthiness, and income.

R_6 is another reinforcing feedback loop within R_4 (see Appendix I for a clearer image of R_6). This loop simply indicates that creditworthiness is associated with interest rates. If a household is deemed not very creditworthy, or has a low credit score, this means that it is a risky borrower: its chances of defaulting are high. Lenders will try to compensate for this risk by increasing the interest rate – either directly or through penalties (Bechlioulis & Brissimis, 2021; Lee et al., 2019). This increases the household debt burden. Large amounts of household debt are associated with higher risk of default, which then decrease creditworthiness again. Like R_5, this effect strengthens the effect of R_4, though this time through creditworthiness and interest rates.

As promised above, I will outline the effect of missing payments on basic necessities in the system. This effect is demonstrated by loop B_2. This loop can have different consequences, depending on the necessity in question. For example, a household can decide not to buy any more clothes for a while and to cut costs on food. In this case, its financial deficit will decrease, which then decreases the number of arrears and allows for other necessities to continue to exist. In this case, the results are not great – the household has to live without new clothing even when necessary and a variety of nutritious foods – but they could be worse. When a household experiences a financial deficit and misses important payments, it ends up in arrears. According to Sweet (2020), households often prioritise debt repayments over essential expenses, which amplifies this effect. This can have especially dire consequences, as it might lead to some necessities not being provided anymore (Burton, 2020). Failing to pay utility bills can lead to the household being cut off from gas or electricity; being in arrears with a housing

agency can lead to eviction. In Figure 3, this effect is simply shown as "Arrears" negatively influencing "Basic necessities", which then positively influences "Expenses". The idea behind this is that when some necessities are not paid, it reduces the household's expenses. However, in reality, this has much more far-reaching consequences. Hence, although B_2 seems like a welcome balancing feedback loop, it really is not.

Finally, I will study the impact of loop B_3. This balancing loop seems to counteract loop R_4: although limited access to credit reinforces the impact of arrears on household debt (R_4), it restricts the impact of credit on household debt (B_3). Starting from "Access to credit" in Figure 3, we now know that easy access to credit increases the likelihood of obtaining credit (Burton, 2020). This credit then amplifies total household debt, which increases the household's risk of default and therefore decreases its creditworthiness. The loop closes with the positive effect of diminished creditworthiness on access to credit. So, access to credit increases debt, which then decreases access to credit: a balancing loop.

4.2. Household Debt Interventions

4.2.1. The Effect of Universal Basic Services

In Chapter 2.3.1., I discussed the implications of UBS. When linking UBS to the model presented in Figure 3, there is a clear connection between the implications of UBS and the income and expenses elements. One of the main effects of UBS is that they reduce "[…] the cost of living for those living at the bottom of our society" (IGP, 2017). UBS therefore specifically target the "Basic necessities" and "Expenses" elements in Figure 3. These elements are involved in three feedback loops (B_2, R_1 and R_2), so these loops are affected by UBS.

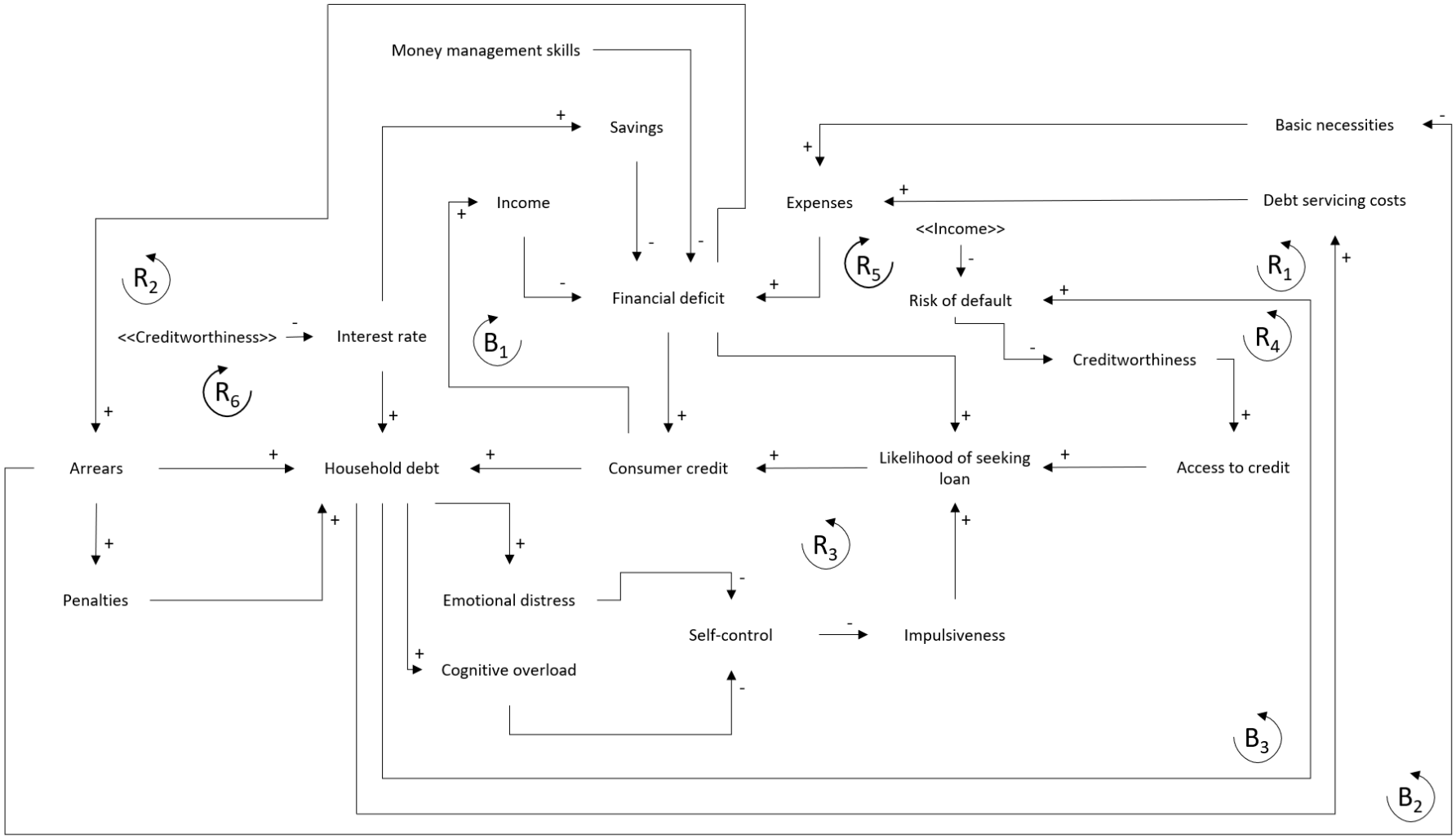
First, because UBS imply that basic needs are provided for free, loop B_2 is practically eliminated. Without enduring expenses for basic needs, households experience lower financial deficits and they are less likely to be in arrears because most priority payments are taken care of through UBS. As a result, there is no severe impact of being in arrears on the availability of basic needs anymore.

Second, because UBS cause households to miss fewer payments – as they simply do not have to pay – priority debt contributes much less to overall household debt (see R_2). Household debt decreases as a result, which also means households incur lower debt servicing costs. Hence, expenses decline even more, leaving the households more income to direct to their savings, for example. Similarly, reduced expenditure on basic needs reduces financial deficit, which means that households are less likely to resort to credit (R_1). This, too, leads to a smaller total household debt, lower debt servicing costs, and declining expenses.

Hence, under UBS, households are less likely to become indebted in the first place. Of course, adverse shocks can still impact the household and dispositional or internal factors still play a role. Households with poor money management skills who neglect to save up or who irresponsibly indulge in conspicuous consumption do not build the financial resilience that is necessary to mitigate the consequences of such shocks. Additionally, lack of self-control and impulsiveness can still tempt a household to complement or substitute wages with credit, causing indebtedness. This would also weaken the household's financial position in case of adverse shocks. In short, UBS can protect households from taking on dangerous levels of debt, but the systems that cause indebtedness to escalate remain intact.

Figure 3

Causal Loop Diagram of Household Debt: Extended Dynamics



The Effect of an Interest Rate Ceiling

Interest rate ceilings directly impact "Interest rate" in the system. By enforcing a maximum on the interest rate, the impact of the interest rate on total household debt remains limited. Taking into account the system's feedback loops, this has several effects. First of all, it eliminates the growth of the power of R_6 after the interest rate has reached its limit. Household's poor creditworthiness will therefore still result in more expensive credit, but only to an extent. As a result, their total interest payments – as a part of total household debt – remains limited. This, then, ensures that their default risk is restricted, which keeps creditworthiness from escalating. Hence, when the interest rate reaches the 'ceiling', loop R_6 stabilises and is no longer reinforcing.

Essentially, R_6 is a subloop of R_1 and R_2; these loops are connected through the mutual presence of "Household debt". The limit on the effect of R_6 causes the growth of household debt to stagger, because the interest payments that add to a household's total debt cannot continue to increase. This creates a ripple effect in R_1 and R_2, because household debt as a result of interest rates stabilises. To an extent, this limits debt servicing costs, thus household expenses. Consequently, the financial deficit does not grow as quickly, making households less dependent on tonnes of extra credit to refinance their loans as well as less likely to miss payments. However, it is important to realise that these loops are still present; their effect is simply bounded by an interest rate ceiling.

4.2.2. The Effect of a Debt Jubilee

A debt jubilee, debt cancellation, or debt write-off targets one element in Figure 3 directly: "Household debt" itself. By cancelling household debts that are particularly onerous, the jubilee relieves households from the heavy burden of their debts. If we refer to the system, we can follow the tracks that lowering the debt burden leaves. Considering R_1 and R_2, cancelling household debt will lower debt servicing costs – hence expenses – which decreases the household's financial deficit (Montgomerie, 2019). As a result, the household is less likely to be in arrears (R_2) and to borrow money (R_1), which means that its total debt stabilises. Essentially, debt cancellation – in the spirit of the debt jubilee – enables households to increase their financial stability and start over.

This effect is complemented by R_5 and R_6, which demonstrate that debt cancellation results in a lower risk of default for households. Generally, this will lead to them being more creditworthy and have more access to cheaper credit. However, there might be a delay before this effect occurs. In the Netherlands, for example, defaulters are blacklisted for five years after debt cancellation; only then are they allowed to take on loans again. Ideally, this effect should not be necessary: after cancellation, one would hope households are financially stable and do not immediately become critically indebted again. Nonetheless, this might not always be the case and it is an issue to look out for when implementing cancellation. After all, as with UBS, cancellation provides potentially sustainable relief, but it does not eradicate the systems that are in place in which debt can escalate.

In addition to the question whether debt-relieved household will have immediate access to cheaper credit, it is important to consider the effect of cancellation on the lender. I have not presented lender-related dynamics in the system, but they might complicate the situation. If debt cancellation becomes common, this could potentially also increase borrowers' risk of default. When it is easier for a household to default without consequences, they might choose to default strategically. This is an example of a common economic argument: the 'moral hazard'. To counter this effect, lenders can decide to adopt stricter guidelines for credit access, which would create an effect in the opposite direction of the effect described above (Montgomerie, 2019). For lower-income households, such stricter guidelines will likely restrict their access to credit again. I have not found evidence of a moral hazard causing debt cancellation to result in strategic defaulting in the literature. Nonetheless, lenders might still be convinced that easy cancellation increases the risk of default and act on it. This effect requires further research and anticipation in case a debt jubilee is implemented.

5. Discussion

5.1. Interpretations

Despite not including all possible elements and dynamics, the CLDs in this paper already provide many insights. I have shown that debt, generally, is an issue of financial deficits. For one reason or another, a household experiences a lack of funds to finance its expenses. This leads them to either miss payments or to resort to credit to fill the gap. Once they are indebted, there are multiple factors and dynamics that can cause them to spiral into further debt. For example, the household can decide to keep refinancing its debts with new loans. As the household's financial position weakens, such loans become increasingly expensive and financial pressure on the household increases. Households often experience stress and other psychological effects as a result of indebtedness. This psychological burden causes them to make decisions that only increase their financial vulnerability. Finally, debt does not only have financial consequences; being in arrears can lead to being in dire straits.

The three interventions that I have addressed in this study all cover part of these mechanisms behind overindebtedness. UBS reduce financial vulnerability, in particular of lower-income households who are more susceptible to overindebtedness. As a result, households will be less dependent on credit when emergency strikes. Hence, UBS are a preventative intervention in regard to household debt. Interest rate ceilings are more of a mitigating intervention. They target part of the system that causes debt to escalate. By restricting interest rates, households are – to an extent – protected from predatory lending practices and mounting interest payments that can haunt them for years. Finally, debt jubilees function as a last resort intervention. After households have become overindebted or when it becomes clear that their situation is unsustainable, debt cancellation can help them start anew. A heavy weight is lifted off their shoulders. Essentially, these three interventions target three different stages of indebtedness. However, individually, they do not present a comprehensive solution.

5.2. Implications and Policy Recommendations

To my knowledge, this study is the first to describe household overindebtedness from a systems perspective with a focus on the individual household. The most important implication of my findings relates to this systems perspective. As I have concluded above, individual interventions that target only parts of the systems that surround household debt are not sufficient in resolving issues of household overindebtedness. Although they might do well in limiting some causes of problematic debts, they do not address the full system. Consequently, the household still has to bear the consequences of the system in case these interventions fall short,. To develop effective policies to target overindebtedness, researchers and policymakers should therefore consider the whole system and its dynamics. In this study, I have made a start.

UBS, interest rate ceilings and debt jubilees are all interventions that could work against overindebtedness, especially when combined. However, the CLD in Figure 3 gives rise to other opportunities. Those who want to elicit substantial change in the system can use the CLD to find strong leverage points, as I discussed in Chapter 3.1. To develop interventions, it is possible to consider the level of certain elements and how to target those. For example, what is the effect of money management skills on debt and how can these skills be improved? Other possibilities exist within the connections between elements. What is the effect of emotional distress on debt and how can this effect be mitigated? Additionally, it is possible to consider the nature of the feedback loops. How can feedback loop R_6 be transformed into a balancing loop? What if high-income households are charged higher interest rates than low-income households to mitigate the default risk of low-income households? I would argue that through the development and analysis of the dynamics of overindebtedness, it becomes easier to come up with comprehensive policies that target the issue on all fronts.

Importantly, there is more to resolving household overindebtedness than introducing interventions. Current practices around interest rates serve the lender more than de borrower. After all, interest rates do not merely exist to account for inflation; they also mitigate default risk and they provide lenders with prospective profits (Sweet, 2018). In many countries, current practices around resolving consumer overindebtedness are also mainly centred around the protection of the lenders. This protection is partly kept in place due to "[…] the superior influence over the legislative process of the coordinated and concentrated financial sector […]" (Spooner, 2018, p. 791). Morawska et al. (2020) constructed an indicator – the Bankruptcy Law Severity Index – to compare the debtor-friendliness of insolvency laws in 27 OECD countries. In their analysis, they found that 18 of those countries had bankruptcy laws that were leaning towards debtor-unfriendliness. These practices stem from a morality in which the debtor is held responsible for its debts and the creditor has little to no accountability (Graeber, 2021; Poppe et al., 2016; Sweet, 2018). Therefore, protecting households from overindebtedness requires more than effective interventions – it requires a paradigm shift (Meadows, 2008).

5.3. Limitations and Future Research

5.3.1. Scope and Element Selection

During the development of the CLDs in this study, I had to consider many different variables that were mentioned in the literature. I could not include all elements relevant to household overindebtedness because they would overcrowd the diagram. The result is a somewhat simplified diagram, in which I have tried to expose just some of the underlying mechanisms in the development of overindebtedness. In particular, I have focused on the interaction between household budgets and household debt, the role of access to credit in the existence and persistence of debt, and one of the psychological effects that play a role in escalating indebtedness.

Despite their abundance in the literature, I have not included all external risk factors of overindebtedness, such as 'class', young age, being BIPOC, or single parenthood (e.g. Brown et al., 2014; Oksanen et al., 2015). I felt that those factors, though important, would overcrowd the diagram. Moreover, I am of the opinion that the system does reflect the position of those who are subject to these risk factors implicitly. Consider the single-parent household, for example. Such households generally have less income than a household with two working adults. Additionally, a single-parent household suffers higher costs than a single-adult household without children. Based on the system, we can infer that single-parent households will therefore have tighter budgets than their two-parent/zero-children counterparts. Similar conclusions can be drawn in regard to BIPOC people (e.g. lower income, so tighter budgets) or young people (e.g. lower income and fewer savings, so tighter budgets).

Future research can consider many other mechanisms that complement and complicate the system's dynamics. Earlier in this document, I discussed how household debt has grown as a result of the popularisation of neo-liberal policies and austerity as well as the deregulation of financial markets. Accordingly, people's attitudes to debt changed (Leclaire, 2021). This element is crucial to the likelihood of households using credit to finance their budgetary gaps. After all, households that feel negative about debt and credit will be more hesitant to turn to credit (Almenberg et al., 2021). In their research on the effect of debt attitudes on overindebtedness, Almenberg et al. (2021) found that debt attitudes are not only affected by a social component; cultural and generational factors also influence people's attitude towards debt (see also Sotiropoulos & d'Astous, 2013). These elements could therefore greatly complement the system that I have developed in this study and might explain the dynamics of household overindebtedness even further.

And there are more elements that I have not included in this study for sake of clarity, but that could be explored within different themes in the system. Macro-variables such as employment could be interesting to study. On an even larger, more abstract scale, the impact of export-led economic policies – which require wage suppression – on household debt could also be researched (Glassmann & Filsinger, 2021). Other elements include digital finance and fintech, which affect consumer's access to credit (Burton, 2020) or consumerism and social pressure to live according to a certain standard (Ejebu, 2018; Soro et al., 2021).

Finally, part of the problem of household debt is that people seek help too late. 66% of people in the UK wait longer than a year before finding help and one-third of people even wait

three years (Burton, 2020). In most cases, people simply want to sort things out for themselves. However, embarrassment and fear are also important contributors to people's tardiness when it comes to seeking debt advice (Burton, 2020). Being indebted is heavily stigmatised, in part because of associated deprivation and poverty, so people would rather not open up about their financial problems (Ferreira et al., 2021). As a result, Burton (2020) explains that "[…] many individuals and households had ten debts that constituted 97 percent of average household income" (p. 249) by the time they tried to find help. This effect, in addition to the effects that this help ultimately brings about, could also provide interesting insights for policymakers.

5.3.2. Nature of the Study

Because CLDs are inherently exploratory, there are many ways to take the current study even further. In their description of systems thinking methodology, Bala et al. (2017) consider CLDs as the first step in the development of a systems model. CLDs are conceptual and qualitative and therefore they do not reflect quantitative dynamics of the model. In this particular case, it would be especially interesting to see how the system reacts to the three interventions in reality – or modelled reality. Future research can therefore move onto the next steps described by Bala et al. (2017), which are stock-flow diagrams and parameter estimates, after which the model needs to be validated. Sensitivity analysis and policy analysis are quintessential to further validate the model. Only then can researchers continue to the application of the model.

6. Conclusion

With the findings presented in this paper, I introduce a new way of considering issues of household indebtedness. Although the CLDs that I have produced by no means reflect all dynamics around household debt, I hope that my findings inspire others to view overindebtedness from a systems perspective. Taking this perspective, it becomes evident that household overindebtedness has multiple causes, all of which should be targeted by policies to reduce household indebtedness and its devastating effects on people. Such causes can be variables, like money management skills, or dynamics, like the interactions between household debt and its psychological effects. The interventions discussed in this study, however, only target one or two of these causes, leaving the remainder of the system intact. Hence, these interventions are not sustainably or fully effective from a systems point-of-view.

To address household overindebtedness effectively, I therefore argue that the solution should be comprehensive and should consider many different elements and dynamics of the system at once. This does not only require studying the elements and dynamics separately, as I have done in this study, but also questioning the system as a whole. Why does this system function the way it does and is this desirable? According to Meadows (2008), "one of the most frustrating aspects of systems is that the purposes of subunits may add up to an overall behavior that no one wants" (p. 15). Considering that there seems to be increasing consensus on the idea that household overindebtedness is 'overall behaviour that no one wants', it might be time to challenge the purposes of the subunits that ignite this destructive outcome; perhaps systems

awareness will finally convince neoliberal capitalists that their profits are detrimental to prosperity.

References

Almenberg, J., Lusardi, A., Säve-Söderberg, J., & Vestman, R. (2021). Attitudes towards debt and debt behavior. *The Scandinavian Journal of Economics*, *123*(3), 780-809.

Anderloni, L., Bacchiocchi, E., & Vandone, D. (2012). Household financial vulnerability: An empirical analysis. *Research in Economics*, *66*(3), 284-296.

Appel, H., Whitley, S., & Kline, C. (2019). *The Power of Debt: Identity and Collective Action in the Age of Finance*. UCLA Publications.

Arestis, P., Corrado, G., & Corrado, L. (2021). Shocks, financial constraints and households' consumption amid the Great Recession. *Panoeconomicus*, *68*(1), 1-33.

Arnold, R.D., & Wade, J.P. (2015). A definition of systems thinking: A systems approach. *Procedia Computer Science*, *44*, 669-678.

Arrow, K., Bolin, B., Costanza, R., Dasgupta, P., Folke, C., Holling, C.S., Jansson, B.O., Levin, S., Mäler, K.G., Perrings, C., & Pimentel, D. (1995). Economic growth, carrying capacity, and the environment. *Ecological Economics*, *15*(2), 91-95.

Bala, B.K., Arshad, F.M., & Noh, K.M. (2017). *System Dynamics: Modelling and Simulation*. Springer.

Bechlioulis, A.P., & Brissimis, S.N. (2021). Are household consumption decisions affected by past due unsecured debt? Theory and evidence. *International Journal of Finance & Economics*, *26*(2), 3040-3053.

Ben-Ishai, S. (2020). Consumer bankruptcy in the wake of COVID-19: The calm before the storm. *Osgood Hall Law Journal*, *57*(3), 637-664.

Bialowolksi, P., & Weziak-Bialowolska, D. (2021). Good credit, bad credit: The differential role of the sources of debt in life satisfaction. *The Journal of Consumer Affairs*, 1-28.

Brown, S., Garino, G., & Taylor, K. (2013). Household debt and attitudes toward risk. *Review of Income and Wealth*, *59*(2), 283-304.

Brown, S., Ghosh, P., & Taylor, K. (2014). The existence and persistence of household financial hardship: A Bayesian multivariate dynamic logit framework. *Journal of Banking & Finance*, *46*, 285-298.

Brown, S., Taylor, K., & Price, S.W. (2005). Debt and distress: evaluating the psychological cost of credit. *Journal of Economic Psychology*, *26*(5), 642–663.

Büchs, M. (2021). Sustainable welfare: How do universal basic income and universal basic services compare? *Ecological Economics*, *189*, 107152.

Burton, D. (2020). Digital debt collection and ecologies of consumer overindebtedness. *Economic Geography*, *96*(3), 244-265.

Chmelíková, G., & Redlichová, R. (2020). Is there a link between financial exclusion and over-indebtedness? Evidence from Czech peripheral municipalities. *Journal of Rural Studies*, *78*, 457-466.

Coote, A., & Percy, A. (2020). *The case for Universal Basic Services*. Polity Press.

De Almeida, F., Ferreira, M.B., Soro, J.C., & Silva, C.S. (2021). Attitudes toward money and control strategies of financial behavior: A comparison between overindebted and non-overindebted consumers. *Frontiers in Psychology*, *12*, 1313.

Debt Collective. (n.d.). Biden Jubilee 100. https://biden100.debtcollective.org/

Debt Collective. (2020). *Can't Pay Won't Pay.*

Ejebu, O.Z. (2018). Exploratory study of comparison income and individual debt using British household panel survey. *Review of Economic Analysis*, *10*, 181-202.

Ferreira, M.B., Pinto, D.C., Herter, M.M., Soro, J., Vanneschi, L., Castelli, M., & Peres, F. (2021). Using artificial intelligence to overcome over-indebtedness and fight poverty. *Journal of Business Research, 131,* 411-425.

Filipović, I., Škalamera-Alilović, D., & Štambuk, A. (2016). Commercial banking and personal indebtedness in Croatia. *Economic and Social Development: Book of Proceedings, 66*.

French, D., & McKillop, D. (2016). Financial literacy and over-indebtedness in low-income households. *International Review of Financial Analysis, 48,* 1-11.

Friedman, M. (1957). *A Theory of the Consumption Function*. Princeton University Press.

Gathergood, J. (2011). Debt and depression: Evidence on causal links and social stigma effects. *SSRN*. https://ssrn.com/abstract=1922625.

Gathergood, J. (2012). Self-control, financial literacy and consumer over-indebtedness. *Journal of Economic Psychology*, *33*(3), 590-602.

Glassmann, U., & Filsinger, M. (2021). Varieties of private household debt in Europe: Incompatibility of culturally diverse lending regimes between Germany and Italy? *German Politics*, *30*(3), 380-402.

Graeber, D. (2020). *Debt: The first 5,000 years*. Melville House.

Harari, Y.N. (2018). *Money*. Vintage.

Hohnen, P., & Hansen, A.R. (2021). Credit consumption and financial risk among Danish households - A register-based study of the distribution of bank and credit card debt. *Journal of Consumer Policy, 44*, 311-328. Hojman, D.A., Miranda, A., & Ruiz-Tagle, J. (2016). Debt trajectories and mental health. *Social Science & Medicine*, *167*, 54–62.

Hyytinen, A., & Putkuri, H. (2018). Household optimism and overborrowing. *Journal of Money, Credit and Banking*, *50*(1), 55-76.

Institute for Global Prosperity. (2017). Social Prosperity for the Future: A Proposal for Universal Basic Services. https://discovery.ucl.ac.uk/id/eprint/10080175/1/universal_basic_services_-_the_institute_for_global_prosperity_.pdf.

Keen, S. (2012). *The Debtwatch Manifesto*. http://keenomics.s3.amazonaws.com/debtdeflation_media/2012/01/TheDebtwatchManifesto.pdf

Kim, H., & Andersen, D.F. (2012). Building confidence in causal maps generated from purposive text data: mapping transcripts of the Federal Reserve. *System Dynamics Review*, *28*(4), 311-328.

Kirwan, S. (2019). On 'those who shout the loudest': Debt advice and the work of disrupting attachments. *Geoforum*, *98*, 318-326.

Klamer, A., Bezemer, D., Lubbersen, V., Milo, M., van Staveren, I., & Steiner, T. (2020). Schuld als een gedeelde verantwoordelijkheid: een hedendaagse uitwerking van het

jubilee. *Socires and Sustainable Finance Lab.* https://sustainablefinancelab.nl/schuld-als-een-gedeelde-verantwoordelijkheid-een-hedendaagse-uitwerking-van-het-jubilee/

Kolios, B. (2020). Australian household debt and the macroeconomic environment. *Journal of Economic Studies*, *48*(1), 21-34.

Kuhnen, C.M., & Melzer, B.T. (2018). Noncognitive abilities and financial delinquency: The role of self-efficacy in avoiding financial distress. *The Journal of Finance*, *73*(6), 2837-2869.

Kukk, M. (2019). Debt repayment problems: short-term and long-term implications for spending. *Review of the Economics of the Household*, *17*(2), 715-740.

Ladas, A., Ferguson, E., Aickelin, U., & Garibaldi, J. (2014). A data mining framework to model consumer indebtedness with psychological factors. *2014 IEEE International Conference on Data Mining Workshop*, 150-157.

Lea, S.E.G. (2021). Debt and overindebtedness: Psychological evidence and its policy implications. *Social Issues and Policy Review*, *15*(1), 146-179.

Leclaire, J. (2021). Does household debt matter to financial fragility? *Review of Political Economy, ahead of print*, 1-20.

Lee, J.M., Park, N., & Heo, W. (2019). Importance of subjective financial knowledge and perceived credit score in payday loan use. *International Journal of Financial Studies*, *7*(3), 53.

Madeira, C. (2019). The impact of interest rate ceilings on households' credit access: Evidence from a 2013 Chilean legislation. *Journal of Banking & Finance*, *106*, 166-179.

Meadows, D.H. (1999). *Leverage Points: Places to Intervene in a System*. Sustainability Institute.

Meadows, D.H. (2008). *Thinking in Systems*. Chelsea Green Publishing.

Meadows, D.H., Meadows, D.L., Randers, J., & Behrens, W.W. (1972). Limits to growth: A report for the Club of Rome's project on the predicament of mankind. Universe Books.

Meltzer, H., Bebbington, P., Brugha, T., Jenkins, R., McManus, S., & Dennis, M.S. (2011). Personal debt and suicidal ideation. *Psychological Medicine, 41*(4), 771–778.

Modigliani, F., & Brumberg, R. (1954). Utility analysis and the consumption function: An interpretation of cross-section data. In K.K. Kurihara (Ed.), *Post-Keynesian Economics*. Rutgers University Press.

Montgomerie, J. (2019). *Should We Abolish Household Debts?* Polity.

Morawska, S., Prusak, B., Banasik, P., Pustułka, K., & Groele, B. (2020). Bankruptcy law severity for debtors: Comparative analysis among selected countries. *European Research Studies Journal*, *23*(2), 659-686.

Oksanen, A., Aaltonen, M., & Rantala, K. (2015). Social determinants of debt problems in a Nordic welfare state: A Finnish register-based study. *Journal of Consumer Policy*, *38*(3), 229-246.

Ottaviani, C., & Vandone, D. (2011). Impulsivity and household indebtedness: Evidence from real life. *Journal of Economic Psychology*, *32*(5), 754-761.

Ottaviani, C., & Vandone, D. (2018). Financial literacy, debt burden and impulsivity: A mediation analysis. *Economic Notes: Review of Banking, Finance and Monetary Economics*, *47*(2-3), 439-454.

Pattarin, F., & Cosma, S. (2012). Psychological determinants of consumer credit: The role of attitudes. *Review of Behavioral Finance*, *4*(2), 113-129.

Poppe, C., Lavik, R., & Borgeraas, E. (2016). The dangers of borrowing in the age of financialization. *Acta Sociologica*, *59*(1), 19-33.

Raworth, K. (2017). *Doughnut Economics*. Random House Business Books.

Richardson, T., Elliott, P., & Roberts, R. (2013). The relationship between personal unsecured debt and mental and physical health: A systematic review and meta-analysis. *Clinical Psychology Review*, *33*(8), 1148-1162.

Rockström, J., Steffen, W., Noone, K., Persson, Å., Chapin, F.S., Lambin, E., Lenton, T.M., Scheffer, M., Folke, C., Schellnhuber, H.J., Nykvist, B., de Wit, C.A., Hughes, T., van der Leeuw, S., Rodhe, H., Sörlin, S., Snyder, P.K., Costanza, R., Svedin, U., Falkenmark, M., Karlberg, L., Corell, R.W., Fabry, V.J., Hansen, J., Walker, B., Liverman, D., Richardson, K., Crutzen, P., & Foley, J. (2009). Planetary boundaries: Exploring the safe operating space for humanity. *Ecology and Society*, *14*(2), 32.

Sahin, O., Salim, H., Suprun, E., Richards, R., MacAskill, S., Heilgeist, S., Rutherford, S., Stewart, R.A., & Beal, C.A. (2020). Developing a preliminary causal loop diagram for understanding the wicked complexity of the COVID-19 pandemic. *Systems*, *8*(2), 20.

Saunders, P. (2021). Loan sharking: changing patterns in, and challenging perceptions of, an abuse of deprivation. *Journal of Public Health*, *43*(1), e62-e68.

Schooley, D.K., & Worden, D.D. (2010). Fueling the credit crisis: Who uses consumer credit and what drives debt burden? *Business Economics*, *45*, 266-276.

Scott, R., & Pressman, S. (2013). Household debt and income distribution. *Journal of Economic Issues*, *47*(2), 323-332.

Sedlacko, M., Martinuzzi,A., Røpke, I., Videira, N., & Antunes, P. (2014). Participatory systems mapping for sustainable consumption: Discussion of a method promoting systemic insights. *Ecological Economics*, *106*, 33-43.

Soederberg, S. (2014). *Debtfare States and the Poverty Industry: Money, Discipline and the Surplus Population*. Routledge.

Song, H., Wang, R., Bishwajit,G., Xiong, J., Feng, Z., & Fu, H. (2020). Household debt, hypertension and depressive symptoms for older adults. *International Journal of Geriatric Psychiatry*, *35*(7), 779-784.

Soro, J.C., Ferreira, M.B., de Almeida, F., Silva, C.S., & Reis, J. (2021). Perceived causes and attitudes regarding overindebtedness and their effects on public agreement with government financial aid. *Frontiers in Psychology*, *12*, 2193.

Sotiropoulos, V., & d'Astous, A. (2013). Attitudinal, self-efficacy, and social norms determinants of young consumers' propensity to overspend on credit cards. *Journal of Consumer Policy*, *36*, 179-196.

Spooner, J. (2018). The quiet-loud-quiet politics of post-crisis consumer bankruptcy law: The case of Ireland and the Troika. *Modern Law Review*, *81*(5), 790-824.

Sweet, E. (2018). “Like you failed at life”: Debt, health and neoliberal subjectivity. *Social Science & Medicine, 212*, 86-93.

Sweet, E., DuBois, L.Z., & Stanley, F. (2018). Embodied neoliberalism: Epidemiology and the lived experience of consumer debt. *International Journal of Health Services, 48*(3), 495-511.

Sweet, E., Nandi, A., Adam, E.K., & McDade, T.W. (2013). The high price of debt: Household financial debt and its impact on mental and physical health. *Social Science & Medicine, 91*, 94-100.

Videira, N., Schneider, F., Sekulova, F., & Kallis, G. (2014). Improving understanding on degrowth pathways: An exploratory study using collaborative causal models. *Futures, 55*, 58-77.

Walsemann, K.M., Ailshire, J.A., & Gee, G.C. (2016). Student loans and racial disparities in selfreported sleep duration: evidence from a nationally representative sample of US young adults. *Journal of Epidemiology and Community Health, 70*(1), 42–48.

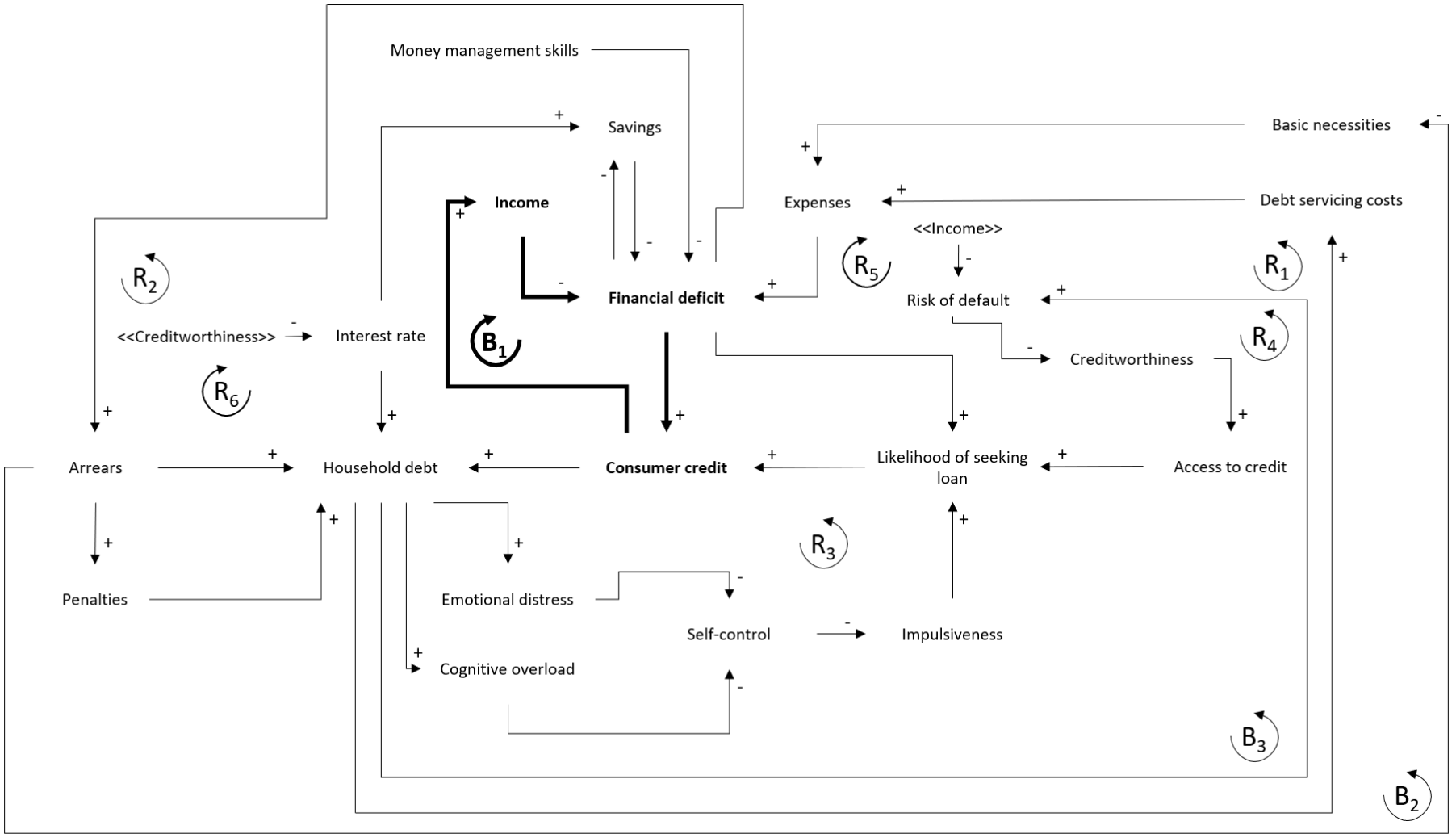
Waterlander, W.E., Singh, A., Altenburg, T., Dijkstra, C., Luna Pinzon, A., Anselma, M., Busch, V., van Houtum, L., Emke, H., Overman, M.L., Chinapaw, M.J.M., & Stronks, K. (2020). Understanding obesity-related behaviors in youth from a systems dynamics perspective: The use of causal loop diagrams. *Obesity Reviews, 22*(7), e13185.

Xia, B., Chen, Q., Walliah, J., Buys, L., Skitmore, M., & Susilawati, C. (2021). Understanding the dynamic behaviour of the Australian retirement village industry: A causal loop diagram. *International Journal of Strategic Property Management, 25*(5), 346-355.

Zinman, J. (2010). Restricting consumer credit access: Household survey evidence on effects around the Oregon rate cap. *Journal of Banking & Finance, 34*(3), 546-556.

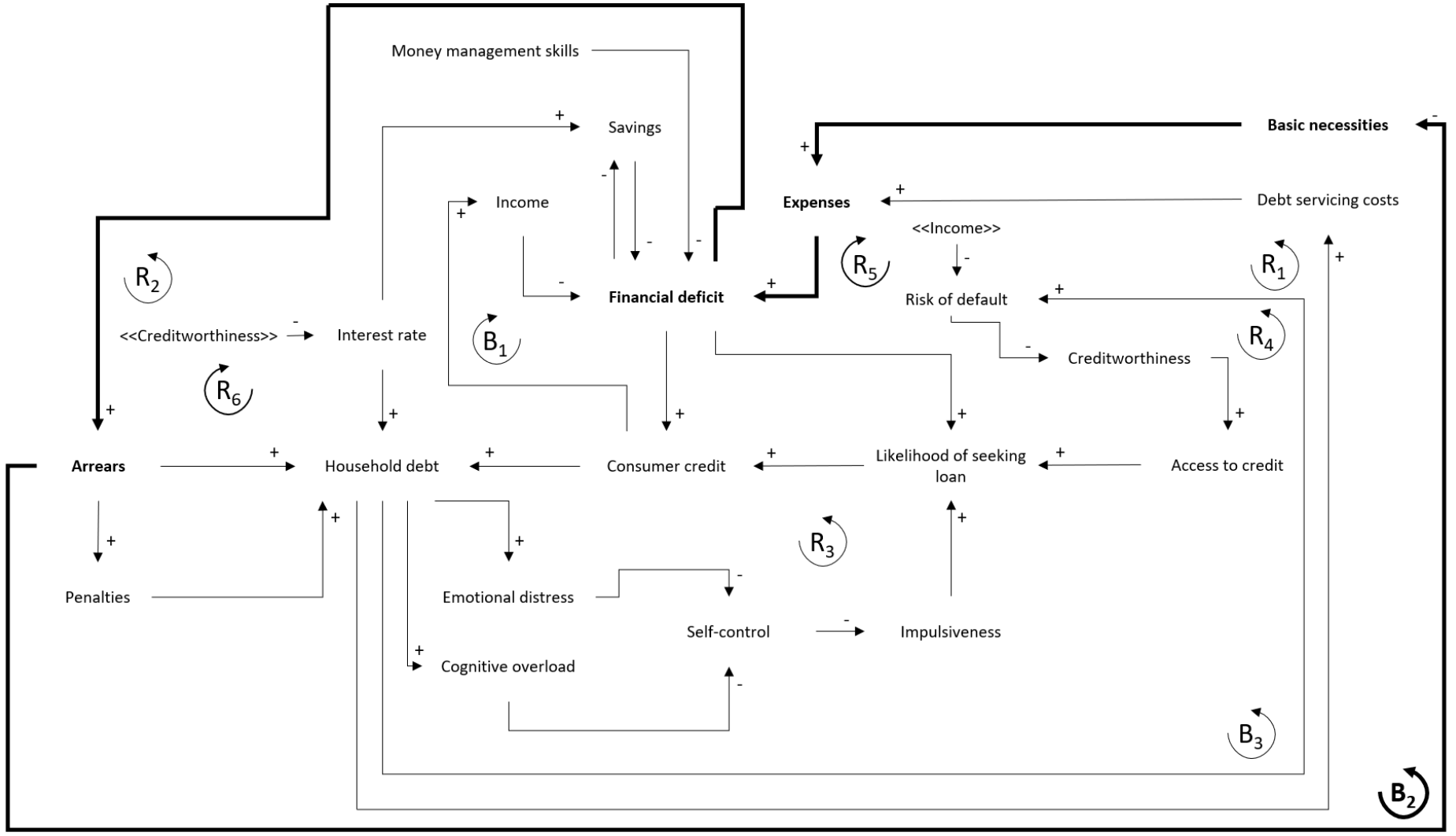
Appendix A

Feedback Loop B_1



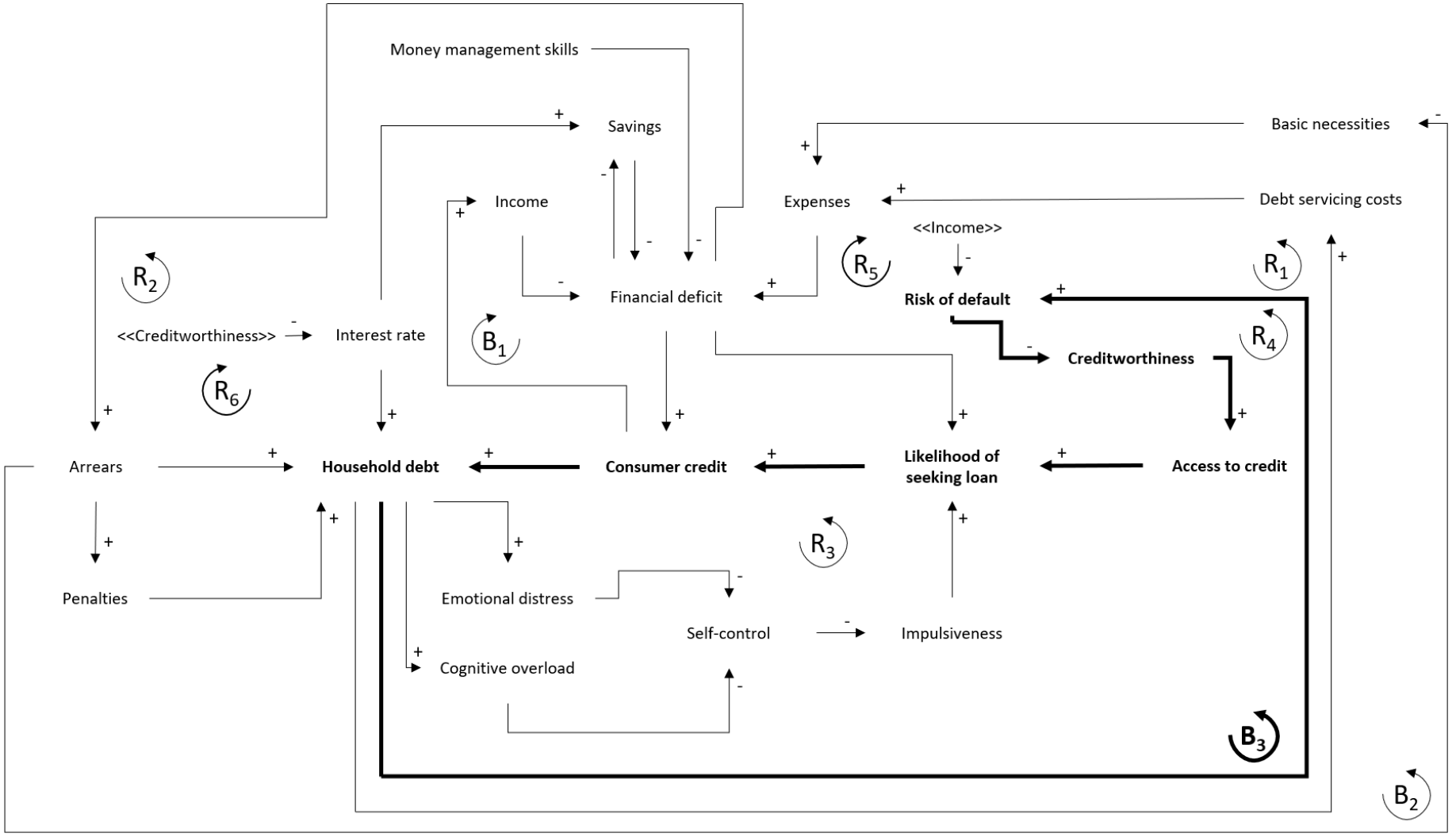
Appendix B

Feedback Loop B_2



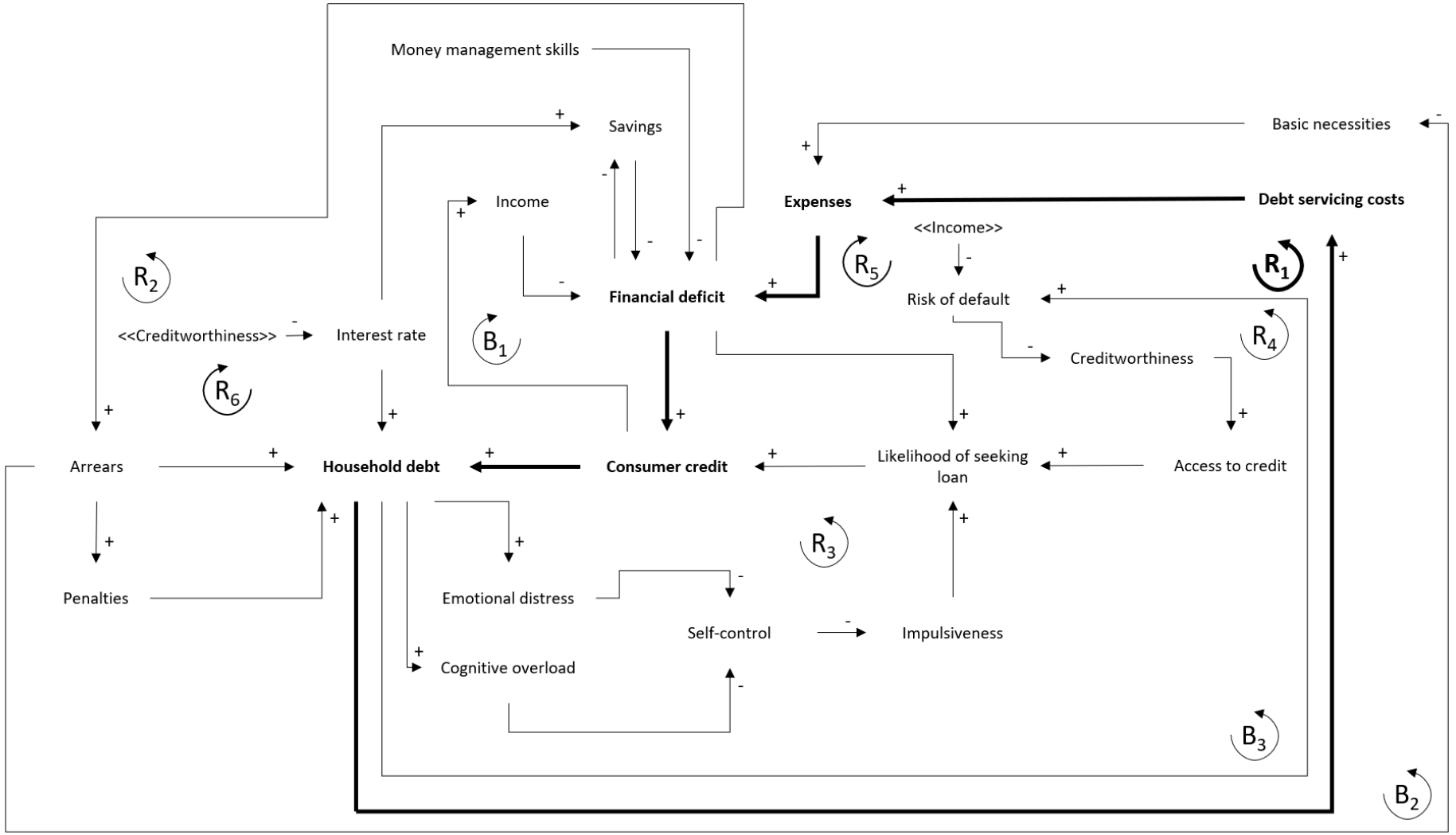
Appendix C

Feedback Loop B_3



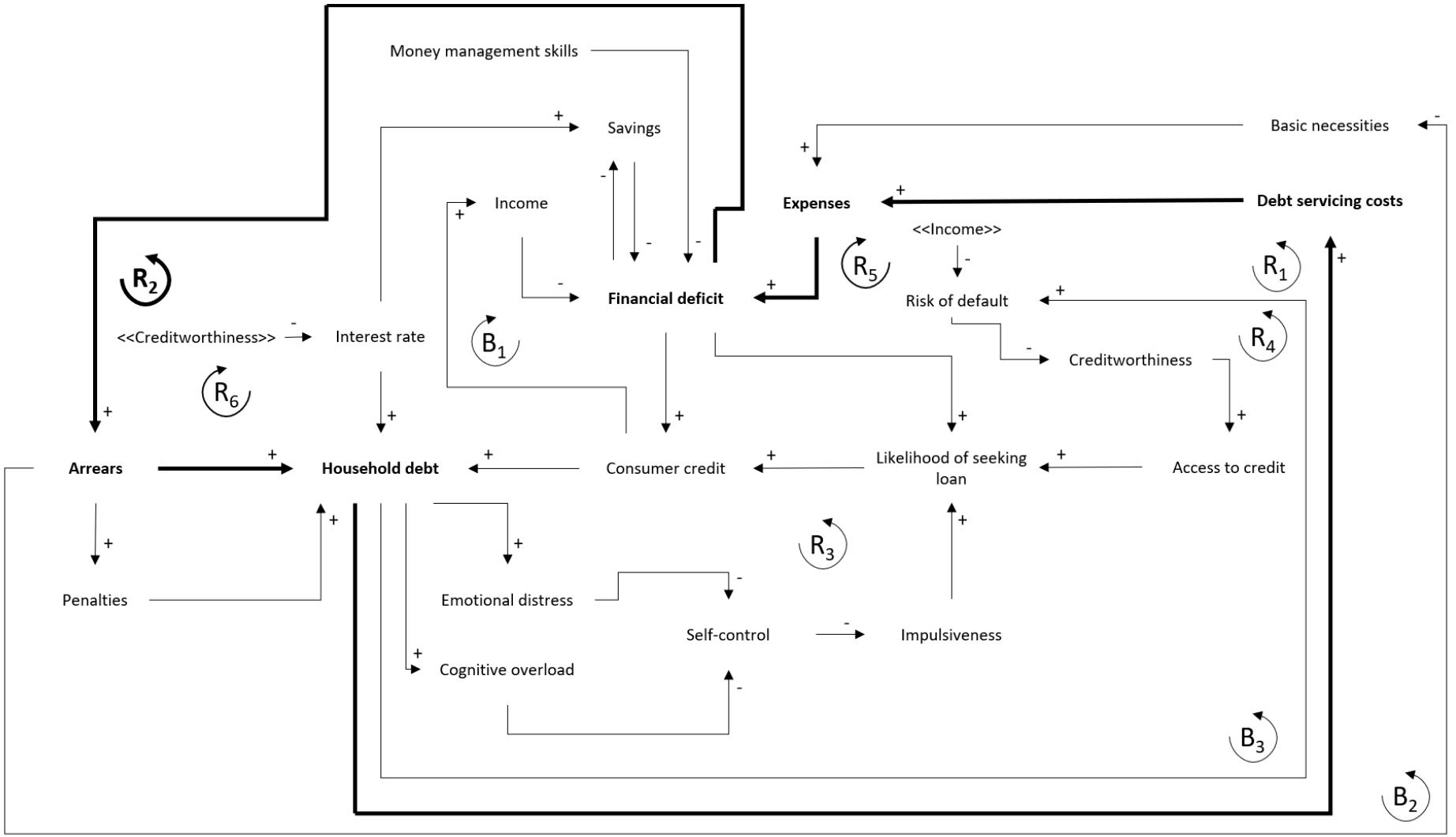
Appendix D

Feedback Loop R_1



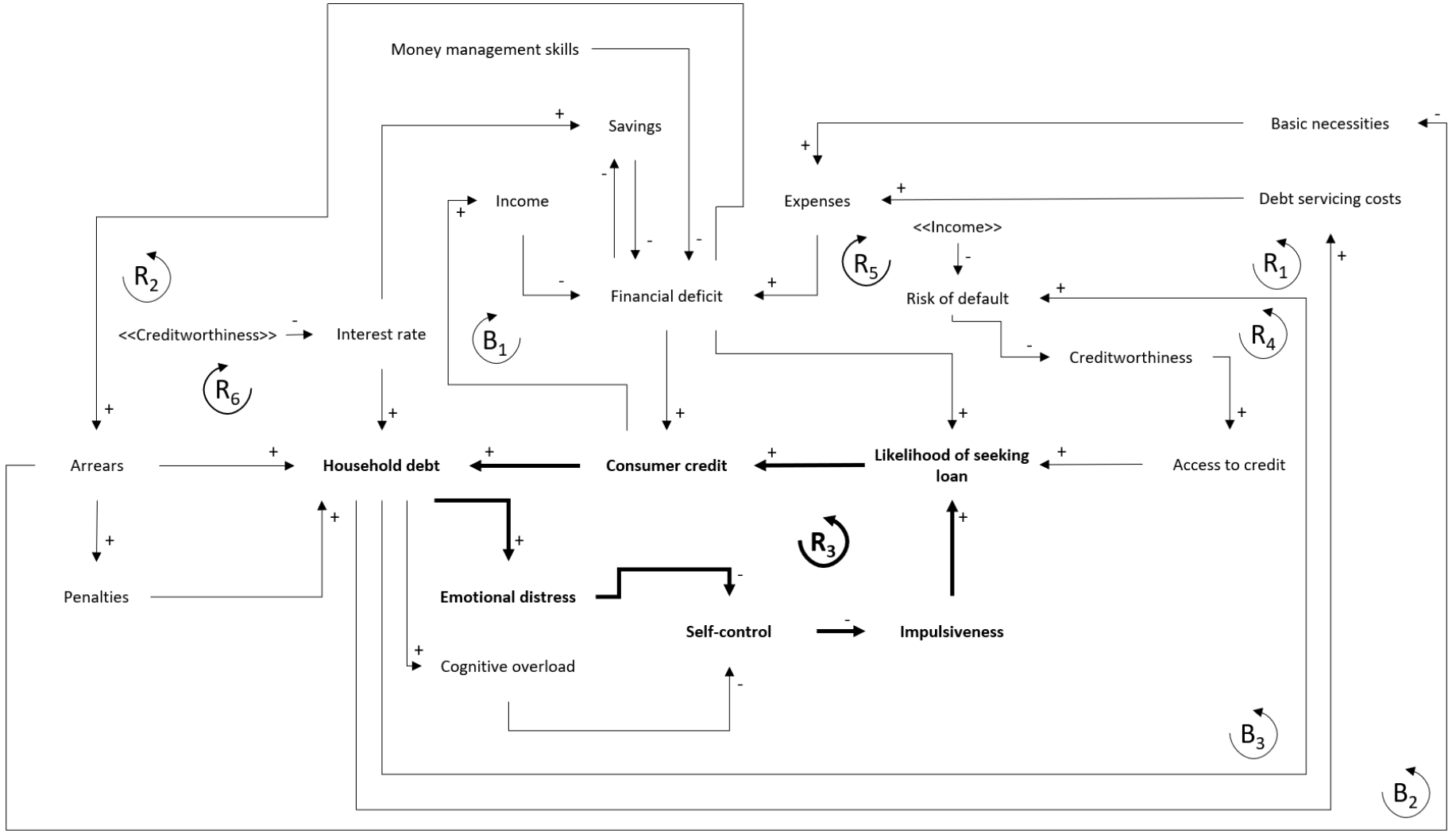
Appendix E

Feedback Loop R_2



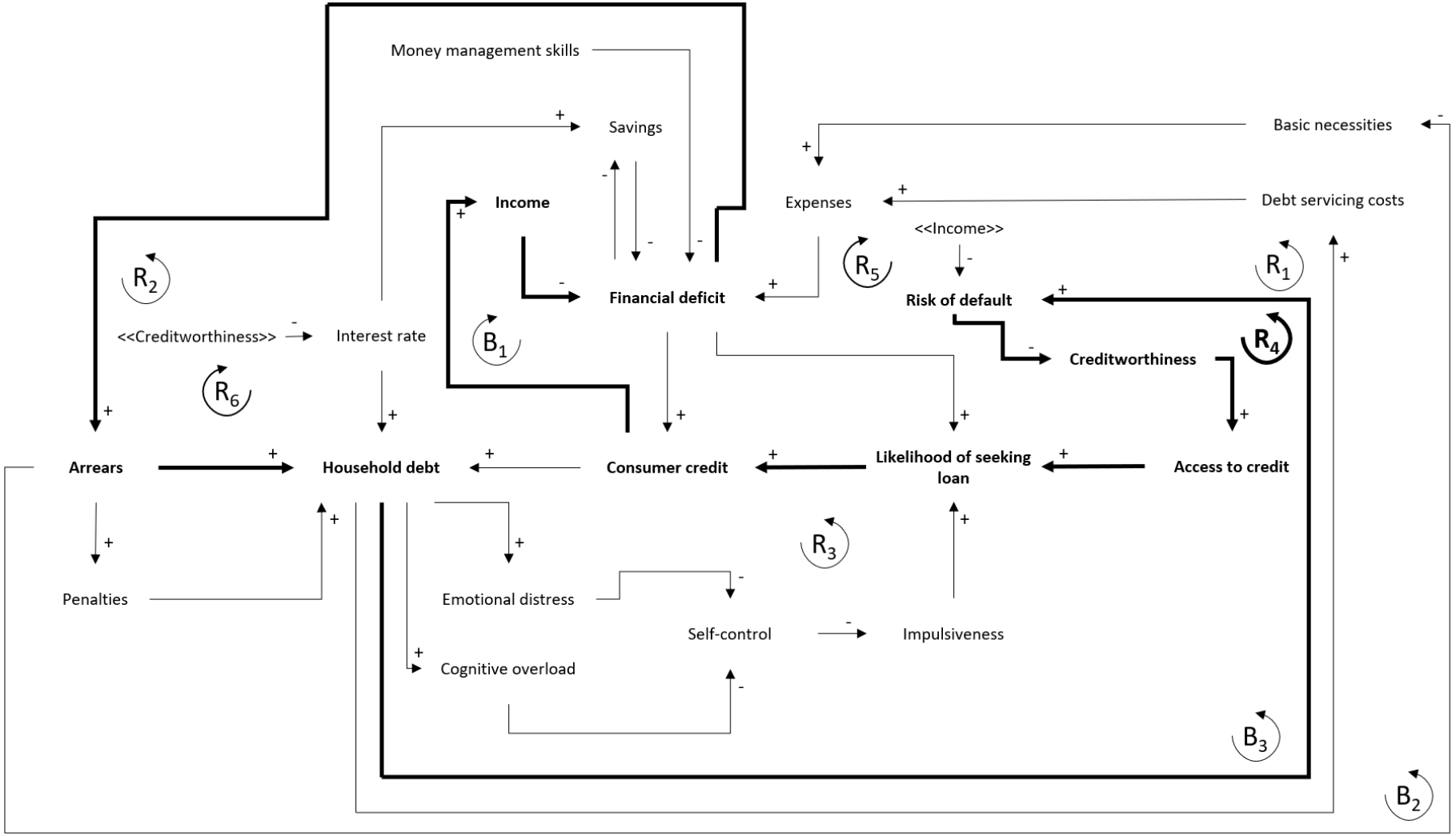
Appendix F

Feedback Loop R_3



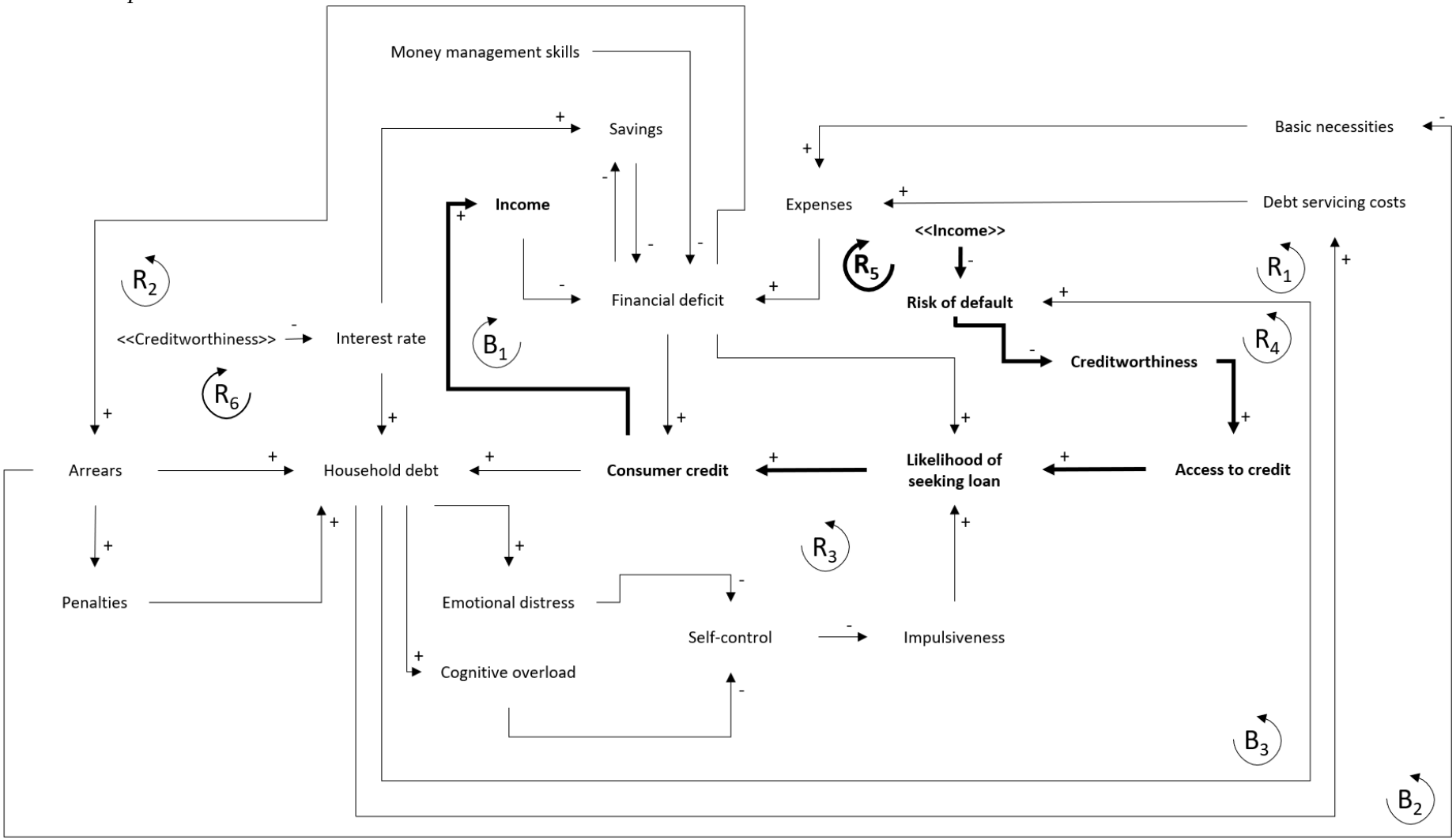
Appendix G

Feedback Loop R_4



Appendix H

Feedback Loop R_5



Appendix I

Feedback Loop R_6