Ecological Economics 215 (2024) 107977

Contents lists available at ScienceDirect

Ecological Economics

journal homepage: www.elsevier.com/locate/ecolecon

Safeguarding livelihoods against reductions in economic output

Jefim Vogel [a,*], Gauthier Guerin [b], Daniel W. O'Neill [a], Julia K. Steinberger [c,a]

[a] Sustainability Research Institute, School of Earth and Environment, University of Leeds, UK
[b] Catalyst Collective Ltd, Todmorden, UK
[c] Institute of Geography and Sustainability, Faculty of Geosciences and Environment, University of Lausanne, Switzerland

ARTICLE INFO

Keywords:
Livelihoods
Economic growth dependence
Post-growth
Sustainable welfare
Profit maximisation
Eco-social policies

ABSTRACT

Secular stagnation, escalating socio-ecological crises, and the urgent need to scale back resource use in affluent countries make reductions in economic output increasingly likely. In this context, the prevailing vulnerability of livelihoods to a reduction in output poses a fundamental threat, and obstructs stringent environmental policies that reduce production or consumption.

This study explores what creates this vulnerability, and how it might be overcome. We introduce a novel analytic framework that describes the relationship between economic output and the adequacy of livelihoods. Using empirical data for the years around the Global Financial Crisis, we illustrate the vulnerability of livelihoods in the UK. Based on our framework, we show that the vulnerability is not inevitable but arises when livelihoods are dependent on wage labour whilst employment and adequate incomes for workers are insecure, or when adequate pensions are insecure. These conditions are pervasive in contemporary capitalist economies, primarily due to profit maximisation and neoliberal welfare and labour policy. Profit maximisation may in fact actively foster the vulnerability of livelihoods, as the vulnerability can be used as a lever for squeezing wages, and as a pretext for pursuing economic growth and blocking environmental policies.

Finally, we identify a range of interventions that could overcome the vulnerability, including specific versions of universal basic services, a universal basic income, a minimum income guarantee, a job guarantee, living wages, worktime reduction, and a pension guarantee, alongside changes in capital-labour relations and a shift to not-for-profit provisioning. Such interventions could secure livelihoods in volatile or contracting economies, and make stringent environmental policies socially sustainable and more politically palatable.

1. Introduction

In contemporary economies, reductions in economic output (as expressed by GDP) are associated with hardship and wide-reaching negative impacts on human livelihoods, i.e. on people's ability to meet their basic needs and in particular their ability to afford the cost of living (Jackson, 2017; Mayrhofer and Wiese, 2020). Even in affluent countries, which are the focus of our study, livelihoods appear to be highly vulnerable to output reductions, i.e. prone to critically deteriorate when economic output declines (Ólafsson et al., 2019a). For example, people who lose their jobs in a recession may no longer be able to afford to pay rent or buy food. Most governments seem to regard the vulnerability of livelihoods to output reductions as inevitable, and conclude that any output reduction is a threat to livelihoods, and that the only way to secure livelihoods is to pursue economic growth.

In the 21st century, however, securing livelihoods through economic growth may not be a viable strategy, as economic growth may be coming to an end, and reductions in economic output are becoming increasingly likely – in particular in affluent countries. First, to stop biodiversity loss and to equitably limit global warming to 1.5 °C without relying on highly contested assumptions about future technologies, affluent countries need to reduce their production and consumption, on top of other environmental policies (Haberl et al., 2020; Hickel and Kallis, 2020; Keyßer and Lenzen, 2021; Otero et al., 2020; Vogel and Hickel, 2023). Second, despite extensive attempts to boost economic growth, many affluent countries are faced with secular stagnation and practical limits to growth (Jackson, 2019; Kallis et al., 2014; Storm, 2017; Summers, 2014). Third, escalating financial, ecological, resource, and public health crises are already and increasingly disrupting societies and plunging economies into deep recessions (e.g. the 1970s oil crises, the 2008/2009 financial crisis, the Covid-19 crisis). As Bailey (2015, p. 800) puts it: "The end of growth may be economically unavoidable or

* Corresponding author at: University of Leeds, LS2 9JT Leeds, UK.
E-mail address: jefim@posteo.de (J. Vogel).

https://doi.org/10.1016/j.ecolecon.2023.107977
Received 16 December 2022; Received in revised form 20 July 2023; Accepted 21 August 2023
Available online 16 October 2023

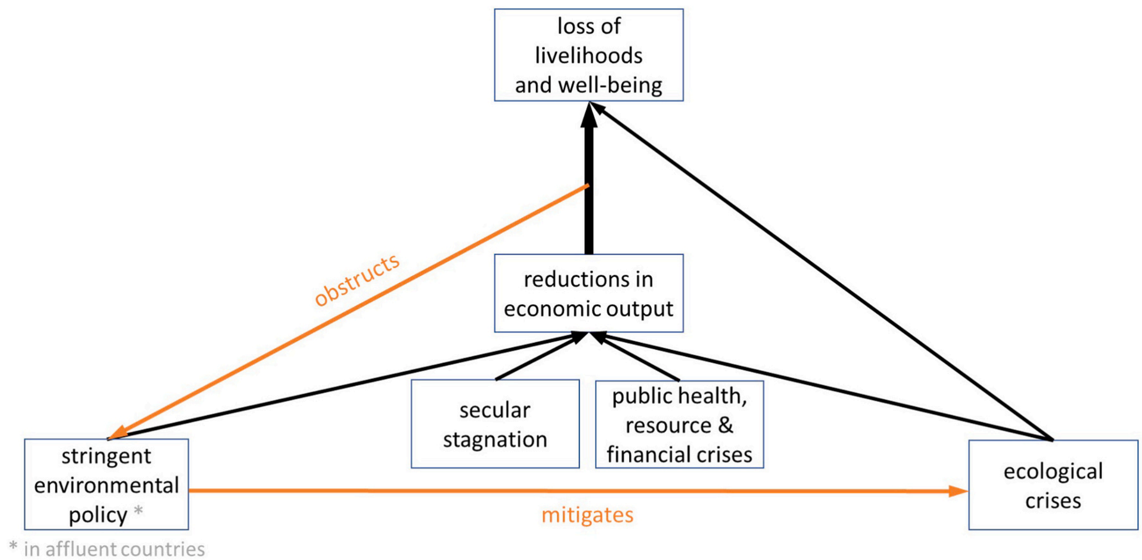

Fig. 1. The vulnerability of livelihoods to reductions in economic output (bold black arrow) poses a fundamental and increasing threat to human well-being, as secular stagnation and escalating public health, resource, financial and ecological crises are making output reductions increasingly likely. In affluent countries, environmental policy capable of tackling ecological crises in an equitable way requires reducing resource-intensive and less-necessary forms of production and consumption, which would likely entail a reduction in economic output. However, the vulnerability of livelihoods obstructs such stringent environmental policy, and thus contributes to the escalation of ecological crises. Black arrows indicate positive relationships, orange arrows indicate negative relationships.

environmentally necessary". Finally, the pursuit of economic growth in affluent countries is no longer improving human well-being, and is in fact in many ways socially detrimental (Costanza et al., 2014; Gough, 2017a; Jackson, 2017; Kallis, 2014; Vogel et al., 2021).

Given that output reductions are becoming increasingly likely in the short and long run, the vulnerability of livelihoods to output reductions poses a fundamental threat to human well-being (Fig. 1). Moreover, this vulnerability also poses a major obstacle to stringent environmental policies that may result in reduced economic output (Jackson and Victor, 2011), even though such policies are urgently needed in affluent countries to avert ecological breakdown (Haberl et al., 2020; Hickel and Kallis, 2020; Keyßer and Lenzen, 2021; Parrique et al., 2019; Vogel and Hickel, 2023).[1] Tackling the existential challenges of the 21st century, and safeguarding human well-being amidst these challenges, thus requires us to find ways to secure livelihoods in a volatile or contracting economy (Büchs and Koch, 2019; Jackson, 2017; Kallis et al., 2020a; Paulson et al., 2020).

To help address this challenge, this study explores the following research questions:

1. How are livelihoods related to economic output, and which variables mediate and moderate this relationship?
2. Under which conditions are livelihoods vulnerable to reductions in economic output?
3. Which factors create and sustain the conditions for the vulnerability of livelihoods to output reductions in contemporary capitalist economies?
4. What interventions could in principle overcome the vulnerability of livelihoods to output reductions?

1.1. *Literature on livelihoods*

The literature on livelihoods is vast, covering topics including poverty, development, sustainability, and social provisioning (Chambers, 1995; Kish and Quilley, 2021; Moore and Collins, 2021; Polanyi, 1977; Scoones, 2013). Across the literature, the term "livelihood" is used in myriad ways – often as an umbrella term for some aspects of "how different people in different places live" (Scoones, 2009, p. 172). A narrower literature defines livelihood as "the means of gaining a living" (Chambers, 1995, p. 174), and more specifically as "the capabilities, assets (stores, resources, claims and access) and activities required for a means of living" (Chambers and Conway, 1991, p. 6). In the post-growth literature, the term "livelihood" is typically used in this latter sense (e.g. Hickel, 2022; Jackson, 2017; Kallis et al., 2020b) but rarely explicitly defined or analysed. Here, we define a person's livelihood as their means to meet their basic needs (i.e. as the basis for their well-being), and introduce a novel concept: the *adequacy of a person's livelihood*, defined as their ability to meet their basic needs (and operationalised in Section 2).

1.2. *The relationship between economic output and livelihoods*

The importance of securing livelihoods and human well-being without economic growth is well-established in the post-growth literature (Büchs and Koch, 2017; Costanza et al., 2017; Gough, 2017a; Hickel et al., 2021; Jackson, 2017; Kallis, 2018; Koch, 2013). However, the conditions under which livelihoods are vulnerable to economic contraction (Research Question 2), and the factors and dynamics that create and sustain these conditions in contemporary capitalist economies (Research Question 3), remain only partly understood.

Previous studies on economic growth dependencies or imperatives have considered a range of different outcomes or goals as being dependent on economic growth, including employment, wages, and incomes (Jackson and Victor, 2011; Mayrhofer and Wiese, 2020; Richters and Siemoneit, 2019; Stratford, 2020); human well-being, prosperity, and basic needs (Jackson, 2017; Mayrhofer and Wiese, 2020; Richters and Siemoneit, 2019; Stratford and O'Neill, 2020); happiness (Fanning and O'Neill, 2019); welfare provision (Bailey, 2015; Büchs, 2021a; Corlet Walker et al., 2021); economic or financial stability (Bailey, 2015; Cahen-Fourot, 2022; Stratford, 2020; Stratford and O'Neill, 2020); and political stability (Jackson, 2017; Richters and Siemoneit, 2019; Schmelzer, 2015). While most of these concepts are relevant to livelihoods, explicit and clearly defined notions of

[1] During the Covid-19 crisis, this vulnerability likely also contributed to late implementation and premature termination of lockdowns in many countries.

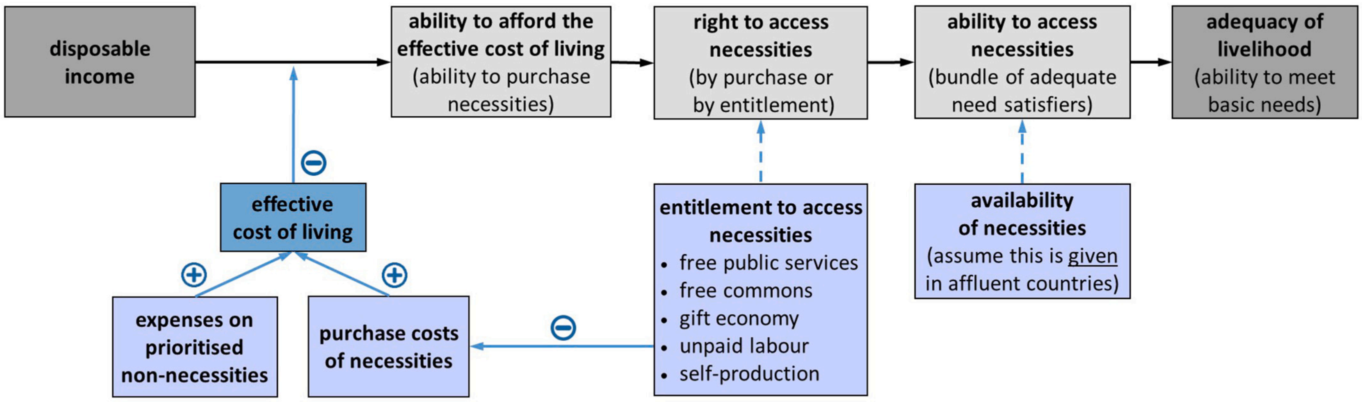

Fig. 2. The adequacy of people's livelihoods can be operationalised in terms of their ability to afford the effective cost of living. Livelihoods are dependent on disposable income, and hence on the monetised economy, to the extent that the right to access necessities must be purchased, as is predominantly the case in capitalist economies. Variables establishing the link between disposable income and livelihoods (mediating factors) are shown in grey boxes. The associations between these mediating factors are positive (black arrows). Variables governing the relationship between disposable income and livelihoods (governing factors) are shown in blue boxes, with their effects illustrated by blue arrows and plus or minus signs (dashed blue arrows indicate effects considered only indirectly). Factors implicitly considered in our analysis but not explicitly included in our main framework (Fig. 3) are shown here in lighter-coloured boxes.

livelihoods have not been assessed in this context, making our study the first to assess the growth dependence of livelihoods, and one of the first to explicitly analyse livelihoods in a post-growth context.

Previous explanations of what creates economic growth dependencies[2] (Research Questions 2 and 3) revolve around a range of factors and dynamics: first, technological innovation and labour productivity growth that is captured for profit and not shared with workers (Jackson and Victor, 2011; Mayrhofer and Wiese, 2020; Richters and Siemoneit, 2019; Stratford, 2020); second, "efficiency consumption", reflecting people's investments in their labour market competitiveness and ability to earn a living (Richters and Siemoneit, 2019; Siemoneit, 2019); third, the extraction of profits and in particular economic rents via mechanisms of enclosure, monopolisation, privatisation, or artificial scarcity, and facilitated by weak worker rights (Corlet Walker et al., 2021; Hickel, 2022; Stratford, 2020; Stratford and O'Neill, 2020); fourth, state finance, public debt and private debt (Bailey, 2015; Büchs, 2021a; Corlet Walker et al., 2021; Stratford, 2020; Stratford and O'Neill, 2020); fifth, demographic trends and associated increases in welfare needs (Büchs, 2021a; Corlet Walker et al., 2021); sixth, political opposition to extensive redistribution (Richters and Siemoneit, 2019); seventh, the capitalist wage relation and market relation (Cahen-Fourot, 2022); and finally and contested, the creation of money as interest-bearing debt (Arnsperger et al., 2021; Cahen-Fourot, 2022; Hartley and Kallis, 2021; Jackson and Victor, 2015).

While a broad literature is relevant for how to overcome the vulnerability of livelihoods to output reductions (Research Question 4), few studies explicitly relate proposed interventions to this objective and assess their ability to achieve it (Jackson, 2017; Kallis et al., 2020b; Mayrhofer and Wiese, 2020; Stratford and O'Neill, 2020), and no study assesses proposed interventions against an adequacy benchmark for livelihoods. Advocacy of specific interventions is rarely grounded in a systematic analysis of what conditions and factors underpin this dependence (Research Questions 2 and 3), and how these proposals would overcome it. Moreover, previous analyses are often limited to the case of a low-growth or zero-growth economy, whereas the case of a contracting economy has received much less attention.

In this study, we aim to address these research gaps as follows. Based on a novel operationalisation of the adequacy of livelihoods (Section 2), we put forward a novel analytic framework to describe the relationship between economic output and the adequacy of livelihoods, and identify the conditions that create the vulnerability of livelihoods to output reduction (Section 3). Applying this framework, we analyse how key aspects of contemporary capitalist economies affect the conditions for vulnerability (Section 4). We identify and discuss a range of interventions for tackling this vulnerability (Section 5). Finally, we discuss the implications of our analysis for the interrelation between livelihoods, profits, and economic growth (Section 6), and conclude (Section 7).

2. Operationalising the adequacy of livelihoods as the ability to afford the effective cost of living

We define the adequacy of a person's livelihood as their ability to meet their basic needs. The satisfaction of basic needs (physical and mental health, cognitive understanding, and socially meaningful opportunities) is considered a universal precondition for human well-being[3] (Doyal and Gough, 1991; Gough, 2015). While basic needs are considered universal, the goods, services, or relationships used to satisfy these needs (so-called need satisfiers) differ across communities, depending on culture, affluence, infrastructure, and technology (ibid.).

Processes of democratic deliberation can be used to determine a basket of *necessities*, i.e. a finite bundle of goods and services considered adequate in type, quality, and quantity to satisfy basic needs in a particular context (Bradshaw et al., 2008; Büchs and Koch, 2019; Goedemé et al., 2015; Gough, 2020; Gough, 2017b). Which goods and services are considered necessities differs somewhat for different household types (e.g. due to age or number of children) and different levels of need (e.g. due to disability) (*ibid.*). The basket of necessities can thus be considered an equitable sufficiency benchmark. Deliberations on necessities should also consider trade-offs and synergies with other needs and goals, such as environmental and health impacts of alternative diets (Brand Correa et al., 2018; Guillen-Royo, 2016; Max-Neef, 1991). Goods and services consumed in excess of, or unrelated to, basic need satisfaction may be considered non-necessities.

The adequacy of a person's livelihood can thus be understood in terms of their ability to access necessities, which in turn hinges on two

[2] Here, we separate economic conditions (factors and dynamics) that create growth dependencies from broader societal obstacles to abandoning the pursuit of economic growth such as social traps (Costanza et al., 2017) or social practices and cultural lock-in of growth (Büchs and Koch, 2019).

[3] Needs-based conceptions of well-being exist alongside subjective concepts of well-being (e.g. life satisfaction) or integral concepts such as quality of life (Costanza et al., 2007). However, several studies have argued that needs-based conceptions of well-being are most suitable in the context of post-growth and ecological crises (Büchs and Koch, 2019; Gough, 2015, 2017a)

factors: first, the availability of necessities (i.e. necessities need to be produced and made physically accessible); and second, the explicit or implicit right to access necessities – a crucial aspect that has received relatively little attention in human need theory.

Assuming that necessities are usually abundantly available in affluent countries,[4] the adequacy of people's livelihoods depends primarily on whether or not people have the right to access these necessities. When someone lives on the street despite vacancies in nearby flats or hotels, it is because they are denied the right to access these available necessities, and have no way to obtain this right.

In principle, the right to access a good or service can be obtained either by purchase (i.e. by paying money), or through formal or informal entitlement (e.g. free public services, commons, gift economy, self-production).[5] While certain necessities are typically obtained through informal gift economies (e.g. voluntary unpaid care work), and some necessities are typically provided through free public services (e.g. healthcare), at least some necessities usually must be purchased (e.g. food, housing).

People's ability to access necessities thus crucially depends on their ability to afford the purchase cost of necessities, and thus on their disposable income.[6] The greater the subset of necessities that is provided for free, and the lower the prices of the necessities that must be purchased (as governed by regulation, taxation, subsidies, and profit margins), the lower the purchase cost of necessities,[7] and the lower the level of income required for an adequate livelihood.

Even though *non-necessities* are not materially required for human well-being, the threat of social exclusion – real or perceived – can make certain non-necessities appear indispensable, in particular in the context of advertisement, status anxiety (Jackson, 2017), "efficiency consumption" (Siemoneit, 2019), lock-in (Brand Correa et al., 2020), induced dependencies (Mattioli et al., 2020), and predatory financing models (Haines-Doran, 2023). Under these social pressures, people often spend money on non-necessities even where this undermines their ability to purchase necessities (see also Supplementary Materials C). The adequacy of people's disposable incomes thus depends on both the purchase cost of necessities, and people's expenses on prioritised non-necessities, which together we consider to be the *effective cost of living.*[8]

While there are certainly also important non-monetary aspects to livelihoods (e.g. care, belonging, reciprocity, trust) and broader human well-being (Büchs and Koch, 2017; Costanza et al., 2007), it is primarily the monetary aspect of livelihoods – the ability to afford the effective cost of living – that is directly linked to economic output. Moreover, monetary aspects of livelihoods also affect non-monetary aspects: "social exclusion seems to be economic exclusion" (Richters and Siemoneit, 2019, p. 131).

On this basis, we operationalise the adequacy of people's livelihoods in terms of people's ability to afford the effective cost of living (Fig. 2). In line with human need theory (Doyal and Gough, 1991), we conceptualise the adequacy of livelihoods as a shortfall concept: the more people's disposable income falls short of the effective cost of living, the more likely they are to be deprived of basic needs, whereas disposable income in excess of that level is not considered to significantly improve their abiltiy to meet their basic needs, and thus their livelihoods.[9]

3. The vulnerability of livelihoods to reductions in economic output

3.1. Analytic framework: The relationship between economic output and the adequacy of livelihoods

Here, we put forward a novel analytic framework that conceptualises how the adequacy of livelihoods is linked to economic output,[10] via production, wage labour, welfare provision, and consumption (Fig. 3). The framework details which variables establish the link between economic output and livelihoods (mediating factors; grey boxes), and which variables govern or modify their relationships (governing factors, blue boxes).[11]

The adequacy of an individual's livelihood (in terms of their ability to afford the effective cost of living) is determined by whether their disposable income is sufficient to cover their effective cost of living. An individual's disposable income can be understood as the sum of two interdependent components: (1) (a) their wage income (workers)[12] or (b) pension benefits (pensioners); and (2) the net welfare transfers they receive (cash benefits minus direct taxes, social contributions, and pension contributions).[13]

If unemployment benefits are insufficient to cover the effective cost of living then being unemployed deprives people of an adequate livelihood (unemployment poverty). In such a situation, working-age people need a job to secure an adequate livelihood, i.e. their livelihoods are dependent on wage labour at the individual level. Employment is however not necessarily enough to secure an adequate livelihood – not if the sum of an individual's wage income and the net welfare transfers they receive remains insufficient (in-work poverty).[10] Wage incomes of course scale with both hourly wages and working hours.

For a given amount of total wage labour, more working hours per worker[14] means fewer people can be employed – and vice versa. Total wage labour, in turn, is proportional to aggregate economic output, and inversely proportional to labour productivity*:* for a given level of output, higher labour productivity implies less total wage labour, leading to the so-called "productivity trap" (Jackson and Victor, 2011). If output stays constant and labour productivity increases, or if labour productivity stays constant and output declines, total wage labour declines, and thus either employment or working hours (or both) must decline.

The livelihoods of pensioners, on the other hand, depend primarily on the adequacy of their pensions, i.e. to what extent their pension

[4] How necessities are produced and provided (e.g. working conditions, ecological impact), and why necessities are abundant more or less only in affluent countries, are big issues, but beyond the scope of this study.

[5] See also Polanyi's (1944) three modes of exchange and Parrique's (2019) four modes of allocation.

[6] While in theory, people could also pay the purchase cost of necessities out of savings, most people do not have sufficient savings to sustain this in the long-run, and thus need a regular income.

[7] Some necessities are offered for free or at below-market prices to people who cannot afford them otherwise (e.g. social housing, food banks), but these provisions are often highly stigmatised, low-quality, or in short supply.

[8] For people who take up loans to finance purchases of necessities (or of prioritised non-necessities), their interest payments on these loans also add to their effective cost of living.

[9] The excess of some people's disposable income above the effective cost of living does not compensate for the shortfall of other people's income below the effective cost of living.

[10] While significant parts of provisioning occur through informal gift economies and unpaid work, our analysis focuses on the monetised economy (where the vulnerability to output reduction arises). Specifically, our framework focuses on the variables and dynamics that directly affect the relationship between economic output and livelihoods, without attempting to cover all aspects of the monetised economy.

[11] The framework translates an aggregate perspective on output into a distributional perspective on livelihoods. For simplicity, we introduce it here at the level of general relationships and dynamics.

[12] We consider self-employment to be included in the variables that relate to wage labour (see Supplementary Materials B).

[13] Capital owners also receive capital income (dividends, interest, capital appreciation) but given that very few people receive substantial income from personal capital, we do not explicitly consider this income here (with the exception of funded pension schemes).

[14] "Workers" here refers to paid work (employment or self-employment). We value unpaid work, and acknowledge issues around its lack of recognition and its gendered distribution.

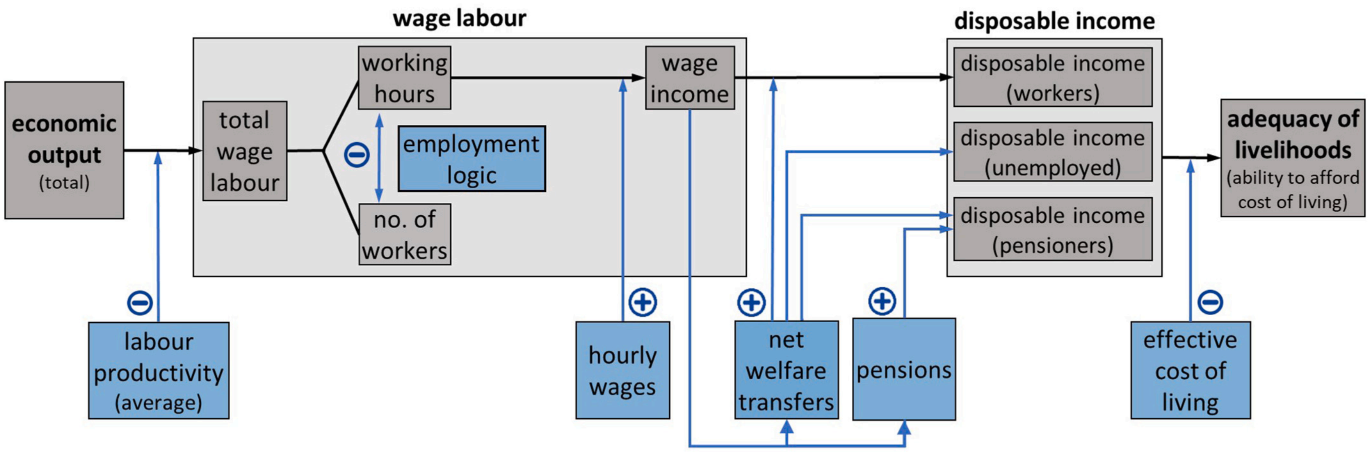

Fig. 3. Analytic framework describing the relationship between economic output and the adequacy of livelihoods. Variables establishing the link between economic output and livelihoods (mediating factors) are shown in grey boxes. The associations between these mediating factors are positive (black arrows). Variables governing the relationship between economic output and livelihoods (governing factors) are shown in blue boxes. Some governing factors have positive effects (+) on livelihoods, others have negative effects (−). For variables not specified as "total" or "average", the distributions across the relevant populations need to be considered (not explicated here).

Table 1
Changes in governing factors that would improve livelihoods.

Change in governing factor that would improve livelihoods (if economic output and all other governing factors remain constant)	Explanation
Decreasing labour productivity	Given no change in economic output, a decrease in labour productivity would increase the amount of total wage labour, which would increase employment, given no change in average working hours per worker.
Increasing hourly wages	Given no change in working hours, an increase in hourly wages would increase wage income.
Increasing net welfare transfers	Given no change in wage income, an increase in net welfare transfers would increase disposable income.
Increasing pension benefits	Given no change in net welfare transfers, an increase in pension benefits would increase disposable income for pensioners.
Decreasing effective cost of living	Given no change in disposable income, a decrease in the effective cost of living would improve the adequacy of people's livelihoods.

benefits cover their effective cost of living.

Finally, greater inequality in disposable income impairs the overall adequacy of livelihoods because at any level of average income, more inequality means greater overall shortfall intensity below the effective cost of living (see also Supplementary Materials C).

3.2. *Dynamics of the relationship between economic output and livelihoods*

Our framework reveals how changes in certain variables affect livelihoods or the relationship between output and livelihoods. While the adequacy of livelihoods is, at a basic level, positively associated with economic output, the actual relationship crucially depends on the governing factors. At a given level of output, livelihoods would improve with increases in positive governing factors (hourly wages, net welfare transfers, pension benefits) and/or with decreases in negative governing factors (labour productivity, effective cost of living), as summarised in Table 1. The reverse changes would impair livelihoods.

Simultaneous changes in several governing factors amplify or attenuate each other's effects. For example, the negative effects of output reductions would be exacerbated by increases in labour productivity, or mitigated by increases in net welfare transfers. More complex interactions may occur depending on the political-economic system (see Supplementary Materials C).

3.3. *Conditions creating the vulnerability of livelihoods to output reductions*

People's livelihoods deteriorate when their disposable income falls below (or further below) the effective cost of living, which can occur through five principal mechanisms (or combinations of them):

(1) job losses (when unemployment benefits are inadequate)
(2) a decrease in the disposable incomes of unemployed people due to a reduction in unemployment benefits (or other benefits)
(3) a decrease in workers' disposable incomes due to a reduction in their
  a. hourly wages
  b. working hours
  c. net welfare transfers
(4) a decrease in pensioners' disposable incomes due to a reduction in their
  a. pension benefits
  b. net welfare transfers
(5) an increase in the effective cost of living.

On this basis, we can specify how a reduction in economic output may impair livelihoods. Decreasing economic output implies a decrease in total wage labour, unless accompanied by a corresponding decrease in labour productivity. A decrease in total wage labour, in turn, implies a decrease in either the number of workers (i.e. job losses) and/or in average working hours. If unemployment benefits are inadequate, job losses directly undermine people's livelihoods. Reductions in working hours can create or exacerbate in-work poverty, unless compensated by increases in hourly wages or net welfare transfers relative to the effective cost of living.

Output reductions can also impact livelihoods indirectly if they result in reductions of net welfare transfers or pension benefits (further) below the effective cost of living. These indirect impacts, however, depend on state policy and the specific welfare and pension system in place

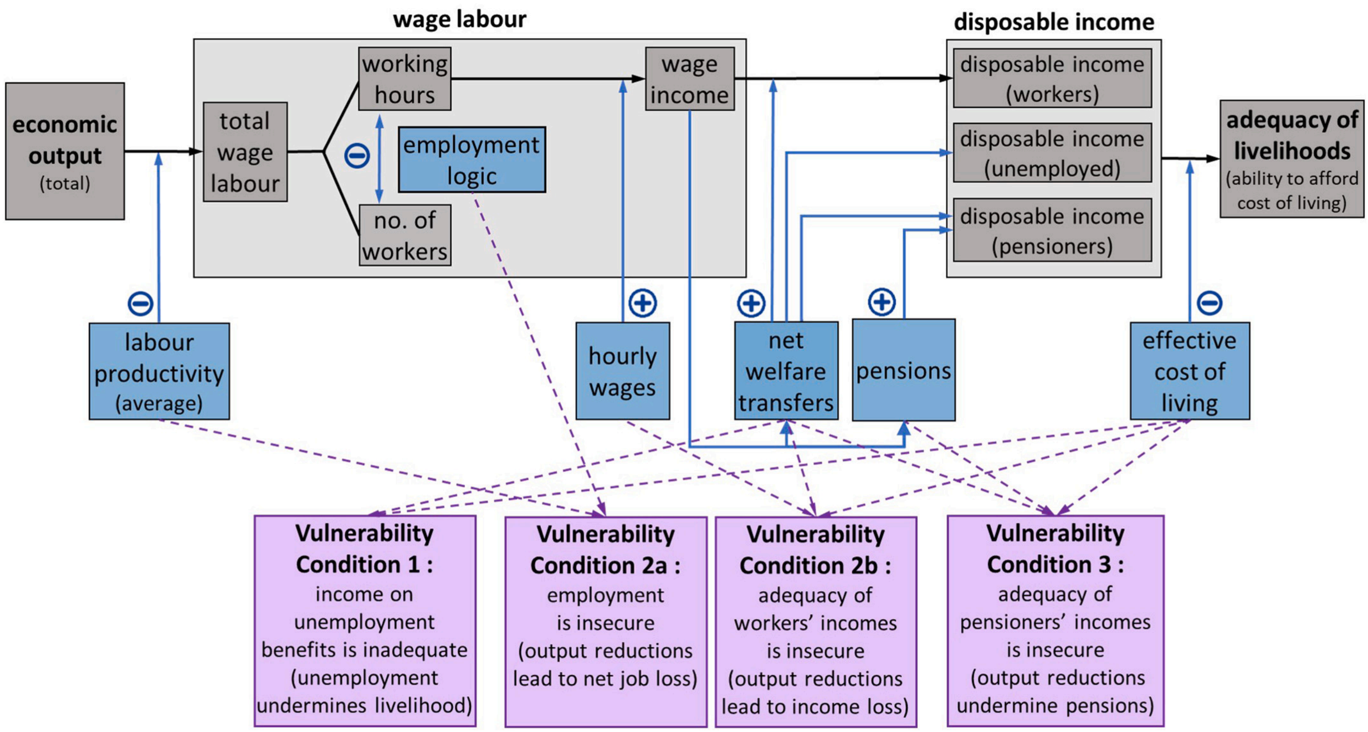

Fig. 4. Conditions for the vulnerability of livelihoods to reductions in economic output (purple boxes). The livelihoods of working-age people are vulnerable to output reductions primarily when (1) disposable income on unemployment benefits falls short of the effective cost of living, i.e. working-age people need a job to secure an adequate livelihood; and (2) (a) employment is insecure or (b) the adequacy of workers' incomes is insecure.[16] The livelihoods of pensioners are vulnerable to output reductions when (3) the adequacy of pensioners' incomes is insecure.

(Chancel et al., 2013; Corlet Walker et al., 2021; Wiman, 2019; Wiman, 2023).

Thus, the livelihoods of working-age people are vulnerable to output reductions primarily when:

(1) livelihoods are dependent on wage labour at the individual level, i.e. unemployment benefits are inadequate to cover the effective cost of living; and
(2) (a) employment is insecure, i.e. there is no mechanism to prevent net job loss; or (b) the adequacy of workers' incomes is insecure, i.e. there is no mechanism to prevent workers' disposable incomes (wage income plus net welfare transfers) from falling (further) below the effective cost of living.

The livelihoods of pensioners are vulnerable to output reductions primarily when:

(3) the adequacy of pensioners' incomes is insecure, i.e. there is no mechanism to prevent pension benefits from falling (further) below the effective cost of living.

Overall, livelihoods are vulnerable if Vulnerability Condition 1 *and* 2 are both met,[15] *or* if Vulnerability Condition 3 is met (Fig. 4).[16]

Thus, our framework suggests that reductions in economic output may impair livelihoods only under specific conditions, and these conditions can be avoided. Whether or not these conditions are met depends on the outlined governing factors which in turn depend on the political-economic system.

In the subsequent analyses, we focus more on vulnerabilities related to wage labour, whilst going into less detail for the more context-dependent cases of pensions and net welfare transfers.

3.4. Empirical example: the (in)adequacy of livelihoods in the UK during and after the Global Financial Crisis

The outlined dynamics around the (in)adequacy of livelihoods and their dependence on economic output and governing factors is visible in the empirical record for the United Kingdom for the years of and after the Global Financial Crisis, illustrated here with a focus on working-age single households (Fig. 5). Between 2008 and 2009, a substantial drop in GDP, only partly offset by decreasing labour productivity, translated into a decline in total wage labour, which in turn manifested in a decline in employment (net job losses) and a reduction in average working hours per worker (Fig. 5, left panel). Even though GDP growth resumed in 2009, employment rates further declined until 2011 and remained below their 2008 levels through to 2014,[17] as the effect of GDP growth on total wage labour was offset by labour productivity growth, and as the increase in total wage labour was partly absorbed by increasing working hours per worker. Hourly wages at the bottom decile increased throughout the period, but at a slower rate than the cost of living of working-age single households, represented here by the Minimum Income Standard (Bradshaw et al., 2008).[18]

Throughout the 2008—2014 period, bottom-decile disposable

[15] Vulnerability Condition 2 is met when either insecurity of employment (2a) is given, or insecurity of adequate incomes for workers (2b), or both.

[16] In this sentence, the terms "and" as well as "or" are used in their meaning as logical operators.

[17] The slow recovery of employment rates (as percentage of the labour force) was also partly due to a growing labour force. Employment levels (number of workers) were back to 2008 levels by 2012.

[18] Whereas our theoretical framework considers the *effective* cost of living, our empirical analysis only represents the cost of living (cost of necessities), as represented by the Minimum Income Standard (see Davis et al. (2018)), but does not account for expenses on prioritised non-necessities.

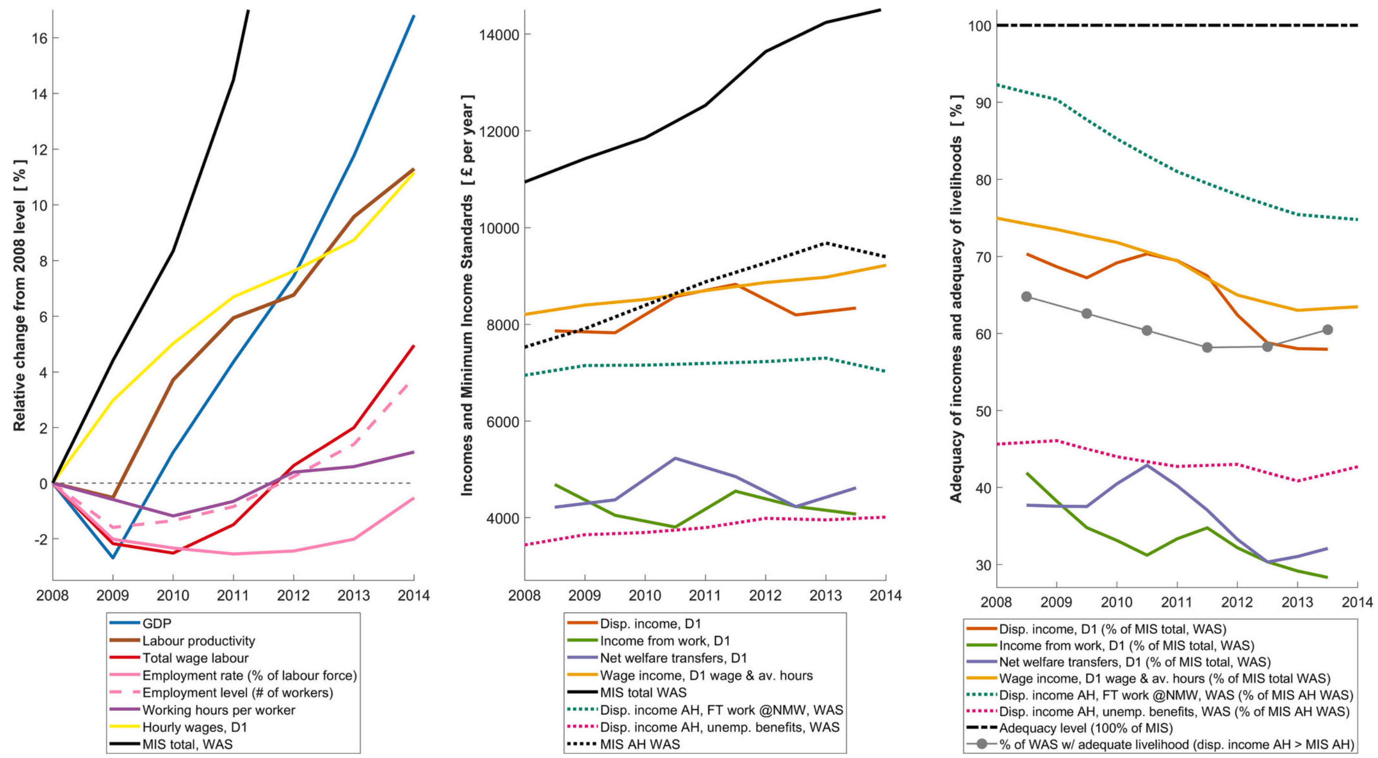

Fig. 5. Changes in the (in)adequacy of the livelihoods of working-age single households in the UK, and key mediating and governing factors, during and after the Global Financial Crisis (2008—2014). Left: Relative changes in economic output (GDP) and key mediating and governing factors in the relationship between economic output and livelihoods. Middle: The cost of living for working-age single households (represented by the Minimum Income Standard) vs. disposable incomes for working-age single households in various employment situations, and various income variables for the bottom decile of the working-age population. Right: Adequacy of these incomes (in relation to the Minimum Income Standard), superimposed with the percentage of working-age single households with adequate livelihoods. In the middle panel, colourful solid lines should be compared to the black solid line, and colourful dotted lines should be compared to the black dotted line (reflecting the ratios shown in the right panel). Abbreviations: D1 = bottom decile; MIS = Minimum Income Standard; WAS = working-age single households; AH = after housing costs; Disp. Income = Disposable income; FT = full-time; NMW = National Minimum Wage. For data sources and calculations, see Supplementary Materials A.

incomes as well as disposable incomes of people on out-of-work benefits, people working full-time on the national minimum wage, and people working average hours on bottom-decile hourly wages all fell dramatically short of the cost of living for working-age single households[19] (Fig. 5, middle panel). Between 2008 and 2009, the drop in employment rates was reflected in a sharp decline in bottom-decile work incomes, which was only partly offset by a slight increase in bottom-decile net welfare transfers, such that bottom-decile disposable incomes declined. In the following years, bottom-decile disposable incomes initially increased but then declined again due to austerity-driven reductions in net welfare transfers.

Even though the assessed disposable income variables overall increased between 2008 and 2014 in absolute terms (Fig. 5, middle panel), they all decreased relative to the rapidly rising cost of living, implying a decline in the adequacy of these incomes (Fig. 5, right panel). Consistent with these trends, and the 2008—2011 decrease and 2012—2014 rebound in employment rates, the percentage of working-age single households with adequate livelihoods declined from 65% in 2008/2009 to 58% in 2011/2012 and rose back to 61% by 2013/2014 (grey dots in Fig. 5, right panel).

Overall, this analysis indicates a profound inadequacy of the livelihoods of UK working-age single households, their vulnerability to output reductions (and the prevalence of Vulnerability Conditions 1 and 2), and their dependence on key governing factors. Not least, it highlights that livelihoods can deteriorate also in times of GDP growth, in particular in an “age of austerity”.

4. Factors creating the conditions for the vulnerability of livelihoods in capitalist economies

To understand which factors create the conditions for the vulnerability of livelihoods in contemporary capitalist economies, we analyse how key aspects of capitalist economies (profit maximisation, competition, and state policy) affect the relationship between economic output and the adequacy of livelihoods (Fig. 6).

4.1. Profit maximisation

Profit maximisation,[20] the dominant operational logic of firms in capitalist economies, involves two main mechanisms: (1) the optimisation of quantity and prices of sales for maximum profit; and (2) the

[19] Based on the available datasets, we compare bottom-decile disposable incomes (before housing costs), as well as the imputed wage incomes (before housing costs) of people working average hours on the bottom-decile hourly wages, to the Minimum Income Standard for working-age singles before housing costs. By contrast, for people working full-time on the National Living Wage and people on out-of-work benefits, we compare disposable incomes after housing costs to the Minimum Income Standard, after housing costs, for working-age single households.

[20] Profit is understood here as the financial surplus (revenue minus cost, including depreciation, maintenance, and interest payments) resulting from the sale of goods, services, or assets.

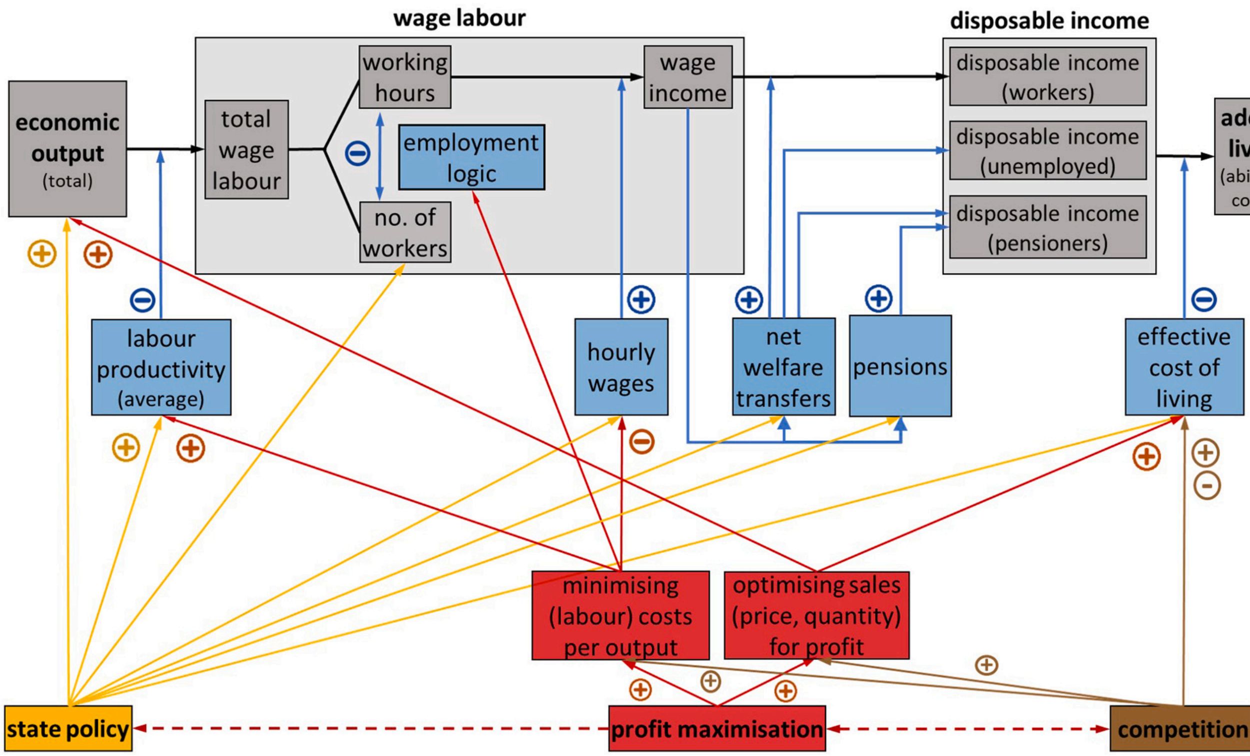

Fig. 6. Effects of profit maximisation, competition, and state policy on the relationship between economic output and livelihoods in capitalist economies. At a given level of output, all mechanisms of profit maximisation (red) impair livelihoods. Competition (brown) partly counteracts and partly exacerbates the negative impacts of profit maximisation. The effects of state policy (yellow) depend largely on the government in power, but under neoliberal capitalism have predominantly negatively impacted livelihoods, while serving profit maximisation.

minimisation of costs per output, importantly including labour costs (Hinton, 2021).

Optimising sales for maximum profit drives up the effective cost of living in two principal ways: first, by expanding the basket of for-purchase necessities and prioritised non-necessities via advertisement, commodification, enclosure, positional consumption, efficiency consumption, planned obsolescence, and induced dependencies on particular commodities (Brand Correa et al., 2020; Hickel, 2022; Jackson, 2017; Kallis, 2014; Mattioli et al., 2020; Siemoneit, 2019); second, by raising prices via monopolies, oligopolies, price cartels, patents, privatisation, advertising, and predatory financing schemes (Bayliss et al., 2021; Haines-Doran, 2023; Hinton, 2021; Jackson, 2017; Stratford, 2020). By increasing the effective cost of living, profit maximisation exacerbates unemployment poverty and in-work poverty (Vulnerability Conditions 1 and 2).

The minimisation of labour costs per output is realised through three main mechanisms: first, by maximising labour productivity, e.g. through technological improvements, innovation, automation, and productivity quotas (Jackson, 2017; Jackson and Victor, 2011, 2020); second, by minimising hourly wages, including by offshoring production to low-wage countries; and third, by optimising employment (hiring or firing, increasing or decreasing working hours) based on what is most profitable. Through these cost-minimising mechanisms, profit maximisation exacerbates unemployment, in-work poverty, and insecurity of employment and wage incomes at a given level of output (Vulnerability Condition 2).

The minimisation of wages and employment also reduces aggregate pension contributions (which scale with wage and employment levels), thus undermining pensions – in particular for pay-as-you-go schemes, where current benefits are financed through current contributions. This effect contributes to a shift to funded pension schemes, where pension contributions are invested for financial returns to fund pension benefits. Funded pensions are, however, more vulnerable to output reductions, as their financial viability is undermined by declining returns on investment and increased risks to financial assets via business failures, drops in share values, stranded assets or stock market crashes (Aigner et al., 2022; Chancel et al., 2013; Tokic, 2012; Wiman, 2019; Wiman, 2023). Non-contributory pensions or other state-backed pensions are less vulnerable because state spending is not directly tied to output (Kelton, 2020; Wiman, 2019; Wiman, 2023). Through these dynamics, profit maximisation also contributes to the insecurity of pension benefits (Vulnerability Condition 3).

All of these effects make profit maximisation a crucial factor in the vulnerability of livelihoods to output reduction. Even at a constant level of output, the outlined mechanisms of profit maximisation all tend to impair livelihoods. At a given level of output, higher aggregate profits imply lower aggregate wages (lower employment and/or hourly wages) and/or higher effective cost of living than would be the case with lower aggregate profits. Thus, in an economy dominated by profit maximisation, livelihoods deteriorate unless compensated by other mechanisms. These arguments expand upon previous analyses that suggest that for-profit business structures (Hinton, 2021), rent extraction (Stratford, 2020), capital accumulation (Blauwhof, 2012; Piketty and Saez, 2014), and the pursuit of "private riches" (Foster and Clark, 2009; Hickel, 2019) have socially detrimental effects, in particular in the absence of economic growth.

At the same time, profit maximisation is also a key driver of economic growth. Profit-driven expansion of sales and investment directly increases output. At the firm-level, expansion also increases the ability to invest, and to influence markets and politics (Richters and Siemoneit, 2019). Profit-maximising firms use lobbying, donations, media power, PR campaigns, and the threat of job cuts or capital flight to sway state policy to support profit maximisation (Chomsky and Barsamian, 2017; Gough, 2016; Hinton, 2021). In particular, firms actively push for policies that foster economic growth because growth in overall consumption makes it more likely for firms to be able to increase sales and prices and thus profits, whilst limiting the risk of social unrest from deterioration of livelihoods (Cahen-Fourot, 2022; Hinton, 2020; Jackson, 2017): if the pie is growing, it is easier to obtain a larger piece.

Importantly, the vulnerability of livelihoods actually benefits profit maximisation: the vulnerability provides a political justification for pursuing economic growth (to the benefit of profit), and facilitates more aggressive minimisation of labour costs. When livelihoods are dependent on wage labour, and wage labour is scarce or insecure, workers are economically coerced[21] into more-or-less any job, no matter how low the wage, how bad the working conditions, or how meaningless the task they perform (see also Graeber, 2018; Hickel, 2022; Stratford, 2020).[22]

4.2. Competition

Competition is often portrayed as a key prerequisite for markets to deliver desirable outcomes, in particular by driving down prices. In reality, however, competition has mixed outcomes. Moreover, real-world competition is imperfect competition. Patents, intellectual property rights, trade agreements, and influential international institutions (e.g. the WTO, IMF, and World Bank) effectively undermine competition for the benefit of particular interests. Privatisation of public services and insufficient checks on concentration and consolidation have enabled private monopolies, oligopolies, and cartels – i.e. little to no competition – in key sectors of the economy, including necessities such as water, electricity, and public transport (Bayliss et al., 2021; Haines-Doran, 2022). Even seemingly more diverse and competitive sectors such as food are often dominated by a small number of large companies (Patel, 2012).

Nevertheless, even imperfect competition often pushes firms to reduce prices (Shaikh, 2016), in particular for commodities where demand increases with decreasing prices. This may partly counteract the price-increasing tendencies of profit maximisation, but only to the extent that price reductions are believed to benefit profitability in the short or long run: after all, it is profit that firms are competing for. Indeed, the need for firms to reinvest in order to remain competitive reinforces the pursuit of profit and expansion (Richters and Siemoneit, 2019). Even in competitive markets, commodities are often sold with large profit margins if companies can sufficiently foster demand, as for example in the case of SUVs (Keil and Steinberger, 2023). Simultaneously, competition also drives up sales through product variety, innovation, niche-filling, and more aggressive marketing (Hinton, 2020). To the extent that competition does lead to price reductions, it also increases demand for some commodities. On balance, competition therefore does not necessarily reduce the effective cost of living but may in fact increase it, or is simply outweighed by the price-increasing effects of profit maximisation. In the UK, for example, the cost of living have significantly increased between 2008—2018, even after controlling for inflation (Davis et al., 2018).

Finally, price competition also leads to more aggressive cost minimisation, thus exacerbating in-work poverty and the insecurity of employment and adequate wage incomes (Vulnerability Condition 2; see Section 4.1). In the absence of full employment, and so long as livelihoods depend on wage labour, competition for labour is not enough to stop these tendencies (see also Kalecki, 1943). In sectors with limited scope for labour productivity growth or price increases (e.g. adult social care), competition can also lead to declines in service quality (Corlet Walker et al., 2022; Forder and Allan, 2014).

4.3. State policy

State policy affects the relationship between economic output and livelihoods by determining economic objectives, welfare provision, net welfare transfers, and the operation of public provisioning, as well as by influencing consumption, markets, and firms' behaviours through laws, regulations, and fiscal or monetary measures (see also Gough, 1979, 2016).

While the effects of state policy on the relationship between economic output and livelihoods depend on prevailing policies and thus on the government in power, some tendencies have been fairly consistent across governments and countries. Most governments foster labour productivity (for example by supporting business-oriented research and development), which contributes to insecurity of employment (Vulnerability Condition 2). Simultaneously, most governments seek to prevent high levels of unemployment, given the threat it poses to political stability. Welfare provision varies across governments and countries, but is largely insufficient to secure the livelihoods of unemployed people and low-wage workers (Vulnerability Conditions 1 and 2) (Bazoli et al., 2022; Cantillon et al., 2015; Figari et al., 2014; Frazer and Marlier, 2016).

Most contemporary governments pursue economic growth as their primary policy goal,[23] typically justifying it with reference to jobs, and thus implicitly, livelihoods (Mayrhofer and Wiese, 2020; Schmelzer, 2015). Another reason why governments pursue economic growth is a set of rebutted but nevertheless persistent orthodox ideas about state finance, including the claim that the state would need to first "collect" money (through taxes) to finance state spending, and that economic growth would be needed to finance increases in welfare spending (for a rebuttal, see Olk et al. (2023), as well as Section 5.1). More fundamentally, economic growth is seen as a way to appease both capitalists and workers, and thus to limit distributional conflict, given that growth in affluence (GDP per capita) could theoretically facilitate increases in incomes for both capitalists and workers (although in reality, real wages have stagnated in many places, especially at the bottom of the income distribution; see also Section 3.4).

With the rise of neoliberal capitalism in the 1970s, governments have increasingly minimised net welfare transfers, eroded or privatised public services, squeezed public sector wages, and selectively minimised regulation and state intervention in markets (including labour markets). Under the paradigm of austerity, these tendencies have been pushed to the extreme (Stuckler and Basu, 2013). All of these neoliberal tendencies contribute to unemployment poverty, in-work poverty, and insecurity of employment and adequate incomes for workers (Vulnerability Conditions 1 and 2; see also Section 3.4). Indeed, austerity measures in the period of and after the Great Financial Crisis were associated with (greater) deterioration of livelihoods (Ólafsson et al., 2019b).

Notably, dominant policy patterns such as the pursuit of growth, the minimisation of taxes and redistribution, and the erosion of welfare provision are all in the interest of profit maximisation. They may hence reflect state capture by vested interests, and a "state imperative" to support private profit and to pursue economic growth to avoid redistribution (Corlet Walker et al., 2021; Hausknost, 2020; Richters and Siemoneit, 2019; Schmelzer, 2015). Moreover, state policy is also affected by international and transnational geopolitical and economic power relations, as exemplified by the case of Troika-induced austerity

[21] While the economic coerciveness of wage labour applies to all workers, it is in particular low-skilled workers that are easily exploitable because they have a weaker position on the labour market. The fact that many workers are motivated to work for reasons beyond economic coercion (e.g. purpose, community) does not change the fact that they have to take some job to secure their livelihoods.

[22] Lower wages, in turn, force people to work more hours to secure their livelihoods, thus increasing demand for wage labour, which enables employers to further squeeze wages and working conditions.

[23] State policy influences economic output through government spending and taxation (and their effects on people's purchasing power), monetary policy, investment in research and development, industrial strategy, planning policy, and crisis intervention (see also Büchs, 2021a; Gough, 1979).

in Greece following the Global Financial Crisis (Teperoglou et al., 2014).

4.4. From vulnerability to output reduction, to dependence on output growth

The conditions underpinning the vulnerability of livelihoods to economic contraction are pervasive in – and perhaps constitutive of – capitalist economies, primarily due to the effects of profit maximisation, inadequate labour protections, and insufficient welfare provision. In the context of labour productivity growth or a growing labour force, livelihoods in capitalist economies are not just vulnerable to reductions in output, but even dependent on growth in output (see also Jackson, 2017; Jackson and Victor, 2011).[24] In capitalist economies, continuous growth is thus required (albeit not necessarily sufficient) to maintain even just a constant adequacy of livelihoods, whereas in the absence of growth, livelihoods are very likely to deteriorate – a situation that creates an *economic growth imperative.*[25]

Given that the output of necessities is by definition roughly constant for a given population, continuous growth in overall output requires producing a continuously growing amount of non-necessities. In capitalist economies, consuming (or accessing) necessities requires not only the production of these necessities but, paradoxically, also the production and consumption of an ever-increasing amount of non-necessities. Capitalist economies are thus profoundly inefficient, and often ineffective, at securing livelihoods, and specifically rely on escalating overconsumption and consumerism, with all the problems that these entail (Jackson, 2017; Kallis, 2014; Pirgmaier, 2020).

5. Overcoming the vulnerability of livelihoods to reductions in economic output

Our analysis highlights fundamental limitations of predominant government responses to output reductions which revolve around attempts to reinstate economic growth (via tax cuts, stimulus spending, quantitative easing, or lowering interest rates). Such responses fail to act on or account for key governing factors and vulnerability conditions that we have identified, calling into question how suitable they are for protecting livelihoods. Even if they do succeed at reinstating economic growth, they do not prevent loss of livelihoods during and in the wake of the crisis (see Section 3.4). Indeed, in most OECD countries, government responses to the Global Financial Crisis have failed to prevent significant loss of livelihoods (Cazes et al., 2013; Ólafsson et al., 2019a; Osberg and Sharpe, 2014). Fundamentally, a strategy that focuses on trying to prevent or counter the occurence of output reductions (rather than their effects) is ill-suited at a time when output reductions are becoming increasingly likely, and indeed increasingly unavoidable (Section 1). It is not output reductions but the vulnerability to output reductions that can and should be precluded. In what follows, we identify various points of intervention for overcoming the vulnerability, and map out available levers for acting on them.

5.1. Interventions dismantling the vulnerability conditions

Livelihoods are vulnerable to output reductions when Vulnerability Conditions 1 (inadequacy of income on unemployment benefits) and Vulnerability Condition 2 ((a) insecurity of employment; (b) insecurity of adequate incomes for workers) are fulfilled, or when Vulnerability Condition 3 (insecurity of adequate incomes for pensioners) is fulfilled.[16] Accordingly, the vulnerability could in principle be overcome by dismantling Vulnerability Condition 1 or 2 (the latter would require dismantling both 2a and 2b) and dismantling Vulnerability Condition 3.[16] For each vulnerability condition, we identify changes in governing factors that could dismantle the condition when meeting specific criteria, and outline interventions that could deliver or contribute to the required changes (Fig. 7).[26,27]

Vulnerability Condition 1 could be dismantled by reducing the effective cost of living and/or increasing net welfare transfers for unemployed people, to the point where the latter match or exceed the former. The effective cost of living could be reduced by regulating prices of market-provided necessities, as well as by expanding public services and providing them for free or at low prices, in line with proposals for universal basic services (Coote and Percy, 2020; Gough, 2019; Stratford and O'Neill, 2020) or proposals for an expansion and decommodification of the foundational economy (Bärnthaler et al., 2021). Moreover, shifting to preventative care could reduce care needs and thus also reduce the cost of living (Corlet Walker et al., 2021). Increases in unemployment benefits would need to be embedded in a broader transformation of the labour-welfare nexus to overcome structural constraints (Cantillon et al., 2020), for example through a minimum income guarantee that closes any gaps between disposable incomes and the effective cost of living (Tims and Stirling, 2022), or through a universal basic income (Atkinson, 2015; Büchs, 2021b; Van Parijs and Vanderborght, 2017; Varoufakis, 2016).[28]

Dismantling Vulnerability Condition 2a would require protecting current employment levels, or securing full employment. Current employment levels could be protected through worktime reduction that fully absorbs any reduction in total wage labour and thus prevents net job loss (Jackson, 2017; Jackson and Victor, 2011; Kallis et al., 2013; Lange, 2018; Victor, 2008). Reducing labour productivity via a shift to labour-intensive (low-labour-productivity) sectors such as care could also contribute to protecting employment, as it would offset the effect of output reductions on total wage labour (Hardt et al., 2021; Jackson, 2017; Jackson and Victor, 2011, 2020; Lange, 2018). Full employment could be achieved through a job guarantee (Kelton, 2020; Tcherneva, 2020), or by reducing the average worktime of those currently employed to free up sufficient wage labour for those seeking a job (work redistribution).

Vulnerability Condition 2b could be dismantled by maintaining workers' current disposable incomes relative to the cost of living, or by securing adequate incomes for all workers. To maintain workers' current income levels, any worktime reductions resulting from output reductions would need to be compensated with corresponding increases in hourly wages (Kallis et al., 2013) or net welfare transfers. Adequate incomes for

[24] Labour productivity growth implies a decline in total wage labour, unless output grows correspondingly.

[25] The political imperative to prevent serious deterioration of livelihoods is also the central pillar of what Richters and Siemoneit (2019) call a "political growth imperative". They further suggest that this political growth imperative is also contingent upon political opposition to sufficient redistribution, which they attribute to the dominance of the ideology of meritocracy, but which may be fundamentally rooted in the dominance of profit interests and especially rentiers (Stratford, 2020). In our analysis, these limits to redistribution are reflected in the inadequacy of wage incomes and net welfare transfers.

[26] For brevity, our analysis is presented here at a general level. However, most income-boosting measures presented here should be understood as applying only to the segment of the population with inadequate or insecure livelihoods. They are not intended to raise incomes substantially above the effective cost of living, or to increase incomes that already substantially exceed the effective cost of living.

[27] While various versions of these interventions have been proposed from various angles, our framework enables us to systematically map out the array of interventions that could in principle overcome the vulnerability of livelihoods, and specify thresholds that these interventions would need to reach to dismantle the respective vulnerability conditions.

[28] Given that the costs of living and the shortfall depth of disposable incomes below the costs of living vary substantially across households (Davis et al., 2018; Goedemé et al., 2015), a uniform increase in net welfare transfers by itself will either leave some people substantially below the adequacy level, and/or lift many substantially above the adequacy level (with implications for inflation and sustainable consumption corridors).

all workers could be secured through an economy-wide living wage[29] (Waltman, 2004), together with a minimum income guarantee that would plug any gaps[30] to the effective cost of living through need-based increases in net welfare transfers (Tims and Stirling, 2022). In both cases, any increases in the effective cost of living would need to be matched by corresponding absolute increases in salaries or net welfare transfers, whereas measures to reduce the effective cost of living (outlined above) would improve the adequacy of workers' incomes.

Dismantling Vulnerability Condition 3 would require maintaining current pension benefits relative to the effective cost of living, or securing adequate pension benefits for all pensioners. Both could be achieved through unfunded pension schemes that entail a benefit promise, including through pay-as-you-go schemes or, more robustly, through non-contributory (state-financed) schemes (Aigner et al., 2022; Wiman, 2019; Wiman, 2023). These latter, transfer-like pension schemes lend themselves for providing a basic pension guarantee[31] that covers the effective cost of living (a "living pension"), and provide more flexibility for intentional steering, as their financing is managed as part of overall state finances (discussed below). Maintaining current pension benefits or securing adequate pension benefits through pay-as-you-go schemes may require increases in contribution rates and thus higher deductions from wage incomes (in particular in light of demographic trends), and as such, may need to be combined with other measures that secure the livelihoods of workers (Aigner et al., 2022; Chancel et al., 2013; Wiman, 2019; Wiman, 2023).[32] Alternatively or complementarily, pensioners' livelihoods could be secured or supported through universal basic services, universal basic income, or minimum income guarantee schemes. By contrast, funded pension schemes are less suitable in a volatile or contracting economy, due to declining financial investment returns and increased risks to financial assets (see Section 4.1), and would thus need to be complemented or backed up by adequate state pension schemes.

Interventions that dismantle Vulnerability Conditions 1 or 2 and Vulnerability Condition 3 could maintain the current adequacy of livelihoods even in a non-growing or contracting economy.[16] Some interventions could go even further. The combination of a living wage and either a job guarantee or work redistribution could in principle secure adequate livelihoods for all workers. A fully-fledged version of universal basic services that provides free access to all necessities (a "Universal Decent Living Entitlement"), or a fully-fledged minimum income guarantee that covers the effective cost of living (a "Universal Decent Living Income"), or a combination thereof,[33] could in principle even secure adequate livelihoods for everyone, whether the economy grows or declines. Several of these interventions support or reinforce each other,[34] and could be bundled together into policy packages that could also secure adequate livelihoods for all without economic growth. Two particularlicy promising policy packages are worth mentioning: first, the Social Guarantee (Button and Coote, 2021) which combines universal basic services, a living wage, and a minimum income guarantee; and second, the Universal Autonomy Allowance (Liegey and Nelson, 2020) which combines universal basic services, free access to basic goods, worktime reduction, a transitory universal basic income, and a maximum income. While the outlined livelihood-securing interventions would be desirable even when the economy is growing, they are essential when the economy is volatile or contracting.

Many of these interventions would involve increased state spending on welfare and public provisioning – a substantial but manageable challenge, and importantly, one that is often misunderstood. For most states, there is no inherent need to first collect money (revenue) to "finance" intended spending because, in fact, states that issue their own currency create the money they spend through the very act of spending it: they "spend it into existence" (Costanza et al., 2017; Kelton, 2020; Jackson et al., 2022; Keen, 2022). Despite this economic reality, many states follow self-imposed or supra-nationally imposed rules to collect as much in revenue as they spend. Such rules are however political choices rather than inherent economic necessities. The socially relevant constraints on increased welfare spending are its ecological and socio-economic effects – and society's capacity to manage these (Hickel, 2021; Olk et al., 2023).[35] The basic issue is that increased spending drives up effective demand, which – if left unchecked – could lead to adverse effects on ecological impact, inflation, exchange rates, or the balance of payments (*ibid.*). In the context of declining output – and especially in a scenario of intentional, ecologically motivated reductions in production and consumption – increased welfare spending thus needs to be accompanied with measures to reduce and shift effective demand, limit imports, and control prices (*ibid.*).[36] Fortunately, there is a range of levers for achieving this, incluing (i) fair and progressive increases in tax rates, in particular on profit, assets, financial wealth, speculative financial transactions, high incomes, luxury consumption, and environmental damage (Bailey, 2015; Costanza et al., 2017; Olk et al., 2023); (ii) price controls and decommodification of necessity provisioing (Olk et al., 2023); (iii) limiting demand in less necessary sectors, including through credit regulation (Olk et al., 2023; Tankus, 2022) (iv) reducing other government spending, e.g. military spending or fossil fuel subsidies; (v) voluntary or forced savings (Levey, 2020), including through government bond sales to the public; (vi) complementary currencies

[29] In a situation of full or near-full employment or in the context of a job guarantee, a public-sector-only living wage may have a similar effect as it might force the private sector to match this wage standard.

[30] Given that both the effective cost of living and the ability to work (e.g. due to illness or care responsibilities) differ substantially across households, any given wage level will either leave some workers substantially below or lift many substantially above the effective cost of living, without need-based adjustments through net welfare transfers.

[31] Basic pension guarantees exist in many affluent countries, although they vary in terms of their adequacies (see also OECD, 2023).

[32] These considerations highlight that securing the livelihoods of pensioners requires an integrated approach to livelihoods (as outlined in this paper), going beyond pension governance alone.

[33] For example, a minimum income guarantee that matches the reduced cost of living that would result from the simultaneous implementation of (partial) universal basic services.

[34] For example, interventions that reduce the effective cost of living or increase unconditional welfare transfers would help to secure pensions, and would reduce minimum wage requirements. Interventions that would maintain or increase wage incomes would also help to secure pensions.

[35] For spending aimed at generating specific new or additional production or provisioning (e.g. low-carbon infrastructure), a crucial additional constraint is the productive capacity of the economy, in particular the availability of the necessary labour, resources, factories, and know-how. For spending on livelihood-securing interventions, productive capacity limits are mainly relevant in relation to their impacts on inflationary pressures, or for generating additional (rather than socialised) public provisioning (e.g. expanding public transport).

[36] How constrained countries are in their spending and which counterbalancing measures they need to take to prevent adverse socio-economic effects, depends on their degree of monetary sovereignty. High monetary sovereignty entails that countries (1) issue their own currency; (2) collect taxes in their own currency; (3) maintain a floating exchange rate; and (4) have no debt in foreign currencies. Countries with less monetary sovereignty are relatively more constrained in their spending decisions and must ensure that they can either generate export revenues or borrow some foreign currency. Affluent countries with high monetary sovereignty include the USA, the UK, Japan, Canada, Australia, and New Zealand. By contrast, Eurozone countries have more limited monetary sovereignty: while they have their own national central banks that can each issue the shared currency, their spending is constrained by supra-nationally determined rules on debt and deficit (e.g. the Stability and Growth pact). However, Eurozone countries differ in their degree of monetary sovereignty, depending on their trade deficit, and their ability to produce a surplus of internationally demanded and competitive goods and services, their influence on the European Central Bank, and other factors.

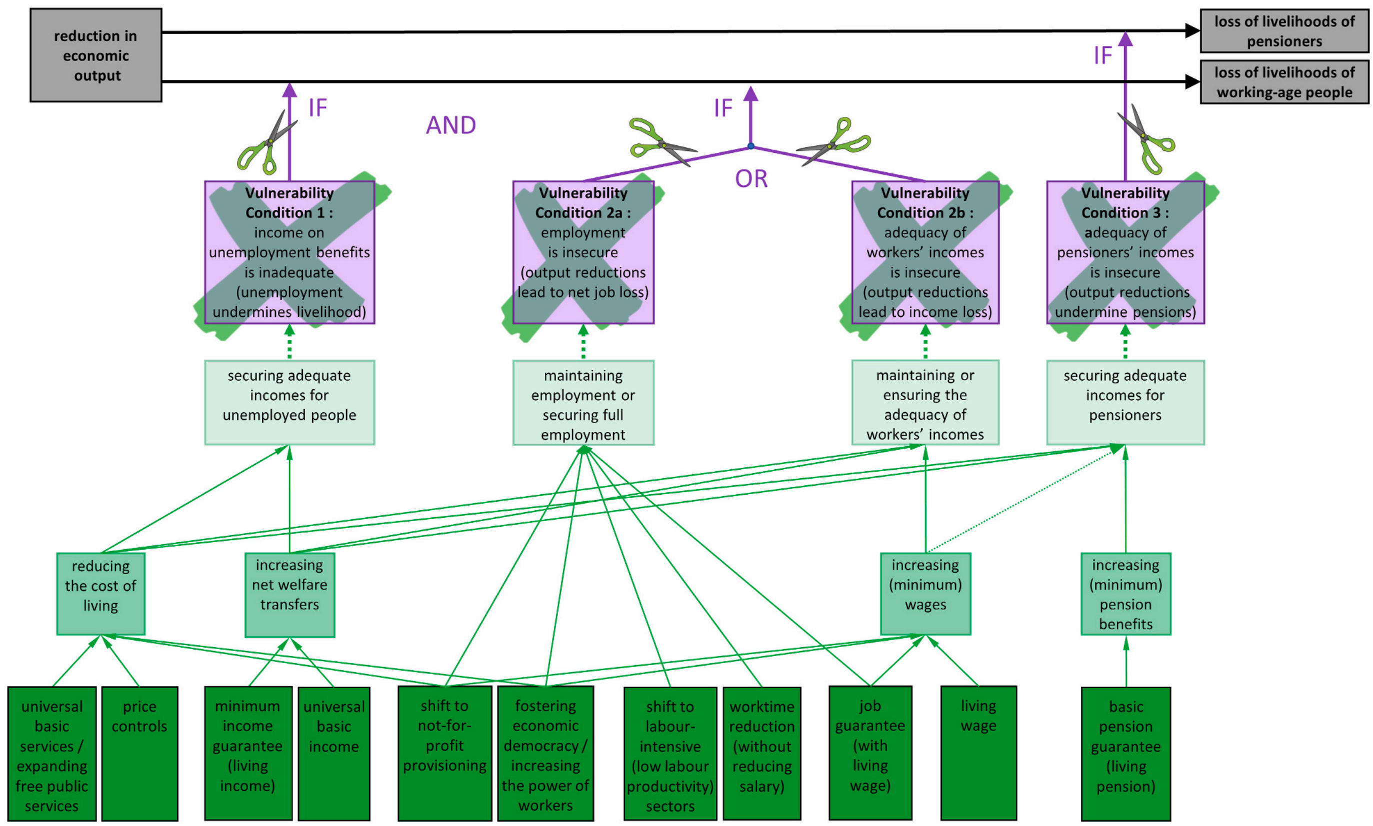

Fig. 7. Stylised interventions that could in principle dismantle the vulnerability conditions and thus overcome the vulnerability of livelihoods to reductions in economic output. Reductions in economic output lead to loss of livelihoods (black arrows) *if* the respective vulnerability conditions are in place (conditionality indicated by purple arrows, with logical operators "AND" / "OR" indicating which combinations of vulnerability conditions is required for the vulnerability to arise). Livelihood-securing interventions (dark green boxes) cause changes in key governing factors (medium green boxes) which – when meeting specific criteria (specified in main text) – amount to outcomes (light green boxes) that dismantle the vulnerability conditions (purple boxes; with dotted green arrows and green crosses indicating their dismantling), and thus eliminate the basis for the vulnerability of livelihoods to output reduction (green scissors cutting purple arrows). The thin dotted green arrow indicates that increasing (minimum) wages can but does not necessarily contribute to securing adequate incomes for pensioners - depending on the pensions scheme.

(Olk, 2023); and (vii) limiting imports through demand reduction, regulation, substitution, and sovereign production, in particular for energy and food (Olk et al., 2023).

While some ecological benefits of some of the outlined livelihood-securing interventions have been discussed (Bohnenberger, 2020; Büchs, 2021b; Coote, 2021; Costanza et al., 2017; Jackson, 2017; Lawhon and McCreary, 2020), little attention has been paid to what is probably their main ecological potential: their ability to unlock stringent environmental policies that may entail reductions in economic output, by safeguarding livelihoods against output reductions, thus making such urgently needed environmental policies socially sustainable and politically more palatable. Whereas in contemporary capitalist economies, environmental and social goals are effectively pitted against each other, the outlined interventions could reconcile environmental and social goals, and thus form a potential point of convergence between environmental, social, and labour movements. As such, these interventions could also lay the foundations for a Just Transition (Newell and Mulvaney, 2013).

5.2. *Interventions tackling key factors that create the vulnerability conditions*

An important complementary set of interventions – which could contribute to overcoming the vulnerability but not necessarily dismantle it on their own – consists of tackling the main factors that create these vulnerability conditions in the first place, in particular profit maximisation and the structures that underpin it (Fig. 7). Shifting away from profit maximisation would require changing the structure and operational logic of firms towards a not-for-profit logic that supports rather than undermines livelihoods (and broader social and ecological goals) – a logic already embodied by consumer cooperatives and credit unions (Gerber and Gerber, 2017; Hinton, 2021; Parrique, 2019). How such a shift could be realised in practice, and to what extent it could be driven bottom-up or catalysed top-down through policies such as caps on wealth and income (or specifically on capital income), is a crucial yet lightly trodden area for future research.

A fundamental structure that underpins the mechanisms of profit maximisation is the power imbalance between company owners and workers/consumers. Redressing power imbalances in firms, markets, and politics is crucial for protecting and improving livelihoods

(Stratford, 2020). Important interventions towards this end include electoral campaign finance reform, a ban on corporate lobbying, strengthening trade unions, and fostering economic democracy, e.g. through worker cooperatives, consumer cooperatives, or worker representation on company boards (Hinton, 2021; Parrique, 2019; Stratford and O'Neill, 2020).

Importantly, interventions that would overcome the dependence of livelihoods on wage labour or the insecurity of employment and workers' incomes (Section 5.1) would also reduce power imbalances between company owners and workers. Much of the prevailing power of company owners over workers rests on the fact that working-age people are dependent on wage labour for their livelihoods,[37] and that wage labour is scarce and insecure. Workers can be exploited so long as declining or quitting a job would put them at existential risk, i.e. so long as wage labour is *economically coercive*.[18] If wage labour were no longer scarce and economically coercive, the power of company owners over workers would dwindle, as would their political power that derives from the threat of job cuts. As such, interventions that dismantle the vulnerability conditions could also profoundly improve working conditions, autonomy, and labour markets, and could facilitate more fundamental changes in the political-economic system: they are "non-reformist reforms" (Gorz, 1968).

5.3. Limits to safeguarding livelihoods against rapid and deep output reductions

There are, of course, limits to the magnitude, speed, and type of output reductions[38] that the outlined interventions can safeguard against. Given that adequate livelihoods fundamentally require both the ability to afford necessities and the availability of necessities (Section 2), output reductions that significantly undermine the availability of necessities also undermine livelihoods.[39,40] To secure the availability of necessities, any output reduction would need to be limited to the realm of non-necessities and the overconsumption of necessities. Thus, the share of non-necessities in output marks an upper limit to the magnitude of output reductions against which livelihoods can be safeguarded (at least based on what is currently considered necessities). Estimates of the "macroeconomic surplus" (Concialdi, 2018) suggest that this upper limit may be around 40% in France, but this threshold differs by country, depending on affluence.

To the extent that necessities are provided through markets and for profit, the magnitude and speed of output reductions also affect the likelihood of disruptions in supply chains through bankruptcies, financial market crashes, or price fluctuations.[41] To insulate the availability of necessities from volatile market dynamics, necessity provisioning could be taken into democratic control and public ownership, or organised through local not-for-profit cooperatives (Boillat et al., 2012).

The different livelihood-securing inverventions outlined above differ in terms of how much their efficacy will be impacted by the magnitude or speed of output reduction. Livelihood-securing interventions that also reorient necessity provisioning towards public welfare rather than private profit (e.g. universal basic services) are likely to be more effective and resilient in securing both the availability of necessities and the ability to afford them, compared to interventions that affect only the consumption side (e.g. universal basic income), only parts of necessity provisioning (e.g. job guarantee), or only the organisation of wage labour (e.g. worktime reduction, living wage). For example, disbursing a universal basic income without reigning in profit seeking and rentier power might lead to increases in the prices of necessities, as landlords, energy companies and other rentiers would try to profit from it (Stratford, 2020). Universal basic services, on the other hand, would be less likely to lead to inflation, as public services would be largely decommodified, or at least under public control. Policies such as work redistribution also face limits in terms of how fast people can be retrained for different jobs.

Finally, rapid and deep output reductions also add to the challenge of ensuring macro-economic stability in the context of increased state spending on welfare and public provisioning, due to greater risks to price stability and balance of payments, declining financial investment returns, and increased risk to financial assets, on top of population ageing.

6. Discussion

6.1. Profit maximisation vs. livelihoods

Our analysis identifies profit maximisation as a key factor in the vulnerability of livelihoods to output reductions. At a given level of output, profit maximisation tends to impair livelihoods. We argue that the reverse is also true: at a given level of output, securing or improving livelihoods tends to curtail profit opportunities. Most of the outlined interventions would effectively curb profits. An economy that secures livelihoods would have substantially reduced scope for profit (Hickel, 2022; Hinton, 2021; Jackson and Victor, 2020; Parrique, 2019).

Consequently, in capitalist economies, the impact of output reductions on livelihoods is inversely related to their impact on profits: the more that profits are prioritised, the more livelihoods are impaired. In effect, livelihoods are sacrificed to the benefit of profit makers. In the early days of the Covid-19 pandemic, many firms paid out dividends to shareholders while simultaneously firing employees (Whoriskey, 2020). And in the 2022/2023 energy crisis, energy companies are making record profits while families cannot afford to heat their homes (Bychawski, 2022).

Importantly, the vulnerability of livelihoods is not just a side-effect of profit maximisation but also an instrument of profit maximisation. First, a situation in which livelihoods are dependent on wage labour, and in which wage labour is insecure, enables capitalists to drive down wages and cut corners on working conditions (see also Hickel, 2022; Stratford, 2020). Second, the dependence of livelihoods on economic growth also serves profit makers because profit maximisation benefits from economic growth, and hence benefits from the legitimacy that growth gains if it is seen as necessary for livelihoods. Growth may be justified primarily in the name of livelihoods but pursued primarily for the sake of profits. Thus, it is in the interest of profit to sustain the vulnerability of livelihoods (see also Hickel, 2022).

Based on this analysis, the pursuit of profit may be seen as fundamentally opposed to securing people's livelihoods. Quite possibly, it is not the vulnerability of livelihoods to output reductions, but rather the vulnerability of profits to output reductions, that obstructs stringent environmental policies. In the 21st century, with growth potentially coming to an end, our ultimate choice may be between securing profits and securing livelihoods. Securing profits means sacrificing livelihoods; and securing livelihoods means shifting away from profit maximisation.

[37] A key factor in the dependence on wage labour is the enclosure of the commons and other means of production, preventing people without significant capital to self-produce or start their own business (see also Hickel, 2022). The dependence on wage labour is further entrenched by the social status attached to jobs, and the role of work for people's sense of meaning and purpose in society.

[38] Reductions in economic output are assumed here to be driven or accompanied by reductions in physical output (not by decommodification of necessities – the latter would improve livelihoods).

[39] Our framework hinges on the assumption that necessities are available, and is thus less suited for cases where the availability of necessities is not given, indicating a limit to the scope of our analysis.

[40] Of course, livelihood-securing interventions by themselves cannot safeguard necessity provisioning against physical disruptions (e.g. due to climate extremes) but only against economic disruptions (output reductions).

[41] Markets dominated by for-profit businesses are particularly fragile as the latter tend to abandon provisioning activities that become unprofitable, and prioritise short-term profitability over resilience.

Efforts to implement livelihood-securing policies could thus face fierce resistance from powerful vested interests (see also Blauwhof, 2012), and likely need to be accompanied by efforts to tackle power imbalances and the dominance of profit motives in businesses.

6.2. Revisiting the growth narrative

Our analysis refutes the dominant narrative that economic growth is indispensable for adequate livelihoods. Economic growth is required for securing livelihoods only under certain conditions that arise from specific institutional arrangements, which in turn reflect political choices.

Should livelihoods be dependent on wage labour, and should the availability and remuneration of wage labour be determined by capitalists and volatile markets? Should labour productivity grow in any circumstance, and should its gains be used to increase profit, wages, or leisure? And fundamentally, should societies prioritise livelihoods or profits?

These political choices are crucial for the adequacy of livelihoods. However, the growth narrative dodges these fundamental political questions, diverts attention from the perhaps unpopular way these questions are implicitly answered by neoliberal capitalist institutions, and replaces them with the supposedly apolitical non-question of growth.

Moreover, economic growth is not at all a guarantor of adequate or improving livelihoods. Our framework highlights that economic growth in itself tells us little about the adequacy of people's livelihoods, and whether livelihoods are improving or not (see also Sullivan and Hickel, 2023). Economic growth leads to more jobs only if it outpaces labour productivity growth, or if any net reduction in total wage labour is compensated by a larger reduction in average working hours (i.e. increased work sharing). Moreover, growth is only likely to improve livelihoods if the economic growth rate exceeds the rate of return on capital (Piketty and Saez, 2014) and in particular the rate of rent extraction (Stratford, 2020). Indeed, in many countries, growth has demonstrably failed to provide jobs or to keep inequality in check (Martus, 2016; Máté, 2010; Piketty, 2014; see also Section 3.4). A vastly disproportionate share of the additional value generation implied in economic growth is captured by the richest 1% (Chancel et al., 2022). Fundamentally, capitalist economic growth in affluent countries does not significantly improve well-being (Fanning and O'Neill, 2019), and in many ways even undermines well-being (Costanza et al., 2014; Gough, 2017a; Kallis, 2014; Vogel et al., 2021).

Our analysis suggests that economic growth is not a good way to secure livelihoods, and certainly not the only way. However, economic growth may well be the only way to secure ever-increasing profits without critically undermining livelihoods – in other words, the only way to avoid significant redistribution. For a short period in history, economic growth has enabled capitalist "core" countries (Wallerstein, 2011) to accumulate wealth without impairing livelihoods nationally (Corlet Walker et al., 2021; Schmelzer, 2015). However, this growth in the capitalist core has come heavily at the expense of the periphery, and has been ecologically highly unsustainable (Hickel, 2022; Hickel, 2017; Hickel et al., 2022; Wallerstein, 2011). One way or another, in 21st century reality, economic growth can no longer be sustained in affluent countries. So long as people's livelihoods are dependent on economic growth, they are thus fundamentally and increasingly at risk.

6.3. The role of the political-economic system

Given the key role of core capitalist institutions in creating the vulnerability of livelihoods, how do countries with a more socialist political-economic system fare?

A remarkable case is how Cuba, a low-income country with a more socialist orientation, weathered the enormous economic turmoil it faced in the 1990s "Special Period", including a 35% drop in GDP. Cuba was able to stave off the worst hardship and even improve life expectancy by prioritising access to necessities for the whole population – specifically, by guaranteeing free education and healthcare, expanding health services, increasing relative welfare and healthcare expenditures whilst slashing military expenditure, subsidising basic goods, giving state land to local food cooperatives, providing food for those in need, implementing job protections, and guaranteeing unemployment benefits (Borowy, 2013; Cole, 2002; Thomas, 2016; Yaffe, 2020; Yaffe, 2009).[42] The Special Period should not be romanticised, nor should authoritarian aspects of Cuba's political regime be overlooked. Nevertheless, Cuba's remarkable success in managing these extremely adverse circumstances illustrates the feasibility of safeguarding livelihoods against economic contraction (if and when this a political priority), and suggests that a more socialist political-economic system may be particularly suitable for securing livelihoods, in particular when combined with strong democracy (see also Boillat et al., 2012).

The favourable performance of "more socialist" political-economic systems in securing livelihoods can also be observed across European "varieties of capitalism" – notably when comparing the performance of the "more socialist" Scandinavian countries (Nordic welfare systems), and the "more capitalist" Anglo-Saxon countries (liberal welfare systems) over the period of the Global Financial Crisis. At comparable rates of economic contraction, increases in financial hardship were substantially greater in the Anglo-Saxon countries than in the Scandinavian countries, and also substantially greater in countries that enacted harsh austerity measures (including the Anglo-Saxon countries) than in countries that did not (including the Scandinavian countries) (Ólafsson et al., 2019b).

These examples are corroborated by cross-national analyses showing that at a given level of output per capita, socialist countries outperform capitalist countries in terms of well-being outcomes, and more democratic countries outperform less democratic ones (Cereseto and Waitzkin, 1986; Lena and London, 1993).

6.4. Limitations and future research

There are several limitations to our analysis. First, our framework describes the relationship between economic output and livelihoods, and key factors that mediate or govern this relationship, but does not account for all potential interactions among these factors (see Supplementary Section C), nor for secondary factors and processes that may affect the factors included in the framework. It is not intended to provide a comprehensive description of the economy. Second, our analysis of pensions is focused on fundamental dynamics but does not address the full complexity of the issue (Chancel et al., 2013; Corlet Walker et al., 2021; Wiman, 2019; Wiman, 2023), and should be deepened in future research. Third, while we consider key interventions for each point of intervention identified in our framework, our analysis is not intended to be comprehensive, and could be extended to other relevant interventions, such as caps on income and wealth (Buch-Hansen and Koch, 2019). Fourth, our analysis of interventions for securing livelihoods does not account for feedbacks or knock-on effects, and is limited in scope to identifying what interventions could secure livelihoods in principle, without analysing to what extent these interventions would work in complex reality (see Section 5.3), or what additional interventions might be needed to make them work – highlighting a need for further analysis. Key issues include their effects on the cost of living as well as on consumption levels (and associated ecological impacts); their suitability for people with particular needs, care responsibilities or limited ability to work; and the question of how to organise necessary work when people no longer need a wage income to secure an adequate livelihood.

Further research is needed to provide a systematic assessment of the

[42] Expressed in terms of the variables in our framework, these interventions reduced the cost of living, protected employment and increased net welfare transfers.

social, ecological and economic effects, specific designs, complementarities, financing (or rather, macro-economic stability) requirements, and political feasibility of the different interventions. There is a particular need to research and advance implementation strategies, with careful consideration of relevant agents of change (e.g. trade unions,[43] social movements), as well as geopolitical and political-economic power relations and their implications for state action (Barlow et al., 2022; D'Alisa and Kallis, 2020; Hickel, 2021; Koch, 2020; Kreinin and Latif, 2022). A key issue is whether the outlined interventions could be realised within capitalist economies and power relations, or whether such interventions need to be embedded in, or indeed drive, a broader transformation of the political-economic system (Bärnthaler et al., 2021; Cahen-Fourot, 2022; Gough, 2017a; Jackson and Victor, 2021; Lange, 2018).

Future research could also extend our empirical analysis to different household types, employment situations, countries and time periods, or use our framework to expand upon empirical assessments of how past output reductions have impacted livelihoods in different contexts (e.g. Ólafsson et al., 2019a). Finally, our framework could also be used for developing a numerical model or extending existing ecological macroeconomic models (Hardt and O'Neill, 2017) to simulate the effects and implications of the outlined interventions.

7. Conclusions

Escalating crises, secular stagnation, and the urgent need to reduce production and consumption in affluent countries to avert ecological breakdown all make reductions in economic output increasingly likely. Against this backdrop, the vulnerability of livelihoods to output reductions poses a fundamental threat, and an obstacle to urgently needed environmental policies that might curtail economic output. This study set out to understand what creates this vulnerability, and to chart ways to overcome it.

Based on a novel operationalisation of the adequacy of livelihoods and a novel analytic framework, we show that the vulnerability of livelihoods to output reductions arises under specific conditions: when (1) livelihoods are dependent on wage labour, and (2) employment or the adequacy of workers' incomes are insecure, or when (3) pension benefits are insecure. These conditions are pervasive in capitalist economies but they are not inevitable. Our analysis identifies profit maximisation as a crucial factor in creating and sustaining these conditions. Indeed, the vulnerability of livelihoods is not just a side-effect of profit maximisation but also an instrument of profit maximisation. Sustaining the vulnerability of livelihoods is thus in the interest of profit. Conversely, interventions to secure livelihoods tend to curtail profit opportunities. The interests of profit maximisation can thus be seen as fundamentally opposed to the interest of securing livelihoods. When output declines, societies have to choose between securing profits and securing livelihoods. Securing profits means sacrificing livelihoods.

Our findings refute the narrative that economic growth is indispensable to secure livelihoods. Economic growth is *not* required to secure livelihoods (and in many cases and for many people does not secure livelihoods) – but it may be required for maximising private profits without critically undermining livelihoods. The vulnerability of livelihoods may thus be actively fostered, and leveraged as a pretext for pursuing economic growth and blocking environmental policies in the name of livelihoods but for the sake of profits.

However, the institutional arrangements that create the vulnerability reflect societal choices, and as such, can be changed. Our analysis identifies a broad range of interventions that could reduce or dismantle the vulnerability. Key options include adequate versions or combinations of universal basic services, a minimum income guarantee, a universal basic income, a pension guarantee, a job guarantee, worktime reduction, and a living wage. A complementary approach that could contribute to overcoming the vulnerability is to tackle the underlying factors that create the vulnerability conditions in the first place, in particular shifting from for-profit to not-for-profit forms of business, and redressing power imbalances between company owners and workers.

One way or another, efforts to secure livelihoods and avert ecological breakdown may need to confront not only polluting industries and economic growth, but also neoliberal welfare and labour policies, and the institutions of private profit. It is hard to overstate this challenge. However, the outlined interventions could protect and even improve people's livelihoods amidst the existential challenges of the 21st century, facilitate a just transition, transform exploitative labour relations, unlock urgently needed environmental policies, and provide the foundation for a socio-ecological transformation. As such, these interventions could gain broad support across, and foster alliances between, social, environmental, and labour movements. In the current conjuncture of a cost-of-living crisis, economic turmoil, and escalating ecological crises, advancing interventions that safeguard livelihoods against output reductions should be a priority for researchers, activists, trade unionists, and policy-makers.

Declaration of Competing Interest

The authors declare no competing interests.

Data availability

Data will be made available on request.

Acknowledgements

We would like to thank William Lamb, Elena Hofferberth, Elke Pirgmaier, Henri Wiman, and Ian Gough for helpful comments on earlier versions of this manuscript, and Irma Emmery for helpful language suggestions. We further would like to thank Beth Stratford, Charles Stevenson, Christopher Olk, Colleen Schneider, Steve Keen, Joe Ament, Anna Katharina Keil, Ben Gallant, Gabriela Cabaña, Lorenzo Velotti, Anna Coote, Timothée Parrique, and Jason Hickel for valuable inputs, feedback, and discussions. Thanks also to the members of the Economics and Policy for Sustainability research group as well as members of the Living Well Within Limits advisory board for helpful discussions, and to Matt Padley for explanations on the MIS data. We are grateful to the three anonymous reviewers whose thoughtful comments helped to significantly improve this article. J.V. was supported by the Leverhulme Trust's Research Leadership Award 'Living Well Within Limits' (RL-2016–048) awarded to J.K.S, and J.K.S was partly supported by an International Academic Fellowship of the Leverhulme Trust (IAF-2018–018).

We would like to express our dedication and gratitude to Pierre Guerin (deceased 03/03/23) for his unconditional support, his increasing interest in this line of work, his ongoing questioning of norms, and for continuously spreading his love and passion for science.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.ecolecon.2023.107977.

References

Aigner, E., Buczko, C., Cahen-Fourot, L., Schneider, C., 2022. Money and Finance: an overview of strategies for social-ecological transformation in the field of money and finance and the case of the Austrian Cooperative for the Common Good. In: Barlow, N., Regen, L., Cadiou, N., Chertkovskaya, E., Hollweg, M., Plank, C., Schulken, M., Wolf, V. (Eds.), Degrowth & Strategy: How to Bring about Social-Ecological Transformation. may fly, pp. 351–374.

[43] See Supplementary Materials D for a discussion on trade unions.

Arnsperger, C., Bendell, J., Slater, M., 2021. Monetary Adaptation to Planetary Emergency: Addressing the Monetary Growth Imperative. Insititute Leadersh. Sustain. IFLAS Occas. Pap. Vol. 8 Univ. Cumbria UK 40.

Atkinson, A.B., 2015. Inequality: What Can Be Done? Harvard University Press, Cambridge, MA and London, England. https://doi.org/10.4159/9780674287013.

Bailey, D., 2015. The environmental paradox of the welfare state: the dynamics of sustainability. New Polit. Econ. 20, 793–811. https://doi.org/10.1080/13563467.2015.1079169.

Barlow, N., Regen, L., Cadiou, N., Chertkovskaya, E., Hollweg, M., Plank, C., Schulken, M., Wolf, V., 2022. Degrowth and Strategy: How to Bring About Socio-ecological Transformation. may fly.

Bärnthaler, R., Novy, A., Plank, L., 2021. The foundational economy as a cornerstone for a social–ecological transformation. Sustainability 13, 10460. https://doi.org/10.3390/su131810460.

Bayliss, K., Mattioli, G., Steinberger, J., 2021. Inequality, poverty and the privatization of essential services: a 'systems of provision' study of water, energy and local buses in the UK. Compet. Change 25, 478–500. https://doi.org/10.1177/1024529420964933.

Bazoli, N., Podesta, F., Mazzeo Ortolani, G., 2022. Measuring the Adequacy of Social Protection by Looking at those above the Poverty Line. European Commission, LU.

Blauwhof, F.B., 2012. Overcoming accumulation: Is a capitalist steady-state economy possible? Ecological Economics 84, 254–261.

Bohnenberger, K., 2020. Money, vouchers, public infrastructures? A framework for sustainable welfare benefits. Sustainability 12, 596. https://doi.org/10.3390/su12020596.

Boillat, S., Gerber, J.-F., Funes-Monzote, F.R., 2012. What economic democracy for degrowth? Some comments on the contribution of socialist models and Cuban agroecology. Futures 44, 600–607. https://doi.org/10.1016/j.futures.2012.03.021.

Borowy, I., 2013. Degrowth and public health in Cuba: lessons from the past? J. Cleaner Product. 38, 17–26.

Bradshaw, J., Middleton, S., Davis, A., Oldfield, N., Smith, N., Cusworth, L., Williams, J., 2008. A Minimum Income Standard for Britain : What People Think.

Brand Correa, L.I., Martin-Ortega, J., Steinberger, J.K., 2018. Human Scale Energy Services: Untangling a 'golden thread'. Energy Res. Soc. Sci. 38, 178–187. https://doi.org/10.1016/j.erss.2018.01.008.

Brand Correa, L.I., Mattioli, G., Lamb, W.F., Steinberger, J.K., 2020. Understanding (and tackling) need satisfier escalation. Sustain. Sci. Pract. Policy 16, 309–325. https://doi.org/10.1080/15487733.2020.1816026.

Buch-Hansen, H., Koch, M., 2019. Degrowth through income and wealth caps? Ecol. Econ. 160, 264–271. https://doi.org/10.1016/j.ecolecon.2019.03.001.

Büchs, M., 2021a. Sustainable welfare: Independence between growth and welfare has to go both ways. Glob. Soc. Policy 21, 323–327. https://doi.org/10.1177/14680181211019153.

Büchs, M., 2021b. Sustainable welfare: how do universal basic income and universal basic services compare? Ecol. Econ. 189, 107152 https://doi.org/10.1016/j.ecolecon.2021.107152.

Büchs, M., Koch, M., 2017. *Postgrowth and wellbeing: Challenges to sustainable welfare.* Springer.

Büchs, M., Koch, M., 2019. Challenges for the degrowth transition: The debate about wellbeing. Futures 105, 155–165.

Button, D., Coote, A., 2021. A Social Guarantee: The Case for Universal Services. New Economics Foundation.

Bychawski, A., 2022. UK Big Six energy firms made more than £1bn in profit ahead of price hike. openDemocracy. URL. https://www.opendemocracy.net/en/opendemocracyuk/uk-big-six-energy-firms-one-billion-pounds-profit-cost-of-living-increase/ (accessed 7.20.23).

Cahen-Fourot, L., 2022. Looking for growth imperatives under capitalism. In: Post-Growth Econ. Netw., Working Paper Series.

Cantillon, B., Collado, D., Van Mechelen, N., 2015. The End of Decent Social Protection for the Poor? The Dynamics of Low Wages, Minimum Income Packages and Median Household Incomes.

Cantillon, B., Parolin, Z., Collado, D., 2020. A glass ceiling on poverty reduction? An empirical investigation into the structural constraints on minimum income protections. J. European Social Policy 30 (2), 129–143.

Cazes, S., Verick, S., Al Hussami, F., 2013. Why did unemployment respond so differently to the global financial crisis across countries? Insights from Okun's law. IZA J. Labor Policy 2, 10. https://doi.org/10.1186/2193-9004-2-10.

Cereseto, S., Waitzkin, H., 1986. Economic development. Political-Economic System, and the Physical Quality of Life 76.

Chambers, R., 1995. Poverty and livelihoods: whose reality counts? Environ. Urban 7.

Chambers, R., Conway, G.R., 1991. Sustainable rural livelihoods: practical concepts for the 21st century. IDS Discuss. Pap. 296.

Chancel, L., Demailly, D., Waisman, H., Guivarch, C., 2013. A Post-Growth Society for the 21st Century, no 08/13: New Prosperity. Insitut de développement durable et des relations internationales.

Chancel, L., Piketty, T., Saez, E., Zucman, G., 2022. World Inequality Report 2022. World Inequality Lab.

Chomsky, N., Barsamian, D., 2017. Global Discontents: Conversations on the Rising Threats to Democracy. Metropolitan Books.

Cole, K., 2002. Cuba - the Process of Socialist Development.

Concialdi, P., 2018. What does it mean to be rich? Some conceptual and empirical issues. Eur. J. Soc. Secur. 20, 3–20. https://doi.org/10.1177/1388262718760911.

Coote, A., 2021. Universal basic services and sustainable consumption. Sustain. Sci. Pract. Policy 17, 32–46. https://doi.org/10.1080/15487733.2020.1843854.

Coote, A., Percy, A., 2020. The Case for Universal Basic Services. John Wiley & Sons.

Corlet Walker, C., Druckman, A., Jackson, T., 2021. Welfare systems without economic growth: a review of the challenges and next steps for the field. Ecol. Econ. 186, 107066 https://doi.org/10.1016/j.ecolecon.2021.107066.

Corlet Walker, C., Druckman, A., Jackson, T., 2022. A critique of the marketisation of long-term residential and nursing home care. Lancet Healthy Longev. https://doi.org/10.1016/S2666-7568(22)00040-X. S266675682200040X.

Costanza, R., Alperovitz, G., Daly, H., Farley, J., Franco, C., Jackson, T., Kubiszewski, I., Schor, J., Victor, P., 2017. Building a sustainable and desirable economy-in-society-in-nature. *Green Economy Reader: Lectures in.* Ecol. Econ. Sustain. 367–454.

Costanza, R., Atkins, P.W., Bolton, M., Cork, S., Grigg, N.J., Kasser, T., Kubiszewski, I., 2017. Overcoming societal addictions: What can we learn from individual therapies? Ecol. Econ. 131, 543–550.

Costanza, R., Fisher, B., Ali, S., Beer, C., Bond, L., Boumans, R., Danigelis, N.L., Dickinson, J., Elliott, C., Farley, J., Gayer, D.E., 2007. Quality of life: An approach integrating opportunities, human needs, and subjective well-being. Ecol. Econ. 61 (2–3), 267–276.

Costanza, R., Kubiszewski, I., Giovannini, E., Lovins, H., McGlade, J., Pickett, K.E., Wilkinson, R., 2014. Development: Time to leave GDP behind. Nature 505 (7483), 283–285.

D'Alisa, G., Kallis, G., 2020. Degrowth and the state. Ecol. Econ. 169, 106486 https://doi.org/10.1016/j.ecolecon.2019.106486.

Davis, A., Hirsch, D., Padley, M., Shepherd, C., 2018. A Minimum Income Standard for the UK, 2008—2018. Joseph Rowntree Foundation.

Doyal, L., Gough, I., 1991. A Theory of Human Need. The MacMillan Press, London.

Fanning, A.L., O'Neill, D.W., 2019. The Wellbeing–Consumption paradox: Happiness, health, income, and carbon emissions in growing versus non-growing economies. J. Clean. Prod. 212, 810–821. https://doi.org/10.1016/j.jclepro.2018.11.223.

Figari, F., Matsaganis, M., Sutherland, H., 2014. Are European Social Safety Nets Tight Enough?.

Forder, J., Allan, S., 2014. The impact of competition on quality and prices in the English care homes market. J. Health Econ. 34, 73–83. https://doi.org/10.1016/j.jhealeco.2013.11.010.

Foster, J.B., Clark, B., 2009. The paradox of wealth: capitalism and ecological destruction. Mon. Rev. 61, 1. https://doi.org/10.14452/MR-061-06-2009-10_1.

Frazer, H., Marlier, E., 2016. Minimum Income Schemes in Europe: A Study of National Policies 2015. European Commission, LU.

Gerber, J.-D., Gerber, J.-F., 2017. Decommodification as a foundation for ecological economics. Ecol. Econ. 131, 551–556. https://doi.org/10.1016/j.ecolecon.2016.08.030.

Goedemé, T., Storms, B., Stockman, S., Penne, T., Van den Bosch, K., 2015. Towards cross-country comparable reference budgets in Europe: first results of a concerted effort. Eur. J. Soc. Secur. 17, 3–30. https://doi.org/10.1177/138826271501700101.

Gorz, A., 1968. Strategy for labor. A radical proposal. Sci. Soc. 32, 448–450.

Gough, I., 1979. The Political Economy of the Welfare State. Macmillan International Higher Education.

Gough, I., 2015. Climate change and sustainable welfare: the centrality of human needs. Camb. J. Econ. 39, 1191–1214. https://doi.org/10.1093/cje/bev039.

Gough, I., 2016. Welfare states and environmental states: a comparative analysis. Environ. Polit. 25, 24–47. https://doi.org/10.1080/09644016.2015.1074382.

Gough, I., 2017a. Heat, Greed and Human Need: Climate Change, Capitalism and Sustainable Wellbeing. Edward Elgar Publishing.

Gough, I., 2017b. Recomposing consumption: defining necessities for sustainable and equitable well-being. Philos. Trans. R. Soc. Math. Phys. Eng. Sci. 375 https://doi.org/10.1098/rsta.2016.0379, 20160379.

Gough, I., 2019. Universal basic services: a theoretical and moral framework. Polit. Q. 90, 534–542. https://doi.org/10.1111/1467-923X.12706.

Gough, I., 2020. Defining floors and ceilings: the contribution of human needs theory. Sustain. Sci. Pract. Policy 16, 208–219. https://doi.org/10.1080/15487733.2020.1814033.

Graeber, D., 2018. Bullshit Jobs - a Theory. The Anarchist Library.

Guillen-Royo, M., 2016. Sustainability and Wellbeing: Human-Scale Development in Practice. Routledge.

Haberl, H., Wiedenhofer, D., Virág, D., Kalt, G., Plank, B., Brockway, P., Fishman, T., Hausknost, D., Krausmann, F., Leon-Gruchalski, B., Mayer, A., Pichler, M., Schaffartzik, A., Sousa, T., Streeck, J., Creutzig, F., 2020. A systematic review of the evidence on decoupling of GDP, resource use and GHG emissions, part II: synthesizing the insights. Environ. Res. Lett. 15, 065003 https://doi.org/10.1088/1748-9326/ab842a.

Haines-Doran, T., 2022. Derailed: How to fix Britain's Broken Railways. Manchester University Press, Manchester, England. https://doi.org/10.7765/9781526164063.

Hardt, L., O'Neill, D.W., 2017. Ecological macroeconomic models: assessing current developments. Ecol. Econ. 134, 198–211. https://doi.org/10.1016/j.ecolecon.2016.12.027.

Haines-Doran, T., 2023. The financialisation of car consumption. New Political Economy 1–19.

Hardt, L., Barrett, J., Taylor, P.G., Foxon, T.J., 2021. What structural change is needed for a post-growth economy: a framework of analysis and empirical evidence. Ecol. Econ. 179, 106845 https://doi.org/10.1016/j.ecolecon.2020.106845.

Hartley, T., Kallis, G., 2021. Interest-bearing loans and unpayable debts in slow-growing economies: insights from ten historical cases. Ecol. Econ. 188, 107132 https://doi.org/10.1016/j.ecolecon.2021.107132.

Hausknost, D., 2020. The environmental state and the glass ceiling of transformation. Environ. Polit. 29, 17–37. https://doi.org/10.1080/09644016.2019.1680062.

Hickel, J., 2017. The Divide: A Brief Guide to Global Inequality and its Solutions. Random House.

Hickel, J., 2019. Degrowth: a theory of radical abundance. Real-World Econ. Rev. 54–68.

Hickel, J., 2021. How to achieve full decolonization. New Int. URL https://newint.org/features/2021/08/09/money-ultimate-decolonizer-fjf (accessed 5.21.23).

Hickel, J., Kallis, G., 2020. Is green growth possible? New Polit. Econ. 25, 469–486. https://doi.org/10.1080/13563467.2019.1598964.

Hickel, J., 2022. Less Is More: How Degrowth Will Save the World. Penguin Books, London.

Hickel, J., Brockway, P., Kallis, G., Keyßer, L., Lenzen, M., Slameršak, A., Steinberger, J., Ürge-Vorsatz, D., 2021. Urgent need for post-growth climate mitigation scenarios. Nature Energy 6 (8), 766–768.

Hickel, J., Dorninger, C., Wieland, H., Suwandi, I., 2022. Imperialist appropriation in the world economy: drain from the global South through unequal exchange, 1990–2015. Glob. Environ. Change 73, 102467. https://doi.org/10.1016/j.gloenvcha.2022.102467.

Hinton, J.B., 2020. Fit for purpose? Clarifying the critical role of profit for sustainability. J. Polit. Ecol. 27, 236–262. https://doi.org/10.2458/v27i1.23502.

Hinton, J.B., 2021. Relationship-to-Profit: A Theory of Business, Markets, and Profit for Social Ecological Economics. University of Stockholm and University of Clermont Auvergne, Sweden and France.

Jackson, T., 2017. Prosperity without Growth: Foundations for the Economy of Tomorrow. Routledge, London.

Jackson, T., 2019. The post-growth challenge: secular stagnation, inequality and the limits to growth. Ecol. Econ. 156, 236–246. https://doi.org/10.1016/j.ecolecon.2018.10.010.

Jackson, T., Victor, P., 2011. Productivity and work in the 'green economy' some theoretical reflections and empirical tests. Environ. Innov. Soc. Transit. 8.

Jackson, T., Victor, P.A., 2015. Does credit create a 'growth imperative'? A quasi-stationary economy with interest-bearing debt. Ecol. Econ. 120, 32–48. https://doi.org/10.1016/j.ecolecon.2015.09.009.

Jackson, T., Victor, P.A., 2020. The transition to a sustainable prosperity-a stock-flow-consistent ecological macroeconomic model for Canada. Ecol. Econ. 177, 106787 https://doi.org/10.1016/j.ecolecon.2020.106787.

Jackson, T., Victor, P.A., 2021. Confronting inequality in the "new normal": hyper-capitalism, proto-socialism, and post-pandemic recovery. Sustain. Dev. 29, 504–516. https://doi.org/10.1002/sd.2196.

Jackson, A., Jackson, T., van Lerven, F., 2022. Beyond the Debt Controversy—Re-framing Fiscal and Monetary Policy for a Post-Pandemic Era (No. 31). CUSP Working Paper.

Kalecki, M., 1943. Political aspects of full employment. Polit. Q. 322–331.

Kallis, G., 2014. Social limits of growth. In: Degrowth: A Vocabulary for a New Era. Routledge, Oxon and New York, pp. 137–140.

Kallis, G., 2018. Degrowth. Agenda publishing, Newcastle upon Tyne.

Kallis, G., Kalush, M., O'Flynn, H., Rossiter, J., Ashford, N., 2013. "Friday off": reducing working hours in Europe. Sustainability 5, 1545–1567. https://doi.org/10.3390/su5041545.

Kallis, G., Demaria, F., D'Alisa, G., 2014. Introduction: degrowth. In: Degrowth: A Vocabulary for a New Era. Routledge, Oxon and New York, pp. 1–17.

Kallis, G., Paulson, S., D'Alisa, G., Demaria, F., 2020a. The case for degrowth in a time of the corona pandemic. Brave New Eur. URL https://braveneweurope.com/giorgos-kallis-susan-paulson-giacomo-dalisa-federico-demaria-the-case-for-degrowth-in-a-time-of-pandemic (accessed 8.2.21).

Kallis, G., Paulson, S., D'Alisa, G., Demaria, F., 2020b. The Case for Degrowth. Polity Press, Cambridge, UK; Medford, MA.

Keen, S., 2022. The macroeconomics of degrowth: can planned economic contraction be stable?. In: *Post-Capitalist Futures: Paradigms, Politics, and Prospects*. Singapore: Springer Singapore, pp. 97–105.

Keil, A.K., Steinberger, J.K., 2023. Cars, capitalism and ecological crises: understanding systemic barriers to a sustainability transition in the German car industry. New Political Economy 1–21.

Kelton, S., 2020. The Deficit Myth: Modern Monetary Theory and the Birth of the people's Economy. Public Affairs.

Keyßer, L.T., Lenzen, M., 2021. 1.5 °C degrowth scenarios suggest the need for new mitigation pathways. Nat. Commun. 12, 2676. https://doi.org/10.1038/s41467-021-22884-9.

Kish, K., Quilley, S., 2021. Livelihood and limits. In: Ecological Limits of Development. Routledge, London, pp. 100–114. https://doi.org/10.4324/9781003087526-9.

Koch, M., 2013. Welfare after growth: theoretical discussion and policy implications. Int. J. Soc. Qual. 3 https://doi.org/10.3167/IJSQ.2013.030102.

Koch, M., 2020. The state in the transformation to a sustainable postgrowth economy. Environ. Polit. 29, 115–133. https://doi.org/10.1080/09644016.2019.1684738.

Kreinin, H., Latif, T., 2022. An overview of strategies for social-ecological transformation in the field of paid work and the case of just transition in the aviation sector. In: Barlow, N., Regen, L., Cadiou, N., Chertkovskaya, E., Hollweg, M., Plank, C., Schulken, M., Wolf, V. (Eds.), Degrowth & Strategy: How to Bring about Social-Ecological Transformation. may fly.

Lange, S., 2018. Macroeconomics without growth. Metropolis Verlag, Marburg.

Lawhon, M., McCreary, T., 2020. Beyond jobs vs environment: on the potential of universal basic income to reconfigure environmental politics. Antipode 52, 452–474. https://doi.org/10.1111/anti.12604.

Lena, H.F., London, B., 1993. The political and economic determinants of health outcomes: a cross-National Analysis. Int. J. Health Serv. 23, 585–602. https://doi.org/10.2190/EQUY-ACG8-X59F-AE99.

Levey, S., 2020. Mobilization Theory: Some Lessons from the Literature for Today. Global Institute for Sustainable Prosperity Working Paper 126.

Liegey, V., Nelson, A., 2020. Exploring Degrowth: A Critical Guide. Pluto Press, London.

Martus, B.S., 2016. Jobless Growth: The Impact of Structural Changes. Public Finance Q.

Máté, D., 2010. A theoretical and growth accounting approach of jobless growth. Period. Oeconomica 67–76.

Mattioli, G., Roberts, C., Steinberger, J.K., Brown, A., 2020. The political economy of car dependence: a systems of provision approach. Energy Res. Soc. Sci. 66, 101486 https://doi.org/10.1016/j.erss.2020.101486.

Max-Neef, M.A., 1991. Human scale development. In: Conception, Application and Further Reflections. The Apex Press, New York and London.

Mayrhofer, J., Wiese, K., 2020. Escaping the Growth and Jobs Treadmill: A New Policy Agenda for Post-Coronavirus Europe. European Environmental Bureau, Brussels.

Moore, H.L., Collins, H., 2021. Rebuilding the post-Covid-19 economy through an industrial strategy that secures livelihoods. Soc. Sci. Humanit. Open 3, 100113. https://doi.org/10.1016/j.ssaho.2021.100113.

Newell, P., Mulvaney, D., 2013. The political economy of the 'just transition'. Geogr. J. 179, 132–140. https://doi.org/10.1111/geoj.12008.

OECD, 2023. Pension Markets in Focus 2022.

Ólafsson, S., Daly, M., Kangas, O., Palme, J., 2019a. Welfare and the Great Recession: A Comparative Study. Oxford University Press.

Ólafsson, S., Helgason, A.F., Stefánsson, K., 2019b. How institutional environments and policies impacted hardship. In: Welfare and the Great Recession. Oxford University Press, pp. 249–275. https://doi.org/10.1093/oso/9780198830962.003.0014.

Olk, C., 2023. Complementary currencies in the global hierarchy of money: Implications for Sustainability. Sust. Sci.

Olk, C., Schneider, C., Hickel, J., 2023. How to pay for saving the world: Modern Monetary Theory for a degrowth transition. Ecol. Econ. 214, 107968.

Osberg, L., Sharpe, A., 2014. The impact of the great recession on economic wellbeing: How different are OECD nations and why? In: Cooper, C.L. (Ed.), Wellbeing. John Wiley & Sons, Ltd, Chichester, UK, pp. 1–27. https://doi.org/10.1002/9781118539415.wbwell101.

Otero, I., Farrell, K.N., Pueyo, S., Kallis, G., Kehoe, L., Haberl, H., Plutzar, C., Hobson, P., García-Márquez, J., Rodríguez-Labajos, B., Martin, J., Erb, K., Schindler, S., Nielsen, J., Skorin, T., Settele, J., Essl, F., Gómez-Baggethun, E., Brotons, L., Rabitsch, W., Schneider, F., Pe'er, G., 2020. Biodiversity policy beyond economic growth. Conserv. Lett. 13 https://doi.org/10.1111/conl.12713.

Parrique, T., 2019. The Political Economy of Degrowth, Economics and Finance. Université Clermont Auvergne and Stockholms Universitet.

Parrique, T., Barth, J., Briens, F., Kerschner, C., Kraus-Polk, A., Kuokkanen, A., Spangenberg, J.H., 2019. Decoupling Debunked: Evidence and Arguments against Green Growth as a Sole Strategy for Sustainability. European Environmental Bureau, Brussels.

Patel, R., 2012. Stuffed and Starved: The Hidden Battle for the World Food System-Revised and Updated. Melville House.

Paulson, S., D'Alisa, G., Demaria, F., Kallis, G., FADA, 2020. From pandemic toward care-full degrowth. Interface 8.

Piketty, T., 2014. Capital in the Twenty-First Century. Harvard University Press.

Piketty, T., Saez, E., 2014. Inequality in the long run. Science 344, 838–843. https://doi.org/10.1126/science.1251936.

Pirgmaier, E., 2020. Consumption corridors, capitalism and social change. Sustain. Sci. Pract. Policy 16, 274–285. https://doi.org/10.1080/15487733.2020.1829846.

Polanyi, K., 1944. The Great Transformation: The Political and Economic Origins of our Time, 2nd ed. Beacon Press, Boston.

Polanyi, K., Pearson, H.W., 1977. The Livelihood of Man. Academic Press.

Richters, O., Siemoneit, A., 2019. Growth imperatives: substantiating a contested concept. Struct. Change Econ. Dyn. 51, 126–137. https://doi.org/10.1016/j.strueco.2019.07.012.

Schmelzer, M., 2015. The growth paradigm: history, hegemony, and the contested making of economic growthmanship. Ecol. Econ. 118, 262–271. https://doi.org/10.1016/j.ecolecon.2015.07.029.

Scoones, I., 2009. Livelihoods perspectives and rural development. J. Peasant Stud. 36, 171–196. https://doi.org/10.1080/03066150902820503.

Scoones, I., 2013. Livelihoods perspectives and rural development. In: Critical Perspectives in Rural Development Studies. Routledge, pp. 159–184.

Shaikh, A., 2016. Capitalism: Competition, Conflict, Crises. Oxford University Press.

Siemoneit, A., 2019. An offer you can't refuse: Enhancing personal productivity through 'efficiency consumption'. Technol. Soc. 59, 101181 https://doi.org/10.1016/j.techsoc.2019.101181.

Storm, S., 2017. The new Normal: demand, secular stagnation, and the vanishing middle class. Int. J. Polit. Econ. 46, 169–210. https://doi.org/10.1080/08911916.2017.1407742.

Stratford, B., 2020. The threat of rent extraction in a resource-constrained future. Ecol. Econ. 169, 106524 https://doi.org/10.1016/j.ecolecon.2019.106524.

Stratford, B., O'Neill, D.W., 2020. The UKs Path to a Doughnut-Shaped Recovery. Sustainability Research Institute, University of Leeds.

Stuckler, D., Basu, S., 2013. The Body Economic: Why Austerity Kills. Basic Books (AZ).

Sullivan, D., Hickel, J., 2023. Capitalism and extreme poverty: a global analysis of real wages, human height, and mortality since the long 16th century. World Dev. 161, 106026 https://doi.org/10.1016/j.worlddev.2022.106026.

Summers, L.H., 2014. U.S. economic prospects: secular stagnation, hysteresis, and the zero lower bound. Bus. Econ. 49, 65–73. https://doi.org/10.1057/be.2014.13.

Tankus, N., 2022. The New Monetary Policy: Reimagining Demand Management and Price Stability in the 21st Century. Modern Money Network.

Tcherneva, P.R., 2020. The Case for a Job Guarantee. John Wiley & Sons.

Teperoglou, E., Freire, A., Andreadis, I., Leite Viegas, J.M., 2014. Elites' and Voters' attitudes towards austerity policies and their consequences in Greece and Portugal. South Eur. Soc. Polit. 19, 457–476. https://doi.org/10.1080/13608746.2014.983306.

Thomas, J.G., 2016. Historical reflections on the post-soviet cuban health-care system, 1992–2009. Cuban Stud. 44, 189–213. https://doi.org/10.1353/cub.2016.0023.
Tims, S., Stirling, A., 2022. The national living income: guaranteeing a decent minimum income for all. New Economics Foundation, London, UK.
Tokic, D., 2012. The economic and financial dimensions of degrowth. Ecol. Econ. 84, 49–56. https://doi.org/10.1016/j.ecolecon.2012.09.011.
Van Parijs, P., Vanderborght, Y., 2017. Basic Income: A Radical Proposal for a Free Society and a Sane Economy. Harvard University Press.
Varoufakis, Y., 2016. The Universal Right to Capital Income. URL. https://www.project-syndicate.org/commentary/basic-income-funded-by-capital-income-by-yanis-varoufakis-2016-10 (accessed 12.15.22).
Victor, P.A., 2008. *Managing Without Growth: Slower by Design, Not Disaster*. Edward Elgar Publishing.
Vogel, J., Hickel, J., 2023. Is green growth happening? An empirical analysis of achieved versus Paris-compliant CO2–GDP decoupling in high-income countries. The Lancet Planetary Health 7 (9), e759–e769.
Vogel, J., Steinberger, J.K., O'Neill, D.W., Lamb, W.F., Krishnakumar, J., 2021. Socio-economic conditions for satisfying human needs at low energy use: an international analysis of social provisioning. Glob. Environ. Change 102287. https://doi.org/10.1016/j.gloenvcha.2021.102287.
Wallerstein, I., 2011. The Modern World-System I: Capitalist Agriculture and the Origins of the European World-Economy in the Sixteenth Century. University of California Press.
Waltman, J.L., 2004. The Case for the Living Wage. Algora Publishing.
Whoriskey, P., 2020. U.S. companies cut thousands of workers while continuing to reward shareholders during pandemic. Wash. Post. https://www.washingtonpost.com/business/2020/05/05/dividends-layoffs-coronavirus/.
Wiman, H., 2019. An approach to post-growth pensions with reflections on Finland, Sweden and Denmark. In: Conf. Publ. Resilient Nord. Welf. States.
Wiman, H., 2023. Growth (in)dependencies in pensions. ESPAnet 2023, Warsaw, 7-9th September 2023. doi: 10.13140/RG.2.2.36517.27366.
Yaffe, H., 2009. Cuban Development: inspiration for the Bolivarian Alliance for the Americas (ALBA). J. Iber. Lat. Am. Res. 15, 143–160. https://doi.org/10.1080/13260219.2009.11090854.
Yaffe, H., 2020. We Are Cuba!: How a Revolutionary People Have Survived in a Post-Soviet World. Yale University Press.