The General Relativity of Fiscal Space: Theory and Applications

Assa, Jacob; Morgan, Marc

How to cite

ASSA, Jacob, MORGAN, Marc. The General Relativity of Fiscal Space: Theory and Applications. In: Review of political economy, 2025, p. 1–35. doi: 10.1080/09538259.2025.2479732

This publication URL: https://archive-ouverte.unige.ch/unige:184973
Publication DOI: 10.1080/09538259.2025.2479732

Review of Political Economy

ISSN: 0953-8259 (Print) 1465-3982 (Online) Journal homepage: www.tandfonline.com/journals/crpe20

The General Relativity of Fiscal Space: Theory and Applications

Jacob Assa & Marc Morgan

To cite this article: Jacob Assa & Marc Morgan (24 Apr 2025): The General Relativity of Fiscal Space: Theory and Applications, Review of Political Economy, DOI: 10.1080/09538259.2025.2479732

To link to this article: https://doi.org/10.1080/09538259.2025.2479732

REVIEW OF POLITICAL ECONOMY
https://doi.org/10.1080/09538259.2025.2479732

Routledge
Taylor & Francis Group

The General Relativity of Fiscal Space: Theory and Applications

Jacob Assa[a] and Marc Morgan[b]

[a]United Nations Development Programme (UNDP), New York, NY, USA; [b]University of Geneva, Geneva, Switzerland

ABSTRACT

This paper argues that fiscal space is not given in absolute terms, as in the sound finance paradigm, but is relative to a country's macroeconomic conditions. We first identify the relativity of fiscal space in the endogenous finance ideas of John Maynard Keynes, drawing an analogy to the theory of special relativity by Albert Einstein. We then present the outline of a 'general relativity' theory of fiscal space based on the functional finance paradigm. Building on our theory we estimate a novel Monetary Sovereignty Index, which we use alongside UNCTAD's Productive Capacities Index, the unemployment rate, and the inflation rate, in a principal component analysis to compute a Fiscal Space Index (FSI) for 150 countries. We find that there is a wide variety of fiscal space across countries, and even within regions. Simple simulations for Malawi and the UK (countries on opposite sides of the fiscal space spectrum) show that the functional finance paradigm outperforms the sound finance paradigm for a range of macroeconomic variables, including the FSI. We end by discussing key political economy and geopolitical constraints and identify various reforms that would facilitate countries to fully use, as well as increase, their fiscal space.

ARTICLE HISTORY
Received 3 May 2024
Accepted 3 March 2025

KEYWORDS
Fiscal space; relativity; sound finance; Keynes; functional finance

JEL CLASSIFICATION
E61; E62; H6; H87; O23

1. Introduction

Public policy stands at a crossroads, as successive crises disrupt the world's development trajectory and reverse hard-won gains. Despite differing causes — economic recessions, pandemics, wars, and climate change — their outcomes are similar across countries: trade disruptions, lower foreign aid flows, unemployment, poverty, inequality, commodity shortages, inflation, natural disasters. In the face of this 'polycrisis,' achieving the United Nations Sustainable Development Goals (SDGs) by 2030 seems increasingly unattainable. Yet, during the overlapping emergencies of the Second World War, British economist John Maynard Keynes famously declared, 'anything we can actually

CONTACT Marc Morgan marc.morgan@unige.ch Université de Genève, Boulevard du Pont d'Arve 40,1205 Genève, Switzerland

Supplemental data for this article can be accessed online at http://dx.doi.org/10.1080/09538259.2025.2479732.

do, we can afford' (Keynes 1942, pp. 264–66), offering a vision of possibility in times of crisis. This historical lesson suggests that merely extending deadlines or adjusting targets for today's global goals is insufficient. Instead, a fundamental reassessment of the conceptual paradigms underpinning public policy is crucial. This paper seeks to address this need by exploring the historical and theoretical foundations of fiscal space — the economic and institutional limits of government expenditure — to provide critical insights for achieving global goals.

The common impacts of these varied crises point to structural vulnerabilities operating in many national economies, especially, but not exclusively, the least developed countries. While they gained their political independence in the second half of the 20th century, most low- and middle-income countries are still economically dependent on the rest of the world. This is visible today in both real economic dependence — lack of industrialization and low productive capacity — and financial economic dependence — low monetary sovereignty (i.e., high dependence on foreign financial flows). The need to recognize this twin dependence, which is not mutually exclusive, is critical to make progress in reducing between-country inequalities. It is best viewed as a spectrum, much like the concept of sovereignty. Some countries are more economically dependent (less economically sovereign) than others given productive patterns and organization of global value chains at different points in time. Yet the spectrum of dependence is hardly mentioned in current debates on Financing for Development (FfD).

These international discussions are dominated by fears of governments lacking sufficient fiscal space to address pressing challenges. This fear stems from a view of money as a scarce resource to be mobilized and public finance as an equilibrium between revenues and expenditures, overlooking Keynes's insight that money serves as an institution for mobilising real resources and public finance as a tool for addressing economic disequilibria. This 'sound finance' paradigm perpetuates a persistent tension: while emergencies consistently secure fiscal space — often through relaxing taboos on monetary financing by central banks (Bateman and van 't Klooster 2023) — essential social investments in housing, employment, healthcare, and decarbonized infrastructure face the recurring question, 'how do we pay for it?' This disparity highlights the urgent need to reassess the frameworks underlying public finance and fiscal space to meet 21st-century funding challenges. It is this fundamental gap between science and policy that our paper seeks to address.

This paper argues that fiscal space is not given in absolute terms, as in the sound finance paradigm, but is relative to a country's macroeconomic conditions, both cyclically and structurally. We first identify the relativity of fiscal space in the ideas of John Maynard Keynes, drawing an analogy to the theory of special relativity by Albert Einstein, as found in the literature for Keynes's overall theory of employment and output (not fiscal space *per se*). We tease out the essential properties and evolution of a 'special relativity' theory of fiscal space (relative to demand in mature economies) before presenting the outline of a 'general relativity' theory of fiscal space (relative to demand and supply in mature and underdeveloped economies) based on our interpretation of functional finance.

We introduce a distinction between productive and non-productive financing, drawing on Abba Lerner's framework. We also adopt the view that money is intimately tied to the credit of the state, and finance involves credit creation rather than

intermediation. And while the self-imposed link between money and precious materials (such as gold and silver) restricted money supply and use before 1971, in today's world of *fiat* money, governments that issue their own currency have no financial limits as such. They do, however, face very real economic limits — productive capacity and its utilization, to which increases in the price level on goods and services act as a pressure valve.[1] This alternative view of money and finance implies that development at the national level is not about getting access to more money but rather building more productive capacity with the resources available to purchase with the national currency. Development is thus about mobilizing and shifting real resources into uses, which along with collective learning, raises material living standards over time. This requires capability as much as capacity.

This conceptualization of money, fiscal space and economic development is not new. It is beyond the scope of this paper to do justice to all the strands of economic thought and scholars that compose its family tree. In a broad sweep, its seeds can be seen in the theories of Renaissance economists; in German Historical School and US post-independence economic thought; in post-1860 Japanese economic policymaking; in American institutional economics (Reinert 2007); in chartalist theories of money and functional finance (Innes 1913, 1914; Keynes 1930; Knapp 1905; Lerner 1943, 1947); in Schumpeterian growth and credit differentiation (Schumpeter 1934, 1939); in Keynesian monetary-production economics (Keynes 1936); in Kaleckian and Post-Keynesian economic theory (Godley and Lavoie 2007b; Kalecki 1976; Minsky 1986); in structuralism, dependency theory and classical development economics post-1945 (Frank 1966; Furtado 1956, 1961; Nurkse 1953; Prebisch 1950, 1961; Singer 1950, 1953); and in neo-chartalist modern monetary theory (Mitchell, Wray, and Watts 2019; Wray 2014).

Our contribution to this long cumulative tradition is to quantify the current extent of national fiscal space across countries and regions, while considering international factors, to get a clear picture of where the real constraints are. Building on our theory we operationalize four macroeconomic determinants of relative fiscal space — two supply-side factors (productive capacity and monetary sovereignty) and two demand-side factors (unemployment and inflation) using available data for 150 countries. Among the former, we contribute a novel Monetary Sovereignty Index (MSI) following the idea of sovereignty (or dependence) as a spectrum. Countries that issue their own currency and do not peg it to another currency score higher on the index, as do countries that have lower dependence on imports of food and fuel, higher foreign exchange reserves, a highly liquid currency, and lower public debt in foreign currency. Dollarized countries, CFA-zone African countries, and Euro Area countries score lowest on the index, while North American countries score highest. We use this index alongside UNCTAD's Productive Capacities Index (PCI), the rate of unemployment and the inflation rate in a principal component analysis (PCA) to compute a Fiscal Space Index (FSI) for each country. We find that there is a wide variety of fiscal space across countries, and even among income-country groups — with some developing economies scoring high, and some developed economies scoring low on the index.

[1]This is contrary, as we argue below, to countries that do not issue their own currency, for whom this institutional choice acts as a financial constraint.

We illustrate the dynamic operation of our framework with linear simulations covering three scenarios for the case studies of Malawi and the UK, two countries on the opposite ends of the fiscal space spectrum. We find that the functional finance paradigm of fiscal space outperforms the sound finance paradigm for a range of macroeconomic variables, as well as improving the FSI when investments in productive capacity are targeted to easing import dependence and improving the international balance of payments. We subsequently identify the key political economy constraints operating at national and international levels that prevent countries from either fully utilizing or increasing their fiscal space. We argue for various reforms that would make it easier for countries' to fully use and expand their fiscal space, notably concerning the international monetary system.

The remainder of the paper is structured as follows. In Section 2 we interpret the Keynesian revolution from the perspective of a special relativity theory of fiscal space. We contrast the classical theory of sound finance, against which Keynes was arguing, with the ideas he developed in the aftermath of Einstein's relativity revolution in physics. Section 3 presents our theoretical foundations for a 'general relativity' understanding of fiscal space, merging Keynes's 'special relativity' framework with a long-run functional finance framework. Section 4 presents our empirical applications of this framework across countries, including the case study simulations for Malawi and the UK, while Section 5 offers a discussion of the findings from a political economy and geopolitics perspective. Section 6 concludes with implications for future research. This paper is supplemented by an Online Appendix including complete series and additional information about data sources and methodology.

2. Keynes and the Special Relativity of Fiscal Space

2.1. The Gold Standard and Sound Finance

Our theorization of fiscal space begins with the beliefs about contemporary economies that John Maynard Keynes rejected. These ideas, influential before and after Keynes, still shape public debates and underpin multiple strands of modern economic thought.[2] Applied to fiscal space — defined as the government's capacity to spend into the economy at current prices — these ideas align with the 'sound finance' paradigm. Central to this is the notion of spending being offset by at least an equal amount of saving, which automatically enriches the community, and finance as the mediation between savers and borrowers, supported by a gold standard mentality viewing money as fixed, exogenous, and convertible into precious metals.[3] Consequently, governments are seen to be reliant on the private sector as suppliers of funds (i.e., savings) for spending, with historical arguments asserting that private investors have always lent to states and require reassurance of solvency.

The sound finance paradigm assumes governments face the same intertemporal budget constraint as households (Blanchard 2020; Wyplosz 2020), expressed as:

$$G = T + B \tag{1}$$

[2]They appear in many Classical economists of the 18th and 19th centuries, Neoclassical Marginalism of the late 19th century, and its 20th-century offspring, New Keynesian and New Classical economics.

[3]For an overview and critique of this 'classical theory of money' dating back to Aristotle, see Tymoigne (2024).

Here, G is government spending, T is taxation, and B is borrowing. Taxes serve as the main revenue source, while borrowing, typically through bond sales, allows temporary deficits. Over the long run, expenditures must align with taxes to maintain market access and avoid debt rollover risks. This framework views fiscal space as absolute, ignoring macroeconomic conditions beyond short-term cyclical effects on tax revenue. Full employment and fixed productive capacity are assumed, reflecting the general equilibrium model rooted in marginalist value theory, which frames deficits and debt in moralistic terms.

This individualistic, household-centric framework explains why deficits ($G>T$) are deemed problematic and why balanced-budget rules or constitutional 'debt brakes' have proliferated (Davoodi et al. 2022). Even proponents of 'fiscal standards' acknowledge that, while favorable interest rate-growth differentials may mitigate high debt, the risk of insolvency persists (Blanchard 2019; Blanchard, Leandro, and Zettelmeyer 2021).[4] This influence extends to 'derisking state' strategies for environmental sustainability challenges (Gabor 2023), shaped by perceived fiscal limits. Relatedly, deficits add to public debt, often expressed as a ratio to GDP ($\frac{D}{Y}$) to assess how much income (Y) is available to cover debt (D).

Public debt-to-GDP ratios are central to this framework, with fiscal sustainability defined by debt thresholds deemed acceptable to market confidence (Ghosh et al. 2013; Reinhart and Rogoff 2010; Romer and Romer 2019). Combining equation 1 with $\frac{D}{Y}$, fiscal solvency ultimately depends on a government's perceived ability to generate future primary surpluses, and thus fiscal space on the budgetary resources available to a government to service its debts (Debrun et al. 2019; Kose et al. 2022).

This framework also links deficits and debt to inflation, invoking the monetarist 'too much money' narrative. Relying on Irving Fisher's equation of exchange (Fisher 1911), $M \times V = P \times Q$, monetarists treat money supply (M) as exogenous, velocity (V) as constant, and output (Q) as fixed in the short term (Kaldor 1982). Any increase in M is presumed to raise prices (P), reinforcing an absolute view of fiscal space. This short-term focus is shared by Keynesian economics, albeit with a fundamentally different emphasis. It is to this Keynesian revolution that we now turn.

2.2. Breaking away from Newton: Einstein and the Keynesian Revolution

The sound finance approach to fiscal space relies on a gold-standard view of money and a microeconomic equilibrium framework treating time and space as absolute concepts. This parallels Newtonian physics before Einstein's paradigm shift. Indeed, Keynes and others have likened (neo)classical economics to Newtonian physics or Euclidean geometry (Galbraith 1994; Keynes 1933a; Togati 1998, 2001), while Keynes's own work has been compared to Einstein's physics (Galbraith 1994; Hutchison 1981; Pedersen 2022; Pigou 1936; Rosenberg 1994; Skidelsky 1992; Togati 1998, 2001).

Rejecting Newtonian absolutes in both physics and economics requires recognising that time and space are interrelated in a system that 'interacts with itself.' This resonates with Keynes's monetary-production economics, which views markets (space) and money (time) in relative terms, where the whole is not reducible to the sum of its parts

[4]For critiques of deficit and debt rules, see Godley and Rowthorn (1994) and Godley and Lavoie (2007a).

(Galbraith 1994). Liquidity addresses temporal uncertainty and conventions address market expectations, which interact to produce emergent properties irreducible to individual behaviors. This stands in contrast to the classical theory's real-exchange (general equilibrium) model, where markets and money (as a medium of exchange) are independent of space and time, enabling instantaneous individual decisions and transactions akin to Newton's worldview (Pedersen 2022; Togati 2001).[5]

As argued by Togati (2001), Keynes's theory, like Einstein's, accepts individual units (atoms or behaviors) but treats aggregates as essential analytical tools. Keynes criticized the classical theory of his professors (Marshall, Pigou, and their marginalist predecessors) as a 'special case' of his general theory, given that the classical theory builds from a state of full employment without incorporating money's distinct role in managing temporal uncertainty. The volatility of effective demand in Keynes's theory is a consequence of systemic interrelations.[6]

Keynes's central objective was to develop a 'general theory of employment' (Keynes 1937), but his 'endogenous finance' paradigm also provides valuable insights into fiscal space. In a 1942 BBC broadcast, expanding on ideas from *A Treatise on Money* (1930), he stated: 'after meeting our daily needs by production and export, we shall find ourselves with a certain surplus of resources and of labour available for capital works of improvement. If there is insufficient outlet for this surplus, we have unemployment. If, on the other hand, there is an excess of demand, we have inflation' (Keynes 1942, p. 267). Equation 2 formalizes this, where G represents government spending, μ unemployment, and π inflation:

$$G = f(\mu^{+}, \pi^{-}) \tag{2}$$

Fiscal space (G) thus depends positively on resource under-utilization (μ) and negatively on inflation (π). In this paradigm, fiscal space is relative to macroeconomic conditions, not absolute. Money, and thus financing, is *endogenous*, '[making] it impossible for all individuals simultaneously to save any given sums' (Keynes 1936, p. 84). By implication, government spending generates tax revenue, as investment creates saving, and loans create deposits (Lavoie 2019).[7]

While Keynes called the classical theory a 'special case' of his general theory, its application to fiscal space aligns more closely with Einstein's 'special relativity' (Pedersen 2022). Keynes focused on effective demand and employment in mature economies, assuming a fixed supply side (productive capacity), as noted by Joseph Schumpeter in his critique of *The General Theory* (Schumpeter 1936). Keynes summarized this view in his final chapter:

> When 9,000,000 men are employed out of 10,000,000 willing and able to work, there is no evidence that the labour of these 9,000,000 men is misdirected. The complaint against the present system is not that these 9,000,000 men ought to be employed on different tasks,

[5]Newton summarized this reductionist logic: 'The extension, hardness, impenetrability, mobility and vis inertie of the whole result from … the parts' (Togati 2001, p. 122, fn 8).

[6]Keynesian economics reduces to classical economics when expenditure is instantaneous, implying no uncertainty about the future (Pedersen 2022).

[7]Applying this logic to international trade results in the proposition that imports create exports. Keynes's proposal of an International Clearing Union for the Bretton Woods Monetary and Financial Conference, where each country would dispose of an overdraft facility to spend Bancor on imports before receiving Bancor from exports, illustrates this principle (Keynes 1943).

> but that tasks should be available for the remaining 1,000,000 men. It is in determining the volume, not the direction, of actual employment that the existing system has broken down. (Keynes 1936, p. 379)

Post-Keynesian economists extended these ideas to developing economies. Joan Robinson, in her 1972 lecture 'The Second Crisis of Economic Theory,' contrasted the interwar crisis of employment level with the 1970s crisis of employment content (Robinson 1972). This shift traditionally separates mature-economy Keynesianism from developing-economy post-Keynesianism. Figures like Prebisch (1950), Nurkse (1953), and Kalecki (1955) tackled the structural challenges of late development. Yet, as Robinson (1972, p. 8) observed, the problem of employment content concerning both 'the allocation of resources between products' and 'the distribution of products between people' persists even in advanced economies. This was evident during the 1970s stagflation and is even more pressing today, given the challenges of transitioning away from fossil fuels.

3. Functional Finance and the General Relativity of Fiscal Space

We argue that the paradigms of fiscal space outlined above concern either an absolute understanding of this space (sound finance paradigm) or a special relative understanding of it (Keynesian paradigm applied to mature economies). In this section we propose a relative approach to fiscal space with general properties, essentially by adding relativity to the supply side of the Keynesian paradigm. We source this type of relativity from the approach of functional finance. As put in the pioneering article by Abba Lerner:

> The central idea is that government fiscal policy, its spending and taxing, its borrowing and repayment of loans, its issue of new money and its withdrawal of money, shall all be undertaken with an eye only to the *results* of these actions on the economy and not to any established traditional doctrine about what is sound or unsound …The principle of judging fiscal measures by the way they work or function in the economy we may call *Functional Finance* (Lerner 1943, p. 39, emphasis in original).

Although functional finance is directly associated to Lerner, its origins can be traced to Keynes's policy-oriented writings, such as his 1933 lecture 'national self-sufficiency,' where he emphasized the role of public investment in achieving national objectives and prioritising resource mobilization over financial constraints (Keynes 1933b).[8] Keynes would re-purpose this reasoning in his BBC radio address during the Second World War, where he implicitly linked fiscal space to available real resources (physical and cognitive) in the country in his remark that 'anything we can actually do, we can afford' (Keynes 1942, pp. 264–66). Similarly, in Chapter 24 of *The General Theory*, Keynes called for a 'generalized socialization of investment' to reduce its volatility and align it with public goals. Similar positions can also be found in the Post-Keynesian literature applied to developing economies cited previously, as well as in more

[8]In his 1933 lecture in Dublin Keynes remarks: 'If I had responsibility for the Government of Ireland to-day, I should most deliberately set out to make Dublin, within its appropriate limits of scale, a splendid city fully endowed with all the appurtenances of art and civilization on the highest standards of which its citizens were individually capable, *convinced that what I could create, I could afford* — and believing that money thus spent would not only be better than any dole, but would make unnecessary any dole. For with what we have spent on the dole in England since the war we could have made our cities the greatest works of man in the world.' (Keynes 1933b, p. 187, emphasis added).

generalized frameworks inspired from these earlier works (Godley and Lavoie 2007a, 2007b; Skott 2021, 2023).

The functional finance paradigm also aligns with the credit theory of money, which defines money not as a private commodity like gold but as a public good created through credit issuance to direct economic activity (Innes 1913, 1914; Keynes 1930; Knapp 1905; Tymoigne 2024). In this framework, money is fiat, a decree that represents a liability of the sovereign issuer and an asset for its holder, with its value determined by the issuing authority. Rejecting the notion of money as inherently scarce, this perspective frames it as an abundant tool for achieving public objectives, with scarcity applying solely to the real resources it can mobilize. This conforms to the praxis of monetarily sovereign governments, as noted by modern central banks (Bundesbank 2017; European Central Bank (ECB) 2011; McLeay, Radia, and Thomas 2014; Stuckey, Becklumb, and Frigon 2021; Werner 2014). Similarly, private banks create money through credit issuance rather than relying on pre-existing deposits (Stuckey, Becklumb, and Frigon 2021). Functional finance thus leverages the endogenous nature of money to prioritize economic stability and public welfare over rigid financial constraints.

Monetary history underscores the central role of monetary authorities in creating fiat money to meet urgent economic needs (Redish 1993). A classic example is the US Civil War (1861–1865) which created the 'greenback' and a national banking system 'to overcome bankers' reluctance to take an active role in floating Union loans and provide the country with the tools to carry out its daily financial transactions' (Barreyre 2017, p. 317). These forms of legal decrees were common practise in sovereign states across the modern world, where inconvertible paper money issued by the public authority acquired 'objective social validity' by 'its forced currency' on the population, receiving thus 'a purely functional mode of existence' (Marx 1990, pp. 223-226). The chartalist approach to money in essence as a promise to pay guaranteed by some public authority rather than a precious material (whose weight for each denomination was always set by the same public authority) has a history stretching back to pre-modern and ancient times (Tymoigne 2024). Despite this long tradition of institutional flexibility, a laissez-faire, bullionist mindset endures, even under today's fiat money regimes, decades after the global abandonment of the gold standard in 1971. This persistence reflects the path dependence of gold and silver standards from pre-modern times, rather than a mere recency bias.

While currency users (households, firms and local governments) must earn or borrow currency to spend, currency users (national governments with sovereign currencies) can create and issue it without relying on prior revenue or borrowing (Bell 2000). Such governments cannot default on debt denominated in their own currency. Central banks, as clearing agents, create reserves to facilitate interbank and government payments but cannot directly control the money supply, as they must accommodate banks' lending practices to maintain interest rate targets (Mitchell, Wray, and Watts 2019). The routine coordination between the fiscal agent of the state (the treasury) and its monetary agent (the central bank) to clear private financial balances and organize the financing of government justifies the unification of fiscal and monetary policies.

These are institutional features of modern economies, and therefore involve explicit public choices, rather than being exogenous. Since taxes and public borrowing are not direct spending operations, this allows a currency issuer to separate the three decisions

— spending, borrowing and taxation — and make them functions of policy goals. Thus, public finance can serve the public interest — e.g., ensuring full employment, relative price stability and ensure a guaranteed positive rate of return to savers (Lerner 1947). Functional finance therefore involves the following operations regarding government taxation and borrowing.

The purpose of taxation (T) is twofold. By operating on prices, it can influence private sector behavior (β) in desirable ways — such as disincentivizing negative behaviors (or 'externalities,' such as pollution or rent-seeking/remuneration practices that excessively increase income and wealth inequality) and incentivizing positive ones (such as driving demand for the national currency for internal transactions, as well as desirable forms of private investment or employment practices). Importantly, taxation can also check inflation (π) by directly reducing aggregate demand. As shown by Skott (2023), this feature eases the inflation constraint in both developed and developing economies, but also addresses the thorny consumption-investment trade-off in developing economies (we return to this in Section 5). Thus we have $T = f(\beta^{+-}, \pi^{+})$. This equation tells us that effective tax rates should be an increasing function of negative externalities (β^{+}), a decreasing function of positive externalities (β^{-}), and an increasing function of inflation (π^{+}).

The purpose of government borrowing (B) is also twofold. The act of auctioning bonds to private agents allows the public sector to manage liquidity (λ) in financial markets and this helps to control interest rates (i) in the economy, affecting the return on assets offered to the private sector as a hedge for their savings.[9] Thus, we have $B = f(i(\lambda))$. Bonds, in a similar way to taxes, can also be used as an anti-inflationary policy tool to drain private savings in times of large government expenditure programs that demand a lot of real resources. This logic is highlighted in Keynes's pamphlet *How to Pay for the War*, where bonds played the role of shifting purchasing power and resources from the private to the public sector for the war effort (Keynes 1940).

In line with this reasoning, fiscal deficits are positioned as dynamic tools for achieving public policy objectives in the functional finance paradigm. Productive deficits — those that enhance resource utilization and productive capacity — not only stimulate economic growth but can also lower sound finance targets, such as the debt-to-GDP ratio, even if the primary budget balance shows a nominal deficit.[10] Importantly, in the functional finance approach, even if there is an increase in the debt-to-GDP ratio, this does not pose a constraint on government spending *per se*. Currency issuing governments do not have financial constraints but are constrained primarily by the extent of their economy's productive capacity, which is premised on the use of existing real resources.

If productive deficits equate to productive activity-specific expenditures in the private sector, giving income, goods and services for private resident households, then we can draw another implication: money as the state's debt is simultaneously the private sector's asset. Moreover, any form of public debt (e.g., government bonds) is the private sector's wealth (with the difference accounted for by the current account

[9]As some authors have argued, interest rate management by the central bank can equally be achieved without having to buy and sell government bonds. Instead, the central bank alters the rate it charges on loans of reserves to banks (i.e., the discount rate) (Mitchell, Wray, and Watts 2019). We do not explore the implications of this choice in this paper.

[10]Note that the nominal deficit includes interest rate payments paid to holders of the contracted debt, implying that productive deficits are measured net of these interest payments.

balance). This can be shown using the three balances identity of the macroeconomy: $(S-I)+(T-G)+(-(X-M+FNI)) \equiv 0$, where S is private savings, I is private investment, T is government tax revenue, G is government expenditure, X are domestic exports, M are domestic imports and FNI is foreign net income. This identity says that the public sector financial balance $(T-G)$, the private domestic financial balance $(S-I)$ and the external financial balance of the rest of the world (or the inverse of the current account balance $(X-M+FNI)$) must add up to zero. In other words, aside from the external account, the public debt is equal to net private wealth. From this accounting perspective, a government fiscal surplus is associated to a private sector deficit and to the private accumulation of debt, *ceteris paribus*. This is unsustainable in the long run as households and firms can face insolvency i.e., a situation in which debtors cannot service their debts out of their current income or gains from asset liquidations. The US government has run surpluses only thirteen times in its history, and all were followed by severe recessions, including the Great Depression (Kelton 2020). This is because running public surpluses forced the country to run unsustainable private deficits, given its external balance, which is often treated as an exogenous variable in the Post-Keynesian literature (Nikiforos and Zezza 2017).

Various historical examples demonstrate the principles of functional finance in practice, particularly its emphasis on productive deficits and fiscal-monetary coordination. During the Great Depression and World War II, the U.S. used productive deficits to invest in infrastructure, reduce unemployment, and boost output, ultimately lowering public debt relative to growth. The Fed-Treasury Accord (1942–51) further ensured fiscal-monetary coordination by stabilising government bond prices (Hetzel and Leach 2001). Similarly, Japan's post-1990 policies highlight the ongoing importance of fiscal-monetary symbiosis in achieving economic objectives (Bernanke 2017). These cases underscore the inherently political nature of fiscal and monetary coordination, as modern parliaments retain ultimate sovereignty over public expenditure and debt management, even when central banks are nominally independent (Berkeley et al. 2022; McLeay, Radia, and Thomas 2014). This highlights how the architecture of fiscal and monetary policy reflects broader political choices within the functional finance framework.

A cornerstone of these arrangements is currency sovereignty. A country has currency sovereignty if it issues its own currency, enforces taxes and other domestic payments in this currency, and has a floating exchange rate, that is, a currency neither pegged, closely tracking, nor convertible into another currency or commodity like gold (Kaboub 2017; Lerner 1947; Mitchell, Wray, and Watts 2019; Wray 2007). These are necessary conditions, but they may not be sufficient for full currency sovereignty. The international status of a currency matters, reflected in its importance as a means of international payment, unit of account and store of value, in other words its 'liquidity premium' (Fritz, de Paula, and Prates 2018; Prates 2020). We can augment this notion of currency sovereignty to one of monetary sovereignty if, in addition to the above requirements, we add the following factors: the weight of inelastic imports that put downward pressure on the exchange rate, and the amount of foreign exchange reserves, influenced by the value-added in exports versus imports.

These factors determine the need for foreign currency, which impacts the extent of a country's monetary sovereignty. Where dependency on inelastic imports is high, and

foreign exchange reserves are low (especially in the context of trade deficits), monetary sovereignty will be lower. This can be summarized in the 'balance of payments constraint' emphasized in the Structuralist and Post-Keynesian literatures (Furtado 1956, 1961; Kregel 2020; Prebisch 1950, 1961; Thirlwall 1979). Not only does this have to do with the value-added in production and declining terms of trade, but also with the international hierarchy of currencies as identified in the literature (Aboobaker and Ugurlu 2023; Bonizzi, Kaltenbrunner, and Michell 2019; De Paula, Fritz, and Prates 2017; Fritz, de Paula, and Prates 2018; Murau and van 't Klooster 2023; Nair 2023; Prates 2020). This hierarchy implies that peripheral economies usually find it difficult to get their currencies accepted for external debt, and even long-term internal debt (Eichengreen, Hausmann, and Panizza 2005). The latter is a sign that the national hierarchy of money does not have a well-defined structure with state money (government liabilities) at the top (Bell 2001; Tcherneva 2016). The result is greater foreign currency indebtedness, which exposes foreign currency debts to exchange rate fluctuations and the economy to contractionary effects (Vernengo and Caldentey 2020). This can be exacerbated by key currency illiquidity, such as periods of dollar tightening, which can even deteriorate conditions in non-peripheral countries.

Thus, currency hierarchy largely mirrors relative differences in producing economic value-added per unit of raw inputs, or in other words, the productivity distance to the country having the most internationally traded currency. Since there are many countries that do not meet all of the conditions for full currency sovereignty, let alone monetary sovereignty, both exist along a spectrum rather than a dichotomy (Bonizzi, Kaltenbrunner, and Michell 2019; Murau and van 't Klooster 2023). Jump and Michell (2023) also argue that monetary sovereignty, while necessary, is not a sufficient condition for domestic policy autonomy, nor a sufficient insulator from external financial shocks. In analyzing recent dollar illiquidity cycles, which negatively affect domestic policy autonomy in a range of countries, they identify domestic productive capacity and global financial market integration as more important policy constraints.

Putting all these elements together, we propose a 'general relativity' theory of fiscal space, which is a function of both demand (from the standard Keynesian paradigm, which can be seen as a 'special' case of this theory) and supply (from the functional finance paradigm). Equation 3 lays this out:

$$G = f(\mu^+, \pi^-, m^+, \rho^+) \tag{3}$$

Fiscal space (G) is an increasing function of unemployment (μ^+) and a decreasing function of inflation (π^-) at a cyclical level, and an increasing function of monetary sovereignty (m^+) and productive capacity (ρ^+) at a structural level. This framework respects the notion of a monetary-production economy as the original frame of reference in the theory, framed by primary systemic elements at a cyclical level (μ, π) and at a structural level (m, ρ), analogous to a general relativity of spacio-temporal (real-monetary) variables.[11] Table 1 summarizes the three approaches we have described in the last two sections.

[11]Real variables are unemployment and productive capacity, while monetary variables are inflation and monetary sovereignty.

4. Empirical Estimates of Relative Fiscal Space

This section turns from theory to empirics to answer the question: how much fiscal space do countries have at their disposal to use. We are not the first paper to propose a comprehensive quantification of countries' fiscal space. The literature is replete with papers studying the sovereign debt risks of national governments with indicators varying from public (often complemented by private and external) debt levels, its composition, public revenues and expenditures expressed in fiscal (cyclically-adjusted) balances, and sovereign credit default swap spreads or ratings. These indicators are usually used in an econometric analysis of fiscal solvency. A key metric is the 'fiscal sustainability gap,' defined as the difference between a country's fiscal balance and its debt-stabilizing balance, taking borrowing costs (interest rates) as being market determined and thus exogenous. Kose et al. (2022) review this literature in presenting a new database of fiscal space for the World Bank, the first to bring together such a wide array of indicators, 30 in total — covering government debt sustainability, balance sheet composition, external and private debt stock and market perception of sovereign risk — across 202 countries since 1990. The study of the database intends to show the most relevant sources of constraints on countries' debt service capacity, particularly in the presence of adverse shocks. They find that higher debt levels make sustainability gaps larger and fiscal responses to crises weaker. This is because fiscal space is conceptualized as a function of the size of deficits and debt. Characteristics of external debt and market credit ratings exacerbate these gaps but they ultimately rest on an absolute understanding of fiscal space, where there is some maximum limit on spending imposed exogenously, as described in Section 2.1, and summarized in Table 1.

We apply the theory of Section 3 to build a novel synthetic index of relative fiscal space. The variables we mobilize are those in equation 3. For one of these — monetary sovereignty — we contribute a new index, which we detail in the following subsection. Subsequent subsections describe the data we use for the other variables and the empirical method we employ to produce a country-level index of fiscal space.

4.1. Monetary Sovereignty Index

Of 252 countries and territories in the world, 197 are nominally politically sovereign, but only 152 issue their own currency. Of these 29 peg it to another currency, 33 have bounded exchange rates (crawling peg, or crawl-like managed arrangements), leaving 90 with floating exchange rates (IMF 2022). For example, of 48 countries in Sub-Saharan Africa which have data, 25 countries issue their own currency and do not peg it. 8 countries issue their own currency but peg it, while 15 countries do not issue their own currency (14 CFA Zone countries and Zimbabwe, which uses the US dollar). Online Appendix A shows the regional classification for all countries in our sample.

This degree of what we call basic currency sovereignty masks aspects important to overall monetary sovereignty as argued above. Complementing it is the status of a currency in the international hierarchy. We proxy this status by the share of the currency in global foreign exchange reserve holdings, which is a positive function of the currency being demanded across countries and its overall liquidity premium, and by the share of debt denominated in domestic currency, which is a positive function of the liquidity of a domestic currency. High foreign-currency debt reduces monetary sovereignty as it forces

Table 1. Overview of fiscal space paradigms.

Fiscal space	Absolute	Relative to demand	Relative to demand and supply
Paradigm	Exogenous ('Sound') Finance (Neoclassical)	Endogenous Finance (Keynesian)	Functional Finance (This Paper)
Determinants	$G = T + B$	$G = f(\mu^+, \pi^-)$	$G = f(\mu^+, \pi^-, m^+, \rho^+)$
Employment	Fixed	Variable	Variable
Productive Capacity	Fixed	Fixed	Variable
Temporality	Short Run	Short Run	Short/Long Run
Analogy in Physics	Newton	Einstein (Special Relativity)	Einstein (General Relativity)

Source: Authors' elaboration. G refers to fiscal space (government spending); T refers to tax revenue; B refers to borrowing (or bonds); μ refers to unemployment, which proxies resource under-utilization; π refers to inflation; m refers to monetary sovereignty; and ρ refers to productive capacity.

countries to get hold of a currency it does not issue in order to service its debt. This fuels a greater need for foreign reserves, and creates exchange rate risks. We consider *public* debt rather than total debt given our focus on fiscal space in a framework where government expenditures are understood to be relative to institutional arrangements and resource utilization.[12] Online Appendix B present these indicators across world regions.

We complement the currency hierarchy approach to monetary sovereignty with two further variables that affect countries' effective degrees of monetary freedom. The first is the amount of foreign exchange reserves countries have accumulated, as this serves as a buffer in times of crisis, relaxing the balance of payments constraint on their development policy. The second is the share of critical inelastic imports, such as food and fuel imports, in total imports. High dependence on these imports make countries financially vulnerable to global prices of primary commodities and to pass-through inflation, particularly if the prevailing institutional arrangements dictate that they are to be paid in a foreign currency (thus also affecting their foreign exchange reserves). Data from World Development Indicators (WDI) from the World Bank is available for 171 countries on food and fuel imports as a percentage of merchandise imports (World Bank 2024).[13]

Table 2 summarizes the ingredients included in our Monetary Sovereignty Index (MSI), distinguishing those with a positive impact on monetary sovereignty from those with a negative impact. The original values of variables expressed in percentage shares are standardized using the max-min procedure to produce values between 0 and 1 and facilitate interpretation, meaning that higher values for the positive indicators will positively impact the MSI, while lower values for the negative indicator will also positively impact the MSI. The MSI is computed as an average of these standardized values, but it is a weighted average. We first weight basic currency sovereignty (Issuer and Floating) by the Share of Food and Fuel Imports, conditioning basic currency sovereignty on the one negative indicator in our list. This adequately controls for the fact that the many countries issuing and floating their own currencies (half of the countries in our sample) do not automatically have equal currency sovereignty. Those with lower shares of food and fuel imports (less monetarily constrained) are scaled upwards, while those with higher

[12]We recognize the influence that private external debt, especially in foreign currency, may have on the balance sheets and aggregate demand of the private sector in the context of exchange rate volatility (Vernengo and Caldentey 2020). For now, we focus on public spending as a leading variable in aggregate demand, and in addressing private sector deficiencies.

[13]Online Appendix B reports these statistics, where Figure B.1 and Figure B.2 show how Sub-Saharan Africa is the most food-dependent importer, but South Asia leads in dependence on fuel imports.

shares of food and fuel imports (more monetarily constrained) are scaled downwards. The MSI is the average of this weighted currency sovereignty measure and the values of the three other indicators. The resulting dataset covers 164 countries across all world regions.

Figure 1 depicts the MSI across different world regions and Figure 2 depicts it among the five highest and five lowest scoring countries. North America is the region with the highest monetary sovereignty, driven by the United States (with an MSI of 0.76). The regions and countries that follow generally issue and float their own currency, as well as having a low dependence on food and fuel imports, high foreign exchange reserves, and a high share of public debt in their own currency. Small dollarized economies, and economies operating in currency unions (CFA, Euro) are at the bottom of the spectrum.[14] Table B.1 in the online Appendix gives the complete ranking of countries. The fact that some developing middle-income countries (such as Algeria, Brazil and Russia) rank higher than some developed high-income countries (such as Norway, the United Kingdom and Canada) is due to the former having higher foreign exchange reserves, while the contribution of the latter's currency liquidity and high public debt in domestic currency are not strong enough to compensate.

4.2. Productive Capacity, Unemployment and Inflation

Monetary sovereignty, although necessary, is not a sufficient condition for development. Another key structural aspect, as identified in Section 3, is productive capacity. A commonly used indicator in this respect is the share of manufacturing as a percentage of total value-added. However, looking just at manufacturing is a narrow view of industrialization. A broader measure of industrialization is the Productive Capacities Index (PCI) launched by the United Nations Commission for Trade and Development (UNCTAD) in 2018. The PCI summarizes indicators in eight categories: information and communication technologies (ICTs); structural change; natural capital; human capital; energy; transport; private sector and institutions. The PCI's overall score (ranging from 0 to 100) and its dimensional scores enable an 'understanding [of] the sources of systemic vulnerabilities and identifying the enablers of economic growth, including progress towards national and global development targets.' (UNCTAD 2021, p. 7). UNCTAD (2021) provides the computational details of the index, where forty-six indicators are mobilized from different official sources as inputs to the eight main categories comprising the PCI. There is a strong correlation coefficient between the PCI and log GDP per capita (0.91) (UNCTAD 2021, p. 33). The UNCTAD database covers 194 countries in total (UNCTAD 2023b), of which there are 161 for which we can estimate an MSI. In Figure 3 we show the positive correlation between these two variables, dividing the sample into currency issuers and currency users. Concerning the final two determinants of fiscal space in our framework, unemployment and inflation, we source the data from the World Bank (2024) for all countries, using the most recent available year across our country sample (2022). Our final sample consists of 150 countries with data covering all four variables.[15]

[14]We classify all individual Eurozone countries as being currency users not issuers, and thus their public debt is entirely denominated in a foreign currency.

[15]Figure A.2 in the Online Appendix presents the list of excluded countries.

Table 2. Indicators in the Monetary Sovereignty Index (MSI), 164 countries.

Indicator (sign)	Definition	Average	Min.	Max.
Currency Issuer (+)	1 for yes, 0 for no	–	0	1
Floating Exchange Rate (+)	1 for yes, 0 for no	–	0	1
Share of Food and Fuel Imports (–)	% total imports (2018–2022 avg.)	29.7	8.3	70.6
Weighted Currency Sovereignty (+)	Average (standardized) of above 3 variables	0.55	0.09	0.90
Foreign Exchange Reserves (+)	Months of imports (2018-2022 avg.)	5.1	0	26.0
Currency Liquidity (+)	% global FX reserves (2022)	3.2	0	59.3
Public Debt in Domestic Currency (+)	% total (2018-2022 avg.)	41.9	0	100
Monetary Sovereignty Index (MSI)	**Average (standardized) of above 4 variables**	**0.33**	**0.02**	**0.76**

Notes: authors' elaboration using data on currencies and exchange rates from IMF (2022), foreign reserve holding from IMF (2023a), public debt from IMF (2023b), and food and fuel imports from World Bank (2024). The sign after the indicator specifies conceptually whether it has a positive or negative impact on monetary sovereignty. The original values of variables expressed in percentage shares are standardized using the max-min procedure to produce values between 0 and 1. The MSI is a weighted average as described in the text, and varies between 0 and 1. See Online Appendix B for the complete country estimates.

4.3. Fiscal Space Index

Empirically estimating fiscal space is challenging given that it is not a directly observable variable. For this reason, an econometric approach would not be very appropriate. Instead, we treat fiscal space as a latent variable indirectly observed through the combination of variables in equation 3. We therefore use Principal Component Analysis (PCA) to first understand how much variation in fiscal space among our sample of countries is explained by each original variable in equation 3 — that is unemployment, inflation, monetary sovereignty, and productive capacity — then reduce the dimensions from

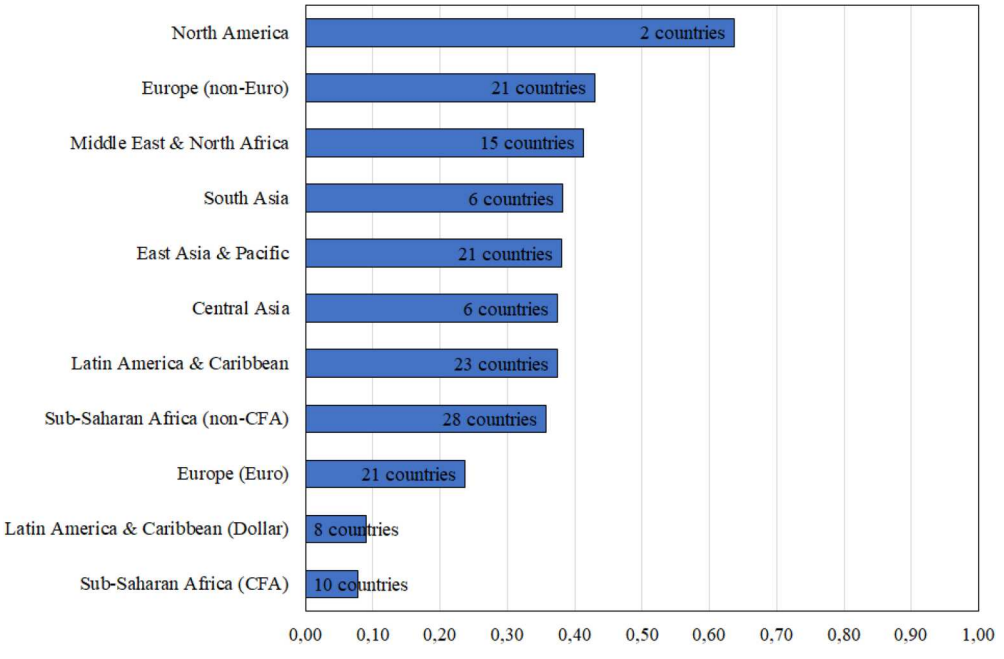

Figure 1. Monetary sovereignty index across world regions.

Note: Authors' computations using data from Table 2.

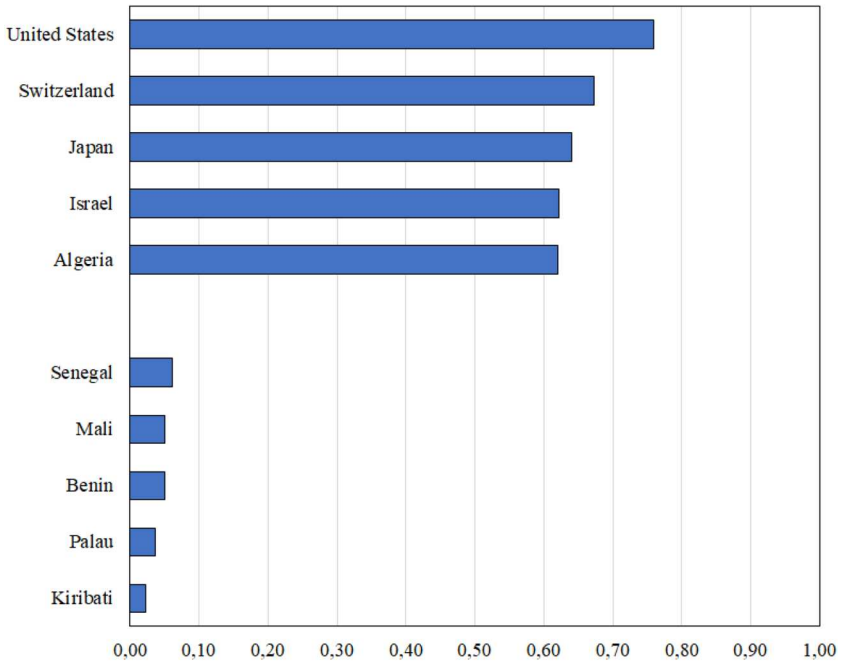

Figure 2. Monetary sovereignty index in top 5 and bottom 5 countries.
Note: Authors' computations using data from Table 2.

four variables to two using linear combinations of the original data, and finally — using statistical weights produced by the PCA — estimate a Fiscal Space Index (FSI) for each country. Table 3 presents the descriptive statistics of variables composing the FSI. Online Appendix C provides the technical specification of the PCA analysis.

This methodology is the same as the one applied by UNCTAD (2021) in its PCI computations. Thus, we maintain consistency with an important component of our fiscal space concept. As stated, we are dealing with four principal components (those in Table 3), which are latent factors, which we posit to be determinants of the latent variable of fiscal space (as argued in Section 3). We run a PCA reducing the number of components to two principal components using linear correlations of the original data. As indicated by UNCTAD (2021, p. 17): 'correlated principal components indicate that they are measuring the same domain, while a lack of correlation indicates that the indicators refer to different latent structures.' Monetary sovereignty and productive capacity are more highly correlated on the first principal component (i.e., both have high eigenvector coefficients), while unemployment and inflation are more highly correlated on the second principal component. Given this combination, we infer that the first component relates to the domain of supply and the second to the domain of demand. Our results fulfill the two binding constraints of a PCA, as outlined by UNCTAD (2021).[16] These two main principal components together explain 60 per cent of total variation in the dataset. Figure 4 presents the decomposition of this variation among the four original

[16]Specifically, '(a) The factor's eigenvalue is greater than one; (b) The factor explains at least 10 per cent of the total variance' (UNCTAD 2021, p. 17). See Online Appendix C.

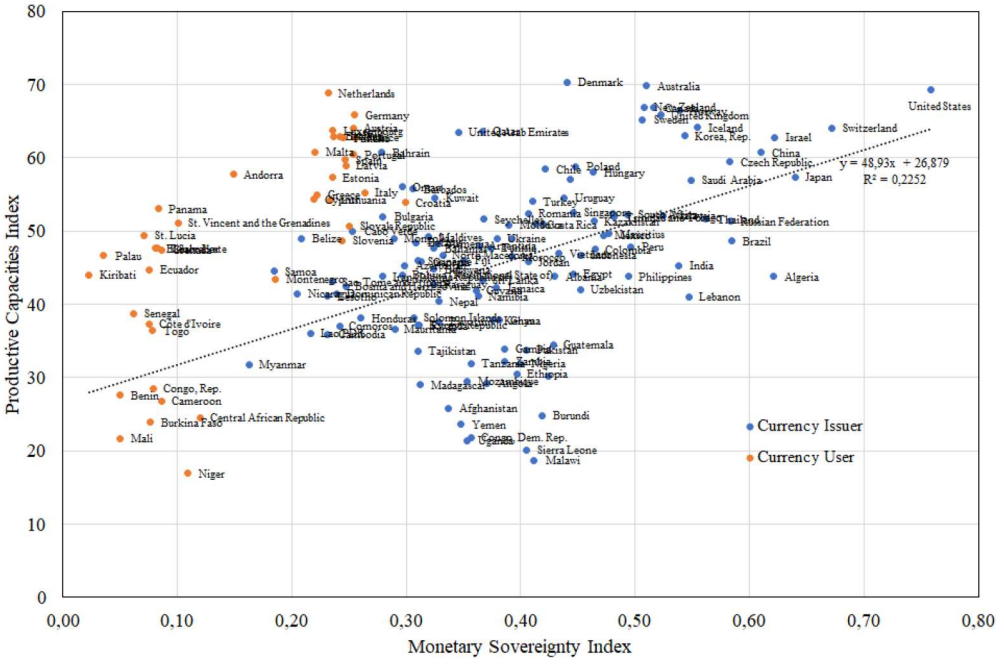

Figure 3. Correlation between monetary sovereignty index and productive capacities index.

Notes: authors' computations using data from Table 2 and UNCTAD (2023b). The sample is divided into currency issuers and currency users.

variables divided into Component 1 (Supply) and Component 2 (Demand). On the demand side, inflation explains 23 per cent, and unemployment explains 19 per cent of the total variation in the data. On the supply side, productive capacity explains 30 per cent and monetary sovereignty explains 27 per cent of the variation.

Now that we have reduced the four original variables into two principal components using a linear statistical combination of the original data, we can estimate each country's fiscal space as a synthetic index using the original (standardized) values multiplied by the statistical weights generated by the PCA analysis as follows:

$$\frac{1}{n}\sum_{i=1}^{n} x_i w_i = \frac{1}{n}(x_1 w_1 + \cdots + x_n w_n) \tag{4}$$

Table 3. Indicators in the Fiscal Space Index (FSI).

Indicator	Source	Average	Min.	Max.
Unemployment	World Bank (2024)	6.8	0.1	34.2
Inflation	World Bank (2024)	11.1	1.4	72.3
Monetary Sovereignty	Table 2	0.34	0.05	0.76
Productive Capacity	Productive Capacities Index, UNCTAD (2023b)	47.1	16.9	70.3
Fiscal Space Index (FSI)	**PCA (150 countries)**	**0.52**	**0.24**	**0.80**

Notes: authors' elaboration. Unemployment and inflation are both originally expressed as a percentage. The original values of all indicators are standardized using the max-min procedure to produce values between 0 and 1. The value of each variable for all countries is then multiplied by the statistical weights of the same variable coming from the Principal Component Analysis (PCA). We exclude Zimbabwe and Lebanon from the computation as their extreme inflation (104.7 per cent and 171.2 per cent) bias the statistical weight of inflation in the whole sample, thus affecting the weighted results of the PCA for each country.

In equation 4, $n = 4$ denotes the four variables in Table 3, x_i are the standardized values for each variable and w_i are the PCA-derived weights for each variable. Figure 5 depicts the FSI across different world regions, and Figure 6 depicts it among the five countries with the highest and lowest values of the index. Following the structure of the raw data presented in Figures 1–3, and in the structure of the correlations between the variables in the sample (Figure 4), Figure 5 confirms that North America is the region with the highest amount of fiscal space on average, followed by Non-Eurozone Europe, Middle East and North Africa, the Eurozone, East Asian and Pacific, all the way down to Sub-Saharan African economies under the CFA currency system.

Figure 6 reports the five economies with the highest and lowest FSI in the sample, the former being a mix of high-income and emerging economies, while the latter being exclusive to Sub-Saharan Africa. The United States is the country in our sample with the highest estimated FSI, pipping South Africa, Switzerland, Israel and China. South Africa's high rank is primarily due to its extremely high unemployment rate (33 per cent), the second highest in the sample after Eswatini (34 per cent) itself ranked twentieth. Both of these countries have high contributions from the demand component of fiscal space (i.e., high unemployment without having high inflation). This is a general feature of developing countries, while developed countries tend to score higher on the supply component (monetary sovereignty and productive capacity), as presented in Figure 7. Given that the PCA weights of the four individual components across the entire sample are relatively balanced, high FSI scores require high scores in each individual component, or a low score in one to be compensated by a high score in another. Table D.1 in the online Appendix presents the complete FSI ranking of countries.

We stress that our approach is not meant to be a static picture of fiscal space. In fact, countries with a low FSI at any point in time are not forever destined to live within the means provided by this space. Rather, countries can act in appropriate ways to expand their frontier. This is what we show in the following section.[17]

4.4. Case Study Simulations

The key issue for global development is that not even all countries with high monetary sovereignty use it effectively. As argued above (and as identified in much of the literature), underdeveloped countries need to first invest in domestic productive capacity. If this is done with public deficits in the short-term, higher productive capacity will reduce the overall debt-burden as well as inflationary pressure over time. Once a higher productive capacity is attained, these countries can further dedicate resources towards sustainable development, selling bonds or raising taxes in domestic currency to drain excess liquidity and inflationary pressures from the system. A key point is that government expenditure that is directed towards significantly raising productive

[17]While we acknowledge that changes in international liquidity — for example, in the monetary policy of the key currency issuing central bank — could affect a country's monetary sovereignty and fiscal space, it would do so in a proportional way across countries with respect to the key currency issuing country, thus not affecting the FSI ranking. In general, we can imagine different contexts of the international monetary system affecting the fiscal space of individual countries over time. We abstract from these issues in the section that follows, but address them in the discussion in Section 5.

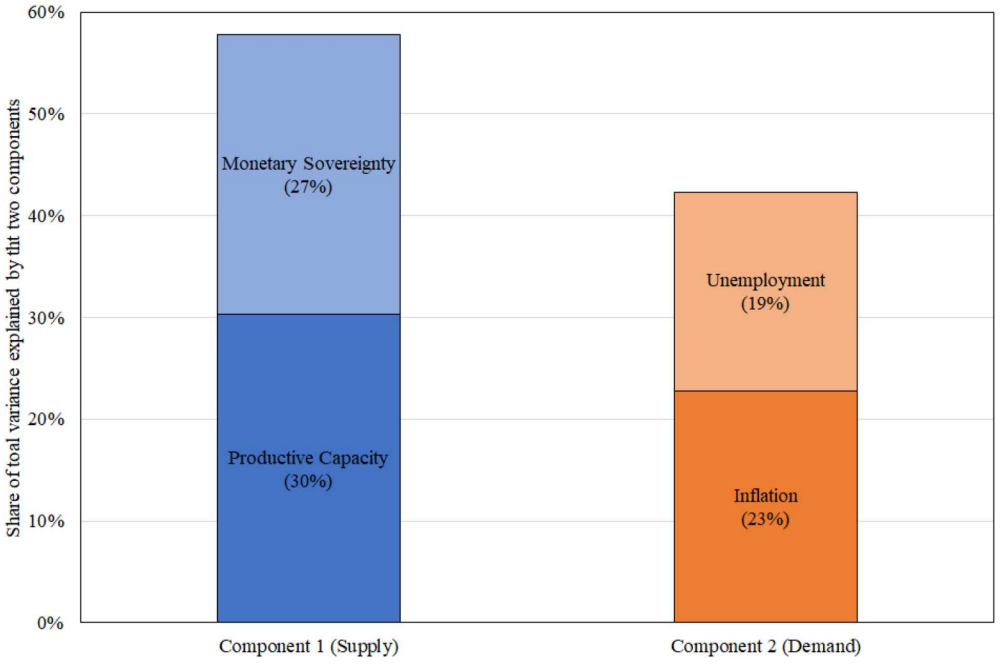

Figure 4. Explained variance across the two principal components.
Note: Authors' computations using data from Table 3.

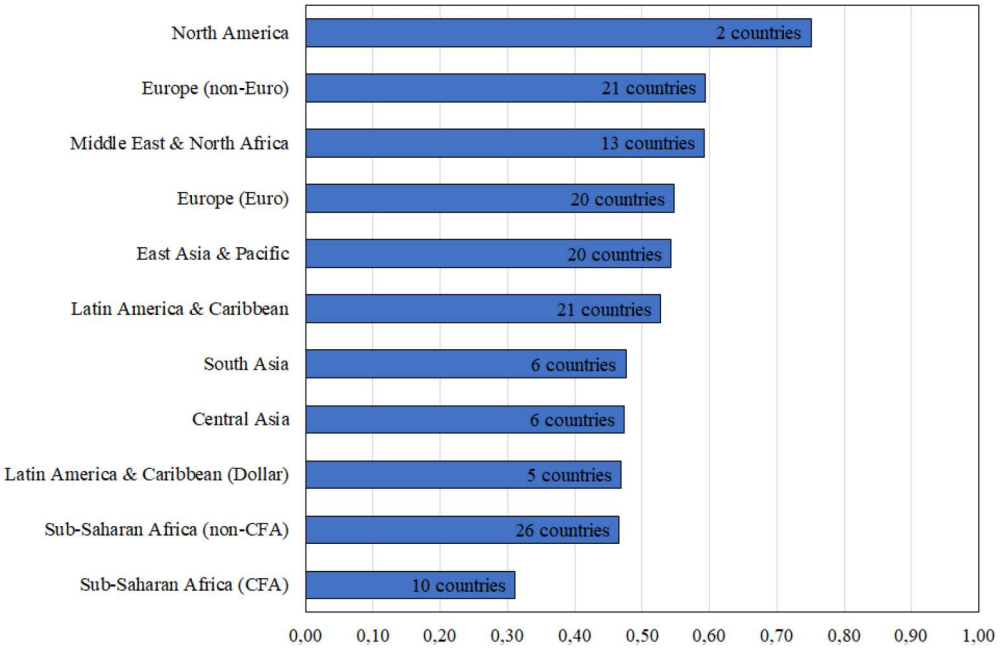

Figure 5. Fiscal space index across world regions.
Note: Authors' computations using data from Table 3 and Figure 4.

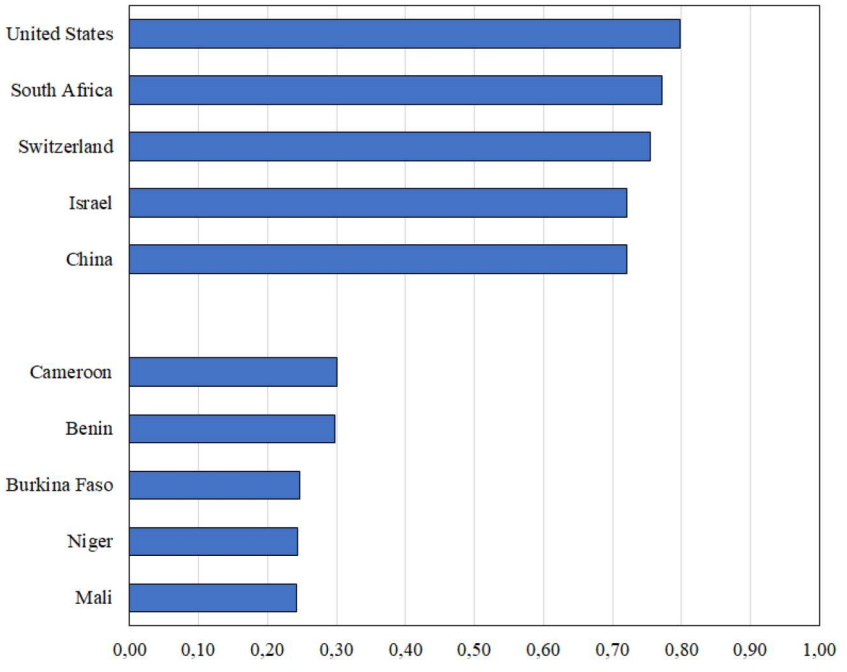

Figure 6. Fiscal space index in top 5 and bottom 5 countries.
Note: Authors' computations using data from Table 3 and Figure 4.

capacity can *increase* fiscal space over time. We explore this point by way of simulations for Malawi and the United Kingdom (UK).

These case studies are pertinent for numerous reasons. With an average income of just $1700, Malawi is a poor underdeveloped economy in Sub-Saharan Africa, with low productive capacity and high informal employment (concealed in a relatively low unemployment rate of 5 per cent); low life-expectancy and low expected and average years of schooling (World Bank 2024). It has the thirteenth lowest Fiscal Space Index (FSI) in our sample of 150 countries, and interestingly for our purposes it issues and floats its own currency. Applying our framework to this country context would convey its generality in even the poorest economies, on the condition that they issue and float their own currency. The case of the UK presents the opposite case of a high-income, developed economy with high productive capacity and low unemployment, which also issues and floats its own currency.

We run simple pooled OLS regressions on the entire sample of 150 countries since 1980 and apply the resulting coefficients to both countries' data for a number of key macroeconomic variables reported in Sections 2 and 3, including the four that comprise our Fiscal Space Index (equation 3). These variables are shown in Table 4 for Malawi and Table 5 for the UK. Online Appendix E presents the calibration details of the model, where regression coefficients are reported for the different relationships that feed our simulations (see also the notes under Tables 4 and 5).[18] Our purpose is to illustrate approximate changes to

[18]The estimated parameters, like all empirical estimations, are sensitive to the sample chosen. We try to be balanced in applying the coefficients we deem most reasonable to the variables at hand. Alternative temporal specifications are presented in Appendix E. We opt for simple pooled OLS regressions, as opposed to a fixed effect model, to exploit the between-group variation in the sample necessary to account for the structural relationships between variables

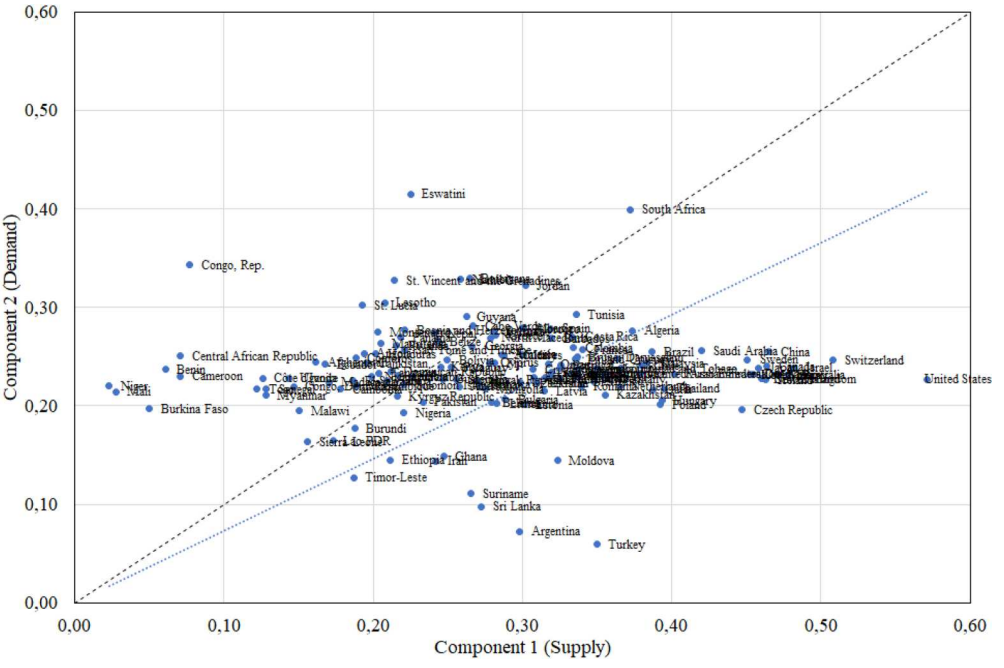

Figure 7. Relative importance of the two principal components.

Notes: Authors' computations using data from Table 3 and Figure 4. Shown is the 45 degree line and the trend line that confirms the greater relative importance of Component 1 (Supply) in the FSI among the 150 countries.

the macroeconomic picture of the country, rather than to offer absolute precision in the point-estimates. We simulate three hypothetical future policy scenarios: changes that respect the sound finance framework — which prioritize a reduction in the government fiscal deficit ($T - G$) — and two changes respecting the functional finance framework — one prioritizing spending that increases domestic productive capacity, and the other spending that additionally improves the international balance of payments for the country (i.e., leads to a reduction in import dependency for productive inputs).

Column (1) presents the current scenario based on the latest data for each variable (i.e., 2022). Column (2) simulates the Sound Finance scenario, where a reduction in the public deficit ($T - G < 0$) of 2 per cent of GDP is projected in Year $T + n$. Assuming an unchanged external balance (and thus foreign reserves), the private balance must adjust to compensate, that is an increase in the deficit of the domestic private sector by 2 per cent in Malawi and a reduction in the surplus of the domestic private sector by 2 per cent in the UK. GDP falls in both cases, making growth negative. Taxes as a share of GDP fall as projected from the positive relationship with the private balance, thus undermining one of the core precepts of the sound finance paradigm. Lower growth explains why unemployment increases, why there is upward pressure on inflation, and downward pressure on productive capacity. The relative levels, rates of change and weight of the fiscal space components in both countries, explains why the

that are relatively time invariant within countries. Time-series data for each country does not provide sufficient observations, nor does it allow us to exploit cross country structural differences, which are crucial to think about long-term development.

Table 4. Simulations for Malawi based on different fiscal space paradigms.

Variables	(1) Current Scenario Year T	(2) Sound Finance Year T+*n*	(3) Functional Finance (PC) Year T+*n*	(4) Functional Finance (PC + BoP) Year T+*n*
Public Balance (*T*−*G*) (% GDP)	−9.3	−7.3	−11.3	−11.3
External Balance (*M*−*X*) (% GDP)	16.7	16.7	16.7	14.7
Private Balance (*S*−*I*) (% GDP)	−7.4	−9.4	−5.4	−3.4
Memo: Sum of Three Balances	0.0	0.0	0.0	0.0
Δ Public Debt (Δ Public Balance, p.p.)		−2.0	2.0	2.0
Public Debt (% in Local Currency)	62.3	62.3	64.3	64.3
GDP Growth (%)	0.9	−0.6	2.5	2.5
Taxes (% GDP)	17.4	15.8	18.9	20.4
Foreign Reserves (months of *M*)	2.5	2.5	2.5	5.3
Unemployment (%)	5.3	6.8	3.8	3.8
Inflation (%)	21.0	21.5	20.4	19.9
Monetary Sovereignty Index	0.41	0.41	0.42	0.44
Productive Capacities Index	18.7	17.0	20.4	22.1
Fiscal Space Index	0.35	0.34	0.35	0.37

Notes: Using data from World Bank (2024) and IMF (2024). The table shows three simulations to current data (Column (1)) for Malawi. Column (2) simulates the Sound Finance scenario, where a reduction in the public deficit ($T-G < 0$) of 2 per cent of GDP is projected. Column (3) simulates the Functional Finance scenario, where an increase in government expenditures (G), increasing the fiscal deficit by 2 per cent of GDP and public debt in local currency, is used to increase productive capacity (PC). Column (4) simulates an alternative Functional Finance Scenario, where an increase in government expenditures and the fiscal deficit is used to increase productive capacity (PC) associated to an improvement in the balance of payments (BoP) through a reduction in imports (M). The simulations use pooled OLS regression coefficients from regressions between key variables across our sample of 150 countries across various years. Growth is regressed on the one-year lagged public balance since 1980; taxes on the one year lagged private balance since 1980; reserves on the external balance; unemployment on growth; inflation on productive capacity; and productive capacity on the one-year lagged private balance, all since 2018. See Online Appendix E for more details.

Fiscal Space Index (FSI) in Malawi slightly falls under these conditions, while it remains stable in the UK. The proportional increase in unemployment (positively associated to fiscal space) is larger in the UK, and the proportional decrease in productive capacity (positively associated to fiscal space) is larger in Malawi.

Column (3) simulates the Functional Finance scenario, where an increase in government expenditures (G) of 2 per cent of GDP, and thus the fiscal deficit, is used to increase the country's productive capacity (PC).[19] Following the framework present in Section 3, we assume that the additional debt is issued in local currency to domestic residents. We see that the domestic private balance improves (a lower deficit in Malawi, and a higher surplus in the UK), as additional private savings are being created when the government increases its net spending. GDP growth also improves compared to the prior two scenarios, given the negative relationship with the public balance, as does the share of taxes in GDP. Unemployment and inflation fall, while productive capacity grows with a strengthening private balance.[20] In Malawi, unlike the UK, given that public debt is not all in local currency, a higher share of local currency denominated debt increases its MSI. The Fiscal Space Index (FSI) remains stable in both countries relative to the current scenario, as the relative changes to components with opposing signs cancel each other out

[19]We do not speculate where this spending is exactly going. We simply assume it increases the country's growth directly from the lagged effect of net public investment expenditure, as well as increasing the Productive Capacities Index indirectly by subsequently inducing private investment. Stronger and more direct assumptions could have a larger impact, but we choose to stick to the aggregate empirical relationships informed by the data.

[20]Malawi's relatively low unemployment may hide high labour under-employment, given high informality. We recommend broader measures of labour utilization to be considered data permitting.

Table 5. Simulations for the UK based on different fiscal space paradigms.

Variables	(1) Current Scenario Year T	(2) Sound Finance Year T+*n*	(3) Functional Finance (PC) Year T+*n*	(4) Functional Finance (PC + BoP) Year T+*n*
Public Balance ($T-G$) (% GDP)	−4.7	−2.7	−6.7	−6.7
External Balance ($M-X$) (% GDP)	2.1	2.1	2.1	0.1
Private Balance ($S-I$) (% GDP)	2.6	0.6	4.6	6.6
Memo: Sum of Three Balances	0.0	0.0	0.0	0.0
Δ Public Debt (Δ Public Balance, p.p.)		−2.0	2.0	2.0
Public Debt (% in Local Currency)	100	100	100	100
GDP Growth (%)	4.8	3.2	6.5	6.5
Taxes (% GDP)	39.4	37.9	40.8	42.2
Foreign Reserves (months of M)	1.8	1.8	1.8	4.1
Unemployment (%)	3.8	5.3	2.2	2.2
Inflation (%)	7.9	8.5	7.4	6.8
Monetary Sovereignty Index	0.52	0.52	0.52	0.54
Productive Capacities Index	65.8	64.2	67.4	68.9
Fiscal Space Index	0.69	0.69	0.69	0.71

Notes: Authors' calculations using data from World Bank (2024) and IMF (2024). The table shows three simulations to current data (Column (1)) for the UK. Column (2) simulates the Sound Finance scenario, where a reduction in the public deficit ($T-G<0$) by 2 per cent of GDP is projected. Column (3) simulates the Functional Finance scenario, where an increase in government expenditures (G), increasing the fiscal deficit by 2 per cent of GDP and public debt in local currency, is used to increase productive capacity (PC). Column (4) simulates an alternative Functional Finance Scenario, where an increase in government expenditures and the fiscal deficit is used to increase productive capacity (PC) associated to an improvement in the balance of payments (BoP) through a reduction in imports (M). The simulations use pooled OLS regression coefficients from regressions between key variables across our sample of 150 countries across various years. Growth is regressed on the one-year lagged public balance since 1980; taxes on the one year lagged private balance since 1980; reserves on the external balance; unemployment on growth; inflation on productive capacity; and productive capacity on the one-year lagged private balance, all since 2018. See Online Appendix E for more details.

proportionally. This further highlights the relativity of fiscal space: increases (or decreases) in the FSI are produced from changes to positive (negative) components that outweigh the negative (positive) components. In the case of Malawi, the critical binding constraint is productive capacity, which is among the lowest in the sample. The challenge of countries with Malawi's make up is how to increase this capacity sufficiently without causing structural bottlenecks (supply constraints) that trigger inflation.

Column (4) simulates an alternative Functional Finance Scenario, where an increase in government expenditures and the fiscal deficit is used to increase productive capacity (PC) associated to an improvement in the balance of payments (BoP) through a substitution of imports (M). The difference in this scenario compared to the previous one is that inflation falls by a larger amount, given that productive capacity increases further from a additional improvement in the private balance coming from the improvement of the external balance. The increase in foreign reserves increases the Monetary Sovereignty Index (MSI).[21] This results in a greater expansion of fiscal space, as shown by the increase in the index to from 0.35 to 0.37 in Malawi, and from 0.69 to 0.71 in the UK. This scenario illustrates the importance of the international balance of payments

[21]We directly simulate the effect of reserves on the MSI using our data given that foreign exchange reserves are one of the MSI's components. See Table 2.

as a source of fiscal space for both developed and developing economies. For the latter, international assistance in easing the rules of the game to facilitate productive convergence is paramount.

5. Development as Political Economy and Geopolitics

Our estimates of fiscal space in the preceding sections solely consider the economic space available to public spending *given* the institutional choices made by the public authorities. As seen in our simulations, the international dimension of fiscal space is critical. In this section we discuss the political, and thus institutional limits, to fiscal space. We start with national political economy, before turning to international geopolitics.

Regarding the first, as Lerner (1943) argued, public deficit spending — especially when dedicated to productive endeavors — crowds-in private investment. This follows the accounting relationship that government deficits add to private profits in the aggregate, and thus feed the private sector financial balance ($S-I$), as shown by Kalecki (1935, 1942, 1954). The issue is that government spending is by its very nature discriminatory. It focuses on promoting certain sectors and companies (via public procurement) in compliance with public goals. If different firms or sectors operate with varying degrees of resource utilization, public investment will need to be tailored to this to avoid supply chain bottlenecks. Furthermore, building future capacity requires inputs whose availability may be threatened by ecological and geopolitical factors. Thus, to pursue full employment and overcome resource bottlenecks that trigger inflation, the government has to make *political* choices regarding which sectors or firms to favor. Once the government acts on these informed choices, it must commit to managing aggregate demand appropriately, either in countries that suffer from excess demand or saving (mature economies) or in countries that suffer from a lack of fixed capital and knowledge accumulation in modern sectors (developing economies). This is by no means straightforward.

The conflict inherent in these choices is what political economy is all about. Central to it is the existing level of economic inequality among national residents, i.e., the inequality of revenue between firms, and the inequality of income between households. The greater the inequality of privately-held resources, the more there is at stake to be negotiated, and the more acute the potential conflict.[22] As anticipated by Kuznets (1955), and as framed by Skott (2023), the stakes are completely distinct in developing economies that suffer from structural transformation problems (rather than just the aggregate demand problems in mature economies). These bring forth additional social limits (on the acceptance of high poverty and inequality levels), temporal trade-offs (between current consumption to alleviate current deprivation and investment in future capacity) and constraints (distributional-conflict inflation) for these countries to effectively pursue a program of economic development. The choice of policy instruments to manage aggregate demand most effectively in this process is critical, as argued by Skott (2023).[23]

[22]One could argue that this would depend on the nature (or 'political color') of the government. It is not inconceivable for a government and a concentrated class of business owners who see eye to eye, to effectively collaborate on national development projects. The relationship between totalitarian-military governments and private elites in Latin America during the 1960s and 1970s is arguably a case in point.

Highly unequal countries are more prone to fiscal maladjustment, given the difficult inter-temporal trade-off between using additional fiscal space to alleviate current poverty or to increase accumulation in modern sectors. This creates both a myopic bias and an inertial bias in policymaking — the former from pressure on governments to use fiscal (redistributive) policy for the short-term benefits of present consumption, the latter from the difficulty in reversing expansionary policies by increasing taxes to make room for accumulation of future capacity. As noted by Skott (2023, p. 327), such a bias '…is likely to be especially strong for governments that lack the inclination or power to confront political and economic elites by imposing significant taxes on capital income and luxury consumption. Limited institutional capabilities of the fiscal authorities accentuate the dangers.' The latter point was comprehensively addressed by Kaldor (1962). We would underline the further inter-temporal dilemma between increasing labor taxes to more effectively check demand coming from private consumption, and increasing capital taxes to check demand coming from private investment. However, as outlined by Kahn (1958), these trade-offs are relaxed the more surplus labour there is available, which is typically the case of less-developed countries with large informal labour markets, disguised underemployment, and elevated unemployment.

An important factor in national-level negotiations and policymaking is the international domain of geopolitics. Figure 8 summarizes public policy risks in a modified version of the open-economy trilemma to fit the experience of most countries (i.e., those not issuing a highly demanded international reserve currency and seeking exchange rate stability rather than a fixed regime). This framework helps identify the constraints on policy at the country level that come from the international sphere. It is important to note that these risks are not all produced by an automatic market adjustment, as in the Mundell-Fleming open-economy extension of the IS/LM model. Rather they are contingent on policy choices and targets, as argued in the endogenous money/exogenous interest rate literature applied to open-economies (Lavoie 2019; Serrano and Summa 2015; Summa 2015). A corollary of this argument is that the options of this trilemma are not 'perfect': capital flows operate in a world of imperfect international markets without perfect substitutability between assets in different countries; exchange rates are not rigidly fixed unless chosen and defended as such by the authorities; and domestic policy autonomy is also contingent on the priority given to different target variables.

Whether in the presence of free capital mobility or not, and granted that these flows do not automatically determine domestic policy variables, the risk of running out of foreign exchange reserves is a noteworthy constraint on policy autonomy, especially in a world of reserve currency (dollar) dominance. As noted by Summa (2015, p. 246): 'Foreign-exchange reserves are finite and when they are depleted the monetary authority cannot sustain the peg any longer.' Nor will they find it easy to sustain a managed float for developmental purposes. Moreover, 'in the case of an external deficit, with foreign reserves gradually disappearing the central bank will need at some point to reconsider its interest-rate target' (Lavoie 2019, p. 100-101), again impacting its domestic autonomy. As summarized by Lavoie (2019, p. 100), the point of the international

[23]For an applied analysis of fiscal maladjustment in a developing country facing these problems see Martins and Skott (2021).

Figure 8. The Trilemma of open economies with non-reserve currencies.

Notes: The open economy trilemma means that only one side of the triangle can be chosen (or two of the three options). Each side can be associated with a primary risk. Contrary to the classic trilemma, which assumes a regime of fixed exchange rates and autonomy for monetary policy, this version assumes a floating regime for countries that issue their own currency and a broader understanding of policy autonomy. Adapted from Morgan (2020).

trilemma 'is not whether the economy is on a fixed or flexible exchange rate; the issue is whether the country is running an external deficit or surplus.' Because external deficits will — under the present architecture of the international monetary system — drain foreign exchange reserves, countries engaging in expansionary developmental policies will have less 'degrees of freedom to operate monetary and exchange-rate policy' (Summa 2015, p. 245), and thus risk facing exchange rate and domestic price volatility. Having less diversified production and non-reserve currencies, developing countries are those most hampered by exchange rate volatility, but not exclusively as the dramatic experience of Weimar Germany shows (Robinson 1938). The key point from our framework is that fiscal deficits are not inherently the problem here. Rather, it is the productive capacity of economies, the extent of their import dependence, and their potential inflationary link, as shown in Section 4.4.

Productive capacity, as described in Section 3, relates to both the supply-side and demand-side of the economy. The greater the productive capacity of an economy the greater the diversity of goods and services produced in the country. This means that it will either be less reliant on imports or it will be more able to afford to pay for them from the value-added produced domestically and exported (more favorable terms of trade). Greater productive capacity in a deficit country can also affect the demand of surplus countries to invest their foreign currency receipts in the deficit country it has sold its goods to. Thus, public spending that enhances domestic productive capacity and investment opportunities lessens the exchange rate constraint for countries running current account deficits by strengthening demand for fixed assets in local currency.

Fixed exchange rate regimes clearly illustrate these constraints by imposing stricter limits on fiscal and external deficits. Countries with pegged currencies must maintain their exchange rate by controlling imports and attracting capital inflows, often at the cost of domestic economic stability through austerity measures. While floating exchange rates offer greater flexibility, they are still vulnerable to risks. A sudden drop in demand for domestic-currency-denominated assets can lead to currency depreciation and imported inflation, particularly in countries with structural trade deficits. Although reserve-currency-issuing nations face fewer constraints, they remain exposed to capital

flow volatility. Addressing these challenges has long required a domestic program for structural transformation, advocated for a long time by structuralist economists (e.g., Kaldor 1962; Prebisch 1961) — such as fiscal policy that targets import-substitution industrialization and shifts the weight of taxation progressively from production and consumption to income and wealth.

Critically, these challenges have also required reform of the international monetary system. Two key areas of focus historically have been the introduction of capital controls on short-term flows to stabilize domestic economies (Ostry et al. 2011; Ostry, Loungani, and Furceri 2016; Rodrik 1998), and the creation of a more balanced international currency system beyond the dominance of a single national currency. Proposed reforms have included multilateral foreign exchange transfers based on an increased use of the IMF's Special Drawing Rights (Ocampo 2011) or on new international currency units (Aglietta 2018; Gallagher and Kozul-Wright 2022; Keynes 1943; Mitchell and Fazi 2017; UNCTAD 2019).[24] These reforms would help countries use the fiscal space they have available — by mitigating the risk of currency crises and default — as well as helping them to increase it over time. Concretely, the FSI, as applied in the simulations in the previous section, would improve after relaxing the foreign reserve constraint. This is a characteristic feature of expansionist plans for the international monetary system (like Keynes's Clearing Union), in which the banking principle is extrapolated to the world system, thus ensuring that liquid reserves are not limited in quantity.

However, reforming the international system is not merely a technical exercise; it requires dismantling entrenched power asymmetries in global economic governance. Geopolitics internationalizes national political economy, so that national conflicts over resources get expressed through international channels of power. The existence of hierarchical international financial markets and foreign creditors (governments, banks, and hedge funds), shaped from past colonial arrangements, limits the autonomous margin of action of present-day developing countries. This is exacerbated by the organization of international public institutions — quotas, voting rights, lending practices, fee structures, allocation of reserves, etc. — tilted in favor of high-income economies (Merling 2022). The recent COVID-19 crisis and its aftermath is the latest iteration of these unequal economic relations that limit the economic breathing space of developing countries (Munevar 2021; UNCTAD 2023a).

The ecological transition adds further complexity. In a world of currency and financial hierarchies dominated by the US dollar, less developed economies depend on this key currency for market access, foreign reserves, and exchange rate management. Access to the universal means of payment is therefore crucial. Since the most reliable way to obtain dollars is by exporting highly demand-inelastic goods, particularly food and energy commodities, dollar dependency promotes ecological extractivism and unequal exchange (Olk 2024; Svartzman and Althouse 2022). This dynamic should not be overlooked when interpreting our Fiscal Space Index. A country may rank high on the index due to ample foreign exchange reserves and moderate inflation, often a result of avoiding

[24]A comprehensive proposal for a multilateral clearing system with national currencies was proposed by Schumacher (1943). This type of system is echoed in recent comments by the President of Brazil, Lula da Silva, on the currency composition of trade. He remarked: 'Every night I ask myself why all countries have to base their trade on the dollar…Why can't we do trade based on our own currencies?' (See https://www.ft.com/content/669260a5-82a5-4e7a-9bbf-4f41c54a6143).

reliance on inelastic imports like food and fuel. However, a food and fossil fuel exporter faces significant challenges in transitioning from environmentally unsustainable production while avoiding balance of payments issues.

For example, Colombia, ranked in the top quartile of the Fiscal Space Index, faces significant macroeconomic risks in reducing fossil fuel production and export, especially if global efforts fail to align (Moreno et al. 2024). Similar vulnerabilities are likely for other less-developed economies, even those with high domestic fiscal space. South Africa, ranked second on the FSI due to underutilized domestic resources, would face similar risks to those modeled for Colombia in transitioning from its coal-based economy. Even with a large fiscal programme efficiently mobilising domestic resources for low-carbon energy development, as implicitly simulated in Section 4, such transitions often require importing critical inputs unavailable domestically, raising potential balance of payments issues. This suggests that while a 'war economy' approach may be necessary to address the ecological crisis, it is insufficient without a supportive international system capable of coordinating limited physical resources and unlimited financial resources on a scale comparable to the two world wars of the last century. Ultimately, the current international system's reliance on access to a scarce monetary resource (the US dollar) exacerbates the difficulty of addressing the ecological crisis, underscoring the need for significant reform of global economic structures.

6. Conclusion and Future Research

Given the prior points of discussion, it is tempting to conclude that fiscal space is all about power, both domestically and internationally. However, the central purpose of this paper was to argue that unless we correctly identify the macroeconomic determinants of fiscal space we will not accurately locate the power struggles that matter. The literature has made a lot of progress towards this goal. Our contribution follows this evolution. We have compared and contrasted three approaches to thinking about fiscal space — the determinants of the amount the government can spend into the economy at any given time at current prices — offering novel theoretical and empirical perspectives. While it is possible to further refine the new indices we propose — the Monetary Sovereignty Index (MSI) and the Fiscal Space Index (FSI) — such as the inclusion of capacity utilization measures, broader labour under-utilization measures, private debt, etc., we want this paper to fundamentally sketch the direction of travel needed to correctly think about fiscal policy for the challenges that lie ahead.

The dominant approach to fiscal space, which can be labeled 'sound finance' from its sole focus on the state of public finances being in a demand-supply equilibrium, is not actually very sound, as it presents an absolute understanding of a relative spacial-temporal reality. We attribute its dominance to a misleading 'private money view' left over from the gold standard era — that what is scarce is money, which is a private commodity like the precious metals it used to be anchored to. On the contrary, we presented alternative frameworks that more accurately describe the relative nature of fiscal space in monetary-production economies. These are figured by the Keynesian paradigm, from which we interpret a theory of special relativity of fiscal space linked to cyclical demand, and a related functional finance paradigm, from which we interpret a theory of general relativity linked to demand and supply from cyclical and structural factors. In our empirical

application of the general relativity theory of fiscal space we constructed a synthetic index to get a first picture of the amount of fiscal space countries dispose of, followed by simple simulations for the case studies of Malawi and the UK, two countries on the opposite ends of the spectrum, thus illustrating the generality of our framework. In future research we envisage to extend our applications of case-study simulations using stock-flow consistent models with behavioral functions, building on work by Godley and Lavoie (2007a), but calibrated with empirical data.

As lessons from all emergencies and successful development episodes teach us, what we can afford (and therefore finance) depends on the quantity of needed physical and cognitive resources in our environment for desired ends. This equally implies that there are very real physical and intellectual limits to what we, as societies, can do at different points in time. Scarcity in these resources from over-exploitation or underdevelopment brings forth all sorts of problems — from competition for resources and price inflation, to conflictual territorial relations and geopolitical tensions. This is precisely why structural changes need to be planned and carefully managed among all relevant stakeholders. To do so, we conclude from this paper that it is crucial to change our paradigm about fiscal space and public finance more generally. In terms of concrete implications such a paradigm-shift would require, and further benefit from, an update to our statistics and indicators to include more physical measures (e.g., real resource inventories detailing the amount of physical resources (minerals, materials, other natural resources, and manual labor) and intellectual resources (e.g., technical professionals)), to complement our monetary measures (different series expressed in nominal prices), would be needed. This would enable greater scientific consensus around what the real limits to fiscal space are, and will make it easier for the global community of states to embark on more effective pathways to achieve their societal goals. At the same time, closing this gap will move the spotlight onto power relations and democratic decision-making in international organizations, which will contribute to addressing the fundamental limits of fiscal space identified above.

Acknowledgments

For insightful feedback on earlier drafts and computations, the authors thank Ayoze Alfageme, Cédric Durand, Simon Grothe, Michalis Nikiforos, Mary O'Sullivan, Juliette Francoise, and other participants at the lunch seminar of the Department of History, Economics and Society in the University of Geneva; Nathalie Marins, Ricardo Summa, and other participants at the Eastern Economics Association Conference in Boston; Raymond Gilpin, El-Hadji Fall, Bruno Avila, Michael Mbate, Moortaza Jiwanji and Jide Okeke from the United Nations Development Programme (UNDP), Regional Bureau for Africa; Farzana Sharmin and Linus Mofor from the UN Economic Commission for Africa (UN-ECA); Thomas Munthali, Frank Kamanga, Salim Mapila from the National Planning Commission of Malawi; participants at the 28th Conference of the Forum for Macroeconomics and Macroeconomic Policies (FMM) in Berlin; and Oscar Barrera from University College Dublin (UCD). We are also deeply grateful to two anonymous referees for helpful comments and suggestions.

Data Availability Statement

The underlying data that support the findings of this study come from the following resources available in the public domain:

- The Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER). Available at https://www.elibrary-areaer.imf.org/Pages/Home.aspx
- Currency composition of official foreign exchange reserves (COFER). Available at https://data.imf.org/?sk=e6a5f467-c14b-4aa8-9f6d-5a09ec4e62a4
- Sovereign Debt Investor Base for Emerging Markets and Developing Economies. Available at https://www.imf.org/ /media/Websites/IMF/imported-datasets/external/pubs/ft/wp/2014/Data/wp1439.ashx
- UNCTAD Productive Capacities Index. Available at https://unctadstat.unctad.org/wds/TableViewer/tableView.aspx
- World Development Indicators (WDI). Available at https://datatopics.worldbank.org/world-development-indicators/
- World Economic Outlook (WEO). Available at https://www.imf.org/en/Publications/WEO/weo-database/2024/October

All the figures, tables, data and replication codes for all the computations of the paper and the appendix can be downloaded in a single file from the personal website of the corresponding author (https://www.marc-morgan.eu/).

Disclosure Statement

No potential conflict of interest was reported by the author(s).

References

Aboobaker, A., and E. Ugurlu. 2023. 'Weaknesses of MMT as a Guide to Development Policy.' *Cambridge Journal of Economics* 47 (3): 555–574.

Aglietta, M. 2018. 'Transitioning to a New International Monetary System.' In *Money: 5,000 Years of Debt and Power*, Chapter 8. London: Verso.

Barreyre, N. 2017. 'The Scales of Money: Monetary Sovereignty and the Spatial Dimensions of American Politics after the Civil War.' *Annales. Histoire, Sciences Sociales* 69 (2): 311–339.

Bateman, W., and J. van 't Klooster. 2023. 'The Dysfunctional Taboo: Monetary Financing at the Bank of England, the Federal Reserve, and the European Central Bank.' *Review of International Political Economy* 24: 1–26. Published online 24 May 2023.

Bell, S. 2000. 'Do Taxes and Bonds Finance Government Spending?.' *Journal of Economic Issues* 34 (3): 603–620.

Bell, S. 2001. 'The Role of the State and the Hierarchy of Money.' *Cambridge Journal of Economics* 25 (2): 149–163.

Berkeley, A., J. Ryan-Collins, R. Tye, A. Voldsgaard, and N. Wilson. 2022. 'The Self-Financing State: An Institutional Analysis of Government Expenditure, Revenue Collection and Debt Issuance Operations in the United Kingdom.' Working Paper IIPP WP 2022-08, UCL Institute for Innovation and Public Purpose.

Bernanke, B. S. 2017. 'The Mayekawa Lecture: Some Reflections on Japanese Monetary Policy.' *Monetary and Economic Studies* 35: 23–38.

Blanchard, O. 2019. 'Public Debt and Low Interest Rates.' *American Economic Review* 109 (4): 1197–1229.

Blanchard, O. 2020. *Macroeconomics*. 8th ed. London: Pearson.

Blanchard, O., A. Leandro, and J. Zettelmeyer. 2021. 'Redesigning Eu Fiscal Rules: From Rules to Standards.' *Economic Policy* 36 (106): 195–236.

Bonizzi, B., A. Kaltenbrunner, and J. Michell. 2019. 'Monetary Sovereignty is a Spectrum: Modern Monetary Theory and Developing Countries.' *Real-World Economics Review* 89: 46–61.

Bundesbank, D. 2017. 'The Role of Banks, Non-Banks and the Central Bank in the Money Creation Process.' *Deutsche Bundesbank Monthly Report* April: 13–33.

Davoodi, H. R., P. Elger, A. Fotiou, D. Garcia-Macia, A. Lagerborg, R. Lam, and S. Pillai. 2022. *Fiscal Rules Dataset: 1985–2021*. Technical report, IMF Fiscal Affairs Department. Available at https://www.imf.org/external/datamapper/fiscalrules/map/map.htm.

De Paula, L. F., B. Fritz, and D. M. Prates. 2017. 'Keynes at the Periphery: Currency Hierarchy and Challenges for Economic Policy in Emerging Economies.' *Journal of Post Keynesian Economics* 40 (2): 183–202.

Debrun, X., J. D. Ostry, T. Willems, and C. Wyplosz. 2019. 'Debt Sustainability.' In *Sovereign Debt: A Guide for Economists and Practitioners*, edited by S. A. Abbas, A. Pienkowski, and K. Rogoff, Oxford: Oxford University Press.

European Central Bank (ECB). 2011. 'The Supply of Money–Bank Behaviour and the Implications for Monetary Analysis.' *European Central Bank Monthly Bulletin October*.

Eichengreen, B., R. Hausmann, and U. Panizza. 2005. 'The Pain of Original Sin.' In *Other People's Money: Debt Denomination and Financial Instability in Emerging Market Economies*. Chicago and London: Edward Elgar Publishing.

Fisher, I. 1911. *The Purchasing Power of Money: Its Determination and Relation to Credit, Interest and Crises*. New York: Macmillan.

Frank, A. G. 1966. 'The Development of Underdevelopment.' *Monthly Review* 18 (4): 17–31.

Fritz, B., L. F. de Paula, and D. M. Prates. 2018. 'Global Currency Hierarchy and National Policy Space: A Framework for Peripheral Economies.' *European Journal of Economics and Economic Policies* 15 (2): 208–218.

Furtado, C. 1956. *Uma Economia Dependente*. Rio de Janeiro: Ministério da Educação e Cultura.

Furtado, C. 1961. *Desenvolvimento e subdesenvolvimento*. Rio de Janeiro: Fundo de Cultura. Development and Underdevelopment. Translated by R. W. de Aguiar, E. C. Drysdale. Los Angeles: University of California Press, 1964.

Gabor, D. 2023. 'The (european) Derisking State.' *Stato e mercato* 2023 (1): 53–84.

Galbraith, J. K. 1994. 'Keynes, Einstein and Scientific Revolution.' *The American Prospect* 5: 62–66.

Gallagher, K. P., and R. Kozul-Wright. 2022. *The Case for a New Bretton Woods*. Cambridge: Polity Press.

Ghosh, A. R., J. I. Kim, E. G. Mendoza, J. D. Ostry, and M. S. Qureshi. 2013. 'Fiscal Fatigue, Fiscal Space and Debt Sustainability in Advanced Economies.' *The Economic Journal* 123 (566): F4–F30.

Godley, W., and M. Lavoie. 2007a. 'Fiscal Policy in a Stock-Flow Consistent (sfc) Model.' *Journal of Post Keynesian Economics* 30 (1): 79–100.

Godley, W., and M. Lavoie. 2007b. *Monetary Economics*. New York: Palgrave Macmillan.

Godley, W., and B. Rowthorn. 1994. 'Appendix: The Dynamics of Public Sector Deficits and Debt.' In *Unemployment in Europe*, edited by J. Michie and J. Grieve Smith. London: Academic Press.

Hetzel, R. L., and R. Leach. 2001. 'The Treasury-Fed Accord: A New Narrative Account.' *Federal Reserve Bank of Richmond Economic Quarterly* 87 (1): 33–56.

Hutchison, T. W. 1981. *The Politics and Philosophy of Economics: Marxians, Keynesians, and Austrians*. Oxford: Basil Blackwell.

IMF. 2022. *Annual Report on Exchange Arrangements and Exchange Restrictions 2022*. Technical report, International Monetary Fund. Available at https://www.elibrary-areaer.imf.org/Documents/YearlyReport/AREAER_2022.pdf.

IMF. 2023a. *Currency Composition of Official Foreign Exchange Reserves (Cofer)*. Technical report, International Monetary Fund (IMF). Available at https://data.imf.org/?sk=e6a5f467-c14b-4aa8-9f6d-5a09ec4e62a4.

IMF. 2023b. *Sovereign Debt Investor Base for Emerging Markets and Developing Economies*. Technical report, International Monetary Fund (IMF). Available at https://www.imf.org//media/Websites/IMF/imported-datasets/external/pubs/ft/wp/2014/Data/wp1439.ashx.

IMF. 2024. *World Economic Outlook (WEO)*. https://www.imf.org/en/Publications/WEO/weo-database/2024/October.

Innes, A. M. 1913, May. 'What is Money?' *The Banking Law Journal*, 377–408.

Innes, A. M. 1914. 'The Credit Theory of Money.' *Banking Law Journal*, 151–168. December/ January 1914.
Jump, R., and J. Michell. 2023. 'Dollar Liquidity, Financial Vulnerability and Monetary Sovereignty.' *Development and Change* 54 (5): 1087–1113.
Kaboub, F. 2017. 'Financial Sovereignty and the Possibility of full Employment in Saudi Arabia.' In *The Job Guarantee and Modern Money Theory: Realizing Keynes's Labor Standard* edited by M. J. Murray and M. Forstater. New York: Palgrave Macmillan.
Kahn, R. F. 1958. 'The Pace of Development.' In *The Challenge of Development*. Jerusalem: The Eliezer Kaplan School of Economics and Social Sciences, The Hebrew University. Reprinted in Kahn, 1972, *Selected Essays on Employment and Growth*, Cambridge: Cambridge University Press.
Kaldor, N. 1962. 'Will Underdeveloped Countries Learn to Tax?.' *Foreign Affairs* 41 (2): 410–419.
Kaldor, N. 1982. *The Scourge of Monetarism*. Oxford: Oxford University Press.
Kalecki, M. 1935. 'A Macrodynamic Theory of Business Cycles.' *Econometrica* 3 (3): 327–344.
Kalecki, M. 1942. 'A Theory of Profits.' *The Economic Journal* 52 (206/207): 258–267.
Kalecki, M. 1954. *Theory of Economic Dynamics. An Essay on Cyclical and Long-Run Changes in Capitalist Economy*. London: Routledge.
Kalecki, M. 1955. 'The Problem of Financing of Economic Development.' *Indian Economic Review* 2 (3): 1–22.
Kalecki, M. 1976. *Essays on Developing Economies*. Hassocks: Harvester Press.
Kelton, S. 2020. *The Deficit Myth: Modern Monetary Theory and the Birth of the People's Economy*. London: Hachette.
Keynes, J. M. 1930. *A Treatise on Money*. London: Macmillan and Co., Ltd.
Keynes, J. M. 1933a. 'Appendix: Variorum of Drafts of the General Theory and the Final Text.' In *The Collected Writings of John Maynard Keynes Vol. XXIX, The General Theory and After: Part II. Defence and Development*, edited by E. Johnson and D. Moggridge. London: Macmillan. 1978.
Keynes, J. M. 1933b. 'National Self-Sufficiency.' *An Irish Quarterly Review* 22 (86): 177–193.
Keynes, J. M. 1936. *The General Theory of Employment, Interest, and Money*. London: Macmillan.
Keynes, J. M. 1937. 'The General Theory of Employment.' *The Quarterly Journal of Economics* 51 (2): 209–223.
Keynes, J. M. 1940. *How to Pay for the War? A Radical Plan for the Chancellor of the Exchequer*. London: Macmillan and Co.
Keynes, J. M. 1942. 'How Much Does Finance Matter?' In *The Collected Writings of John Maynard Keynes, Vol. XXVII. Activities 1940–1946, Shaping the Post-War World: Employment and Commodities*, edited by E. Johnson and D. Moggridge. London: Macmillan. 1978.
Keynes, J. M. 1943. 'Proposals for an International Clearing Union (April 1943).' In *The Bretton Woods Agreements*, edited by N. R. Lamoreaux and I. Shapiro, 363–388. Yale University Press. 2019.
Knapp, F. 1905. *Staatliche Theorie des Geldes*. Leipzig: Duncker and Humblot. The State Theory of Money. Translated by H. M. Lucas and J. Bonar. London: Macmillan and Co., Ltd., 1924.
Kose, M. A., S. Kurlat, F. Ohnsorge, and N. Sugawara. 2022. 'A Cross-Country Database of Fiscal Space.' *Journal of International Money and Finance* 128: 102682.
Kregel, J. 2020. 'External Debt Matters: What are the Limits to Monetary Sovereignty?.' *The Japanese Political Economy* 46 (4): 287–299.
Kuznets, S. 1955. 'Economic Growth and Income Inequality.' *The American Economic Review* 45 (1): 1–28.
Lavoie, M. 2019. 'Advances in the Post-Keynesian Analysis of Money and Finance.' In *Frontiers of Heterodox Macroeconomics*, edited by P. Arestis and M. Sawyer. Palgrave Macmillan.
Lerner, A. 1943. 'Functional Finance and the Federal Debt.' *Social Research* 10 (1): 38–51.
Lerner, A. 1947. 'Money as a Creature of the State.' *American Economic Review* 37 (2): 312–317.
Martins, G. K., and P. Skott. 2021. 'Macroeconomic Policy, Inflation and Deindustrialization in a Dual Economy.' *Industrial and Corporate Change* 30 (2): 409–444.
Marx, K. 1990. *Capital: A Critique of Political Economy, Volume 1*. London: Penguin Books.

McLeay, M., A. Radia, and R. Thomas. 2014. 'Money Creation in the Modern Economy.' *Bank of England. Quarterly Bulletin 2014 Q1*. March 14, 2014.
Merling, L. 2022. 'No Voice for the Vulnerable: Climate Change and the Need for Quota Reform at the Unctad.' Boston University, Global Development Policy Center. GCI Working Paper 057.
Minsky, H. P. 1986. *Stabilizing an Unstable Economy*. New Haven, CT: Yale University Press.
Mitchell, W., and T. Fazi. 2017. *Reclaiming the State: A Progressive Vision of Sovereignty for a post-Neoliberal World*. London: Pluto Press.
Mitchell, W., L. R. Wray, and M. Watts. 2019. *Macroeconomics*. London: Macmillan International Higher Education.
Moreno, A., D. Guevara, J. Andrade, C. Pierros, A. Godin, S. D. Yilmaz, and S. Valdecantos. 2024. 'Low-Carbon Transition and Macroeconomic Vulnerabilities: A Multidimensional Approach in Tracing Vulnerabilities and Its Application in the Case of Colombia.' *International Journal of Political Economy*53 (1): 43–66.
Morgan, M. 2020. 'On "fiscal space" in Developing Countries.' Vox.LACEA, 8 May 2020.
Munevar, D. 2021. 'Sleep Now in the Fire: Sovereign Bonds and the COVID-19 Debt Crisis.' The European Network on Debt and Development (Eurodad), Briefing Paper.
Murau, S., and J. van 't Klooster. 2023. 'Rethinking Monetary Sovereignty: The Global Credit Money System and the State.' *Perspectives on Politics* 21 (4): 1319–1336.
Nair, N. 2023. 'When Minsky and Godley met Structuralism: A Stock-Flow Consistent Approach to the Currency Hierarchy.' Technical Report 1024, Levy Economics Institute Working Paper.
Nikiforos, M., and G. Zezza. 2017. 'Stock-Flow Consistent Macroeconomic Models: A Survey.' *Journal of Economic Surveys* 31 (5): 1204–1239.
Nurkse, R. 1953. *Problems of Capital Formation in Underdeveloped Countries*. Oxford: Oxford University Press.
Ocampo, J. A. 2011. 'Special Drawing Rights and the Reform of the Global Reserve System.' In *Reforming the International Financial System for Development*, edited by J. K. Sundaram. New York Chichester, West Sussex: Columbia University Press.
Olk, C. 2024. 'How Much a Dollar Cost: Currency Hierarchy as a Driver of Ecologically Unequal Exchange.' *World Development* 180: 106649.
Ostry, J. D., A. R. Ghosh, M. Chamon, and M. S. Qureshi. 2011. 'Capital Controls: When and why?' *IMF Economic Review* 59 (3): 62–580.
Ostry, J. D., P. Loungani, and D. Furceri. 2016. 'Neoliberalism: Oversold?' *Finance & Development* 53 (2): 38–41.
Pedersen, J. 2022. 'Abductive Analogies between Keynes' Monetary-Production Economics and Einstein's Theories of Relativity.' *Journal of Post Keynesian Economics* 45 (4): 523–535.
Pigou, A. C. 1936. 'Mr. J. M. Keynes' General Theory of Employment, Interest, and Money.' *Economica* 3: 115–132.
Prates, D. 2020. 'Beyond Modern Money Theory: A Post-Keynesian Approach to the Currency Hierarchy, Monetary Sovereignty, and Policy Space.' *Review of Keynesian Economics* 8 (4): 494–511.
Prebisch, R. 1950. *The Economic Development of Latin America and its Principal Problems*. New York: United Nations.
Prebisch, R. 1961. 'Economic Development Or Monetary Stability: The False Dilemma.' *Economic Bulletin for Latin America* VI (1): 1–31.
Redish, A. 1993. 'Anchors Aweigh: The Transition from Commodity Money to Fiat Money in Western Economies.' *The Canadian Journal of Economics / Revue canadienne d'Economique* 26 (4): 777–795.
Reinert, E. S. 2007. *How Rich Countries Got Rich…and Why Poor Countries Stay Poor*. London: Constable.
Reinhart, C. M., and K. S. Rogoff. 2010. 'Growth in a Time of Debt.' *American Economic Review Papers and Proceedings* 100 (2): 573–578.
Robinson, J. 1938. 'The Economics of Inflation.' *The Economic Journal* 48 (191): 507–513. Review of *The Economics of Inflation*, by C. Bresciani-Turroni.

Robinson, J. 1972. 'The Second Crisis of Economic Theory.' *The American Economic Review* 62 (1/2): 1–10.
Rodrik, D. 1998. 'Who Needs Capital-Account Convertibility?' In *Should the IMF Pursue Capital Account Convertibility?* Essays in International Finance, No. 207, edited by S. Fischer, R. N. Cooper, R. Dornbusch, P. M. Garber, C. Massad, J. J. Polak, D. Rodrik, and S. S. Tarapore. Princeton, NJ: International Finance Section, Department of Economics, Princeton University.
Romer, C. D., and D. H. Romer. 2019. 'Fiscal Space and the Aftermath of Financial Crises: How it Matters and why.' *Brookings Papers on Economic Activity* 2019 (1): 239–331.
Rosenberg, A. 1994. 'What is the Cognitive Status of Economic Theory?' In *New Directions in Economic Methodology*, edited by R. Backhouse, 216–235. London: Routledge.
Schumacher, E. F. 1943. 'Multilateral Clearing.' *Economica* 10 (38): 150–165.
Schumpeter, J. A. 1934. *The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest and the Business Cycle*. Cambridge, MA: Harvard University Press.
Schumpeter, J. A. 1936. 'The General Theory of Employment, Interest and Money by John Maynard Keynes. Review by Joseph a. Schumpeter.' *Journal of the American Statistical Association* 31 (196): 791–795.
Schumpeter, J. A. 1939. *Business Cycles*. New York: McGraw-Hill.
Serrano, F., and R. Summa. 2015. 'Mundell–fleming without the Lm Curve: The Exogenous Interest Rate in An Open Economy.' *Review of Keynesian Economics* 3 (2): 248–268.
Singer, H. 1950. 'The Distribution of Gains between Investing and Borrowing Countries.' *American Economic Review* 40 (2): 473–485.
Singer, H. 1953. 'Obstacles to Economic Development.' *Social Research* 20 (1): 19–31.
Skidelsky, R. 1992. *John Maynard Keynes. Vol. 2, The Economist as Saviour 1920–1937*. London: Macmillan.
Skott, P. 2021. 'Fiscal Policy and Structural Transformation in Developing Economies.' *Structural Change and Economic Dynamics* 56: 129–140.
Skott, P. 2023. *Structuralist and Behavioral Macroeconomics*. Cambridge: Cambridge University Press.
Stuckey, B., P. Becklumb, and M. Frigon. 2021. *How the Bank of Canada Creates Money Through its Asset Purchases*. Technical Report 2015-51-E, Library of Parliament, Ottawa, Canada.
Summa, R. 2015. 'Impossible Trinity.' In *The Encyclopedia of Central Banking*, edited by L.-P. Rochon and S. Rossi. Cheltenham, UK and Northampton, MA, USA: Edward Elgar Publishing.
Svartzman, R., and J. Althouse. 2022. 'Greening the International Monetary System? Not without Addressing the Political Ecology of Global Imbalances.' *Review of International Political Economy* 29 (3): 844–869.
Tcherneva, P. R. 2016. 'Money, Power, and Monetary Regimes.' Levy Economics Institute, Working Paper (861).
Thirlwall, A. P. 1979. 'The Balance of Payments Constraint as an Explanation of International Growth Rate Differences.' *BNL Quarterly Review* 32 (128): 45–53.
Togati, D. T. 1998. *Keynes and the Neoclassical Synthesis: Einsteinian Versus Newtonian Macroeconomics*. New York, NY: Routhledge Studies in the History of Economics.
Togati, D. T. 2001. 'Keynes as the Einstein of Economic Theory.' *History of Political Economy* 33 (1): 117–138.
Tymoigne, E. 2024. 'The Origins of the Platonic Approach to Monetary Systems: Retracing European and Chinese Monetary Thoughts on Chartalism, Nominalism, and the Origins of Monetary Systems.' Working Paper 1058, Levy Economics Institute.
UNCTAD. 2019. *Financing a Global Green New Deal. Trade and Development Report 2019*. Technical report, United Nations, Geneva.
UNCTAD. 2021. *Unctad Productive Capacities Index: Methodological Approach and Results*. Technical report, United Nations, Geneva.
UNCTAD. 2023a. *Global Trends and Prospects. Trade and Development Report Update (April 2023)*. Technical report, United Nations, Geneva.
UNCTAD. 2023b. 'UNCTAD Productive Capacities Index.' Available at https://unctadstat.unctad.org/wds/TableViewer/tableView.aspx.

Vernengo, M., and E. P. Caldentey. 2020. 'Modern Money Theory (mmt) in the Tropics: Functional Finance in Developing Countries.' *Challenge* 63 (6): 332–348.
Werner, R. A. 2014. 'Can Banks Individually Create Money out of Nothing? — the Theories and the Empirical Evidence.' *International Review of Financial Analysis* 36: 1–19.
World Bank. 2024. *World Development Indicators (WDI)*. Available at https://datatopics.worldbank.org/world-development-indicators/.
Wray, L. R. 2007. 'The Employer of Last Resort Programme: Could it Work for Developing Countries?' Economic and Labour Market Papers, International Labor Organization, Geneva, Switzerland.
Wray, L. R. 2014. *From the State Theory of Money to Modern Money Theory: An Alternative to Economic Orthodoxy*. Technical Report 792, Levy Economics Institute.
Wyplosz, C. 2020. *What's Wrong with Fiscal Space?* Technical Report 14431, CEPR Discussion Paper, London.