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Capitalism, Class Relations, and the Role of the State in the AI Era: A Kaleckian View

Srinivas Raghavendra

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Capitalism, Class Relations, and the Role of the State in the AI Era: A Kaleckian View

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Abstract

This paper examines how the financialization of advanced capitalist economies in the 1990s relates to the rise of artificial intelligence (AI) as the dominant technological framework in the 21st century. Using insights from political economy and Kaleckian theory, it suggests that AI is not a break from previous trends but a continuation and intensification of the computational rationality developed during the late 20th century's shift toward finance-led capitalism. The study highlights three structural limits that AI introduces to capitalist reproduction: the zero-slack labor constraint, the full-employment constraint, and resource limitations. These limits and their interactions threaten to destabilize the class relationship between capital and labor, the territorial basis of the state, and the legitimacy of democratic capitalism. The paper proposes that the emerging oligarchic state faces a legitimacy crisis that might be alleviated by universal basic income (UBI), which could serve as a political tool to maintain democratic support amid automation and inequality. It concludes by reflecting on how capitalism, much like an adaptive biological system, sustains itself through ongoing structural transformations, reshaping its institutions and practices to enable it to deflect existential threats while preserving its core logic of private appropriation.

Keywords: Artificial intelligence, Financialization, Automation, Zero-slack labour limit, Class relations, Employment, Universal Basic Income, Oligarchy

JEL codes: P16, O33, B51, B52, E24, D72

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1. Introduction

The current wave of artificial intelligence (AI) threatens to bring sweeping changes to the economy, politics, and society, raising a fundamental political-economy question: what happens to capitalism when labor ceases to be central to production? The potential for AI to supplant human labor on a significant scale has already prompted discussions about concepts such as universal basic income, presented as a way to redistribute the surplus generated by AI, and public ownership of AI, envisioned as a form of public infrastructure. These proposals overlook that they rest on a technocratic reading of AI as a neutral, apolitical innovation. Instead, AI must be understood as an endogenous force within the shifting logics of capitalist organization, where it actively reconfigures property regimes, reshapes circuits of surplus extraction, and redefines the capacities and imperatives of the state (Dyer-Witheford et al. 2019).

From a political-economy perspective, capitalism has never been a fixed system but a historically contingent mode of accumulation that has repeatedly reorganized itself in response to crisis. Its evolution from competitive capitalism (à la Adam Smith) through more cooperative and regulated forms to contemporary variants of "compassionate" or inclusive capitalism reflects a recurring pattern: crises have been resolved not by transcending capitalism but by reconfiguring class relations and state intervention to preserve accumulation and the political dominance of the capitalist class, in short, a changing history of capitalist democracy. Much like adaptive biological systems, capitalism has undergone structural transformations that have allowed it to evade existential threats while maintaining its core logic of private appropriation.

The trajectory of capitalism since the mid-twentieth century can be understood as a sequence of historically specific regimes of accumulation and regulation. Robust economic expansion, strong labor organizations, and a Keynesian commitment to full employment marked the postwar Golden Age (c. 1945-1973). The Golden Age rested on a unique constellation of economic, political, and institutional factors that empowered labor and stabilized growth. High productivity growth, strong investment, and buoyant demand enabled firms to accommodate rising wages without eroding profits. Capital controls limited financial speculation, allowing governments to pursue countercyclical, activist macroeconomic policies. The postwar class politics institutionalized cooperation between contending classes: labor accepted private ownership, while capital accepted strong unions, regulated markets, and redistributive taxation (Bhaduri and Marglin 1990). The result was historically high growth, low unemployment, and rising real wages. Income inequality declined, and the labor share of national income remained stable or increased. This was capitalism at its most socially embedded and politically regulated.

By the late 1960s, the Golden Age's success had generated contradictions that undermined its stability. Strong unions secured wage increases that outpaced productivity growth in many sectors, leading to a profit squeeze and a slowdown in investment. The oil shocks of 1973 and 1979 intensified inflationary pressures. The collapse of Bretton Woods further contributed to

volatility. The coexistence of high inflation and rising unemployment, known as stagflation, undermined the Keynesian policy framework. Capitalist elites argued that labor had become "too strong," rendering the economy ungovernable. The crisis delegitimized the postwar settlement and cooperation, opening the door to a new policy paradigm.

The neoliberal restructuring of the 1980s marked a fundamental shift in the distribution of class power and the institutional framework of capitalism. It was a deliberate political project to restore profitability by rebalancing power toward capital. Governments enacted anti-union legislation, confronted major strikes, and promoted labor market flexibility. Collective bargaining coverage declined sharply. Deregulation unleashed a wave of financial innovation and speculation. Finance became increasingly dominant in corporate governance, household behavior, and macroeconomic policy. Trade liberalization and technological advances enabled firms to relocate production to low-wage regions. Global supply chains emerged, intensifying competition and disciplining labor. Under neoliberalism, the state shifted from managing aggregate demand to enforcing market discipline. Central banks replaced full employment with inflation targeting, and welfare states were restructured.

The institutional changes of the 1980s laid the foundations for the distinctive features of contemporary capitalism, where union density remained low, wage stagnation became structural, and precarious work became normalized. Contemporary capitalism, marked by financialization, globalization, inequality, and technological transformation, cannot be understood without situating it within this long-run historical arc. The rise of AI represents the latest phase of this evolution, extending and intensifying the dynamics set in motion during the neoliberal turn.

2. The Neoliberal Era

The contemporary neoliberal form has evolved in two phases since the 1980s. The first phase was financialization, which marked a decisive shift in the organization of global capitalism. Financial markets expanded in scale, complexity, and influence, while digital technologies spread rapidly across economic sectors. Scholars have described this period as one of "financialization," in which financial motives, actors, and instruments increasingly shaped economic and social life (Krippner 2011). At the same time, advances in computing, data storage, and networking laid the groundwork for the development of machine learning and artificial intelligence. Financialization created both the material infrastructure and the conceptual frameworks that would later underpin the rise of AI.

Financialization during the 1990s was marked by deregulation, the proliferation of complex financial instruments, and the globalization of capital flows. The relaxation of regulatory constraints, exemplified by the repeal of Glass–Steagall in the United States, enabled the consolidation of financial institutions and the expansion of speculative activity (Bhaduri and Raghavendra 2017). The competitive environment created by deregulation encouraged the adoption of increasingly sophisticated quantitative models for pricing, risk assessment, and portfolio management.

The digitization of financial markets led to the widespread adoption of electronic trading platforms. Financial markets became early testing grounds for algorithmic decision-making, enabling quantitative analysis of real-time data at immense speed and precision. Hedge funds and high-frequency trading firms were among the first to push this frontier, adopting increasingly sophisticated machine-learning techniques that accelerated the shift toward automation. Financial derivatives operate through layers of abstraction that obscure underlying material processes and helped popularize a worldview in which value is generated through symbolic manipulation rather than industrial production. The rise of quantitative finance demonstrated that algorithmic systems could outperform human experts in a complex, high-stakes environment where value can be generated from abstract uncertainty through models, data, and computational prediction. As Randy Martin (2014) argued, derivatives transform uncertainty into tradable assets through complex modeling. Financialization did not merely change economic structures; it reshaped the epistemology of capitalism.

The expansion of computational power accelerated turnover times, intensified global capital mobility, and underwrote new regimes of flexible accumulation. These dynamics incentivized the adoption of computational systems capable of processing information at unprecedented speeds, a dynamic captured by the idea of "time-space compression" (Harvey 1999). By the 1990s, financial markets were increasingly conceptualized as computational systems whose efficiency hinged on continuous algorithmic optimization. This phase of financialization can also be seen as marking a transition, a "signal crisis," in Giovanni Arrighi's framework of systemic cycles of accumulation (Arrighi 1994), where existing organizational logics begin to unravel. The growing acceptance of AI-driven decision-making can be understood as part of this signal crisis: a cultural and institutional reorientation that prepares the ground for a new configuration of capitalist governance.

Within this intellectual climate, AI inherits a worldview forged in the crucible of financialized markets, where algorithms are treated as neutral, superior arbiters of complex decision-making (Mirowski 2013). The cultural legitimacy of machine-led governance thus predates contemporary AI and is rooted in the broader restructuring of capitalism at the end of the twentieth century.

The dot-com boom of the late 1990s laid the technological and financial infrastructure necessary for AI's later development. The internet's rapid growth generated unprecedented volumes of digital data, an essential resource for training machine learning models. At the same time, advances in computing hardware and cloud infrastructure lowered the cost of large-scale computation. The boundaries between financial institutions and technology firms blurred as both sectors adopted similar computational tools and analytic frameworks. This convergence accelerated the diffusion of algorithmic thinking across the economy, and the concentration of power began to shift toward institutions with access to computational resources, proprietary data, and algorithmic expertise. This shift toward data-intensive and AI-centric operations required substantial investments in complementary assets, including

data infrastructure, specialized skills, and reconfigured organizational processes (OECD 2019).

2.1. Changing business models

The 'datafication' process, initiated in the 1990s to provide training data for machine learning systems in the financial domain, has now been extended to algorithmic decision-making across domains such as logistics, consumer behavior, healthcare, policing, and human resource management. Business models began shifting from product-centric to service-oriented, using AI-driven analytics to detect patterns in large volumes of data on human behavior and to extract continuous value through dynamic pricing, predictive analytics, and hyper-personalized customer experiences (Farayola et al. 2023). These models often involve AI-powered platforms that facilitate dynamic pricing, predictive analytics for supply chain optimization, and hyper-personalized customer experiences, thereby fundamentally altering traditional operational paradigms (Necula et al. 2024). AI-powered analytics are helping companies move from traditional product-centric to service-oriented models, where adaptive recommendations enable continuous value creation.

Just as financial derivatives transform uncertainty into tradable assets through complex modeling, AI, by detecting predictable patterns in abstract data on human behavior, extracts value from uncertainty. Both systems rely on opacity, probabilistic reasoning, and the commodification of uncertainty.

The digital revolution and the rise of *platform capitalism* have already begun to decouple wealth accumulation from direct labor exploitation, shifting toward the capture and analysis of user behavior and data (Zhang 2025). This shift, intensified by AI, suggests a move toward a new phase in which value is increasingly extracted from passive digital engagement and automated processes rather than from traditional forms of labor, profoundly affecting wealth distribution and societal structures (Škare et al. 2024). This transition marks a significant departure from classic industrial capitalism, introducing new forms of surplus value and complicating traditional critiques of capital that predominantly focused on the exploitation of human labor. Some scholars contend that AI, while potentially reinforcing certain aspects of capitalism, also has the capacity to disrupt its core tenets by fostering conditions of abundance and near-zero marginal costs, thereby pushing society beyond traditional capitalist frameworks (Mariotti 2022). However, Marxist critiques emphasize that AI, as a form of capitalist innovation, is fundamentally driven by the profit motive and private ownership, making it unlikely to lead to widespread job obsolescence but rather to increased precarity, underemployment, and exploitation (Deranty and Corbin 2022).

AI thus emerges as the technological embodiment of a political economy that has turned human behavior into a source of extractable value. AI does not represent a rupture with the financialized capitalism of the 1990s but rather its extension. In Arrighi's framework, the AI phase can be seen as a signal of a transition from the financial accumulation phase, in which the regime's internal contradictions became politically unsustainable. Clive Humbly's oft-

quoted comment that "data is the new oil" in 2005 not only signaled the crisis of the financial accumulation phase but also revealed that the next phase of the accumulation regime would center on human data as an alternative source of surplus value.

3. Role of the state

Across successive morphogenetic transformations of capitalism, one structural constant has been capital's capacity to shape and be shaped by the political organization of the economy. Classical and contemporary theorists of political economy have long emphasized that capitalism has never operated independently of the state. As Karl Polanyi (2002) argued, markets are "embedded" in political institutions that actively construct and maintain the conditions for accumulation. Similarly, scholars such as Bob Jessop (1990) and Wolfgang Streeck (2014) have argued that the capitalist state functions as both a guarantor of property rights and a crisis manager, intervening to stabilize accumulation whenever market mechanisms falter.

The late twentieth and early twenty-first centuries offer ample confirmation of this dynamic. From the savings-and-loan crisis to the 2008 financial collapse, from energy shocks to climate-induced disruptions, the state has repeatedly intervened to rescue and reorganize capitalist reproduction. Far from withering away, as neoliberal ideology once promised, the state has become ever more central to the governance of global capitalism, acting as the lender of last resort and insurer of last resort.

However, the advent of artificial intelligence introduces a qualitatively new tension into this arrangement. AI is not merely another general-purpose technology; it is a potential reconfiguration of the means of production themselves. If AI systems are treated as public infrastructure—analogue to electricity grids, transportation networks, or the internet—the private ownership of the productive apparatus becomes difficult to sustain. The reason is simple: AI's productivity depends on collective inputs such as data, scientific knowledge, and public research funding. Its benefits grow through network effects that are fundamentally social. Public ownership or regulation of AI would therefore challenge the institutional foundations of capitalist surplus extraction, which depend on exclusive control over productive assets.

Conversely, if AI remains privately owned and continues advancing along its current trajectory of labor-saving innovation, it may push production toward what Marx noted as the tendency of capital to reduce "necessary labor time to a minimum" (Marx 1857 (1987); Mosely 2001). Unlike the computerization of the workplace in the 1990s, the current agentic AI phase and future autonomous AI phases will replace labor and drive the system toward an asymptotic limit of "minimum necessary" labor time, or cutting slack to almost zero. As AI evolves from the agentic form to even more advanced forms, it will automate routine, repetitive tasks while enhancing or substituting cognitive labor across a wide variety of

sectors.² Unlike earlier technological innovations, AI's obsolescence is relatively rapid, making it harder for the labor market to catch up. This dynamic will drive greater labor-market churn, pushing the competitive economy toward the zero-slack labor limit. The lack of slack in some sectors will further reinforce AI, as firms try to fill the gap by rationalizing automation on their production lines, thereby driving the economy toward the zero-slack limit. This dynamic between technological obsolescence and labor skill catch-up will stabilize the economy close to the zero-slack labor limit.

AI thus presents a systemic imponderable: it promises unprecedented productivity while potentially dissolving the very social relations through which productivity becomes profit. A production system that competes by bidding toward the "bare minimum labor" or *zero-slack labor limit* threatens to erode the social foundations of wage labor while simultaneously intensifying capitalist imperatives. In the literature, this phase is described as "techno-feudalism," characterized by the extraction of rent from techno-farms (Varoufokis 2023). However, without the labor of software engineers, logistics workers, hardware supply chains, model vendors, etc., transforming "free user data or unpaid labor" into commodities (content), e-commerce platforms cannot generate surplus value. Even monopoly rents presuppose commodification. Therefore, until AI becomes autonomous general intelligence, the relative rate of surplus will still be extracted from labor, albeit from the minimum necessary labor. Without labor, there is nothing to appropriate; without appropriation, there is no accumulation; and without accumulation, there is no capitalism. These complexities are explored by contemporary theorists such as Benanav (2020), Srnicek (2017), and Postone (2017).

The opposite extreme to the zero-slack labor limit is the full-employment limit of the existing labor force. As Michał Kalecki (1943) famously argued, persistent full employment undermines the disciplinary function that unemployment performs within capitalism. Without a reserve army of labor, workers gain bargaining power, wage pressures rise, and the authority of capital over the labor process is weakened. In Kalecki's formulation, capitalists resist full employment not because it is economically infeasible, but because it is politically destabilizing: it erodes the asymmetry of power that underpins capitalist class relations. Capitalism, in this view, is viable only within a bounded zone where labor is sufficiently necessary to generate surplus value yet sufficiently precarious to remain disciplined.

However, there is another structural limit – the resource constraint. AI's expansion is constrained not only by labor dynamics but also by the ecological and geopolitical feasibility of securing the minerals and energy required for large-scale computation. This frontier is not merely a technical constraint but a political-economic one: the availability of cheap energy,

² However, there are a wide variety of sectors where AI may not replace labour. Sectors like Care, Creativity, and Community, which are involved in the wider social reproduction of labour, it is hard to see how AI will replace labour. For instance, the labour process in care work is deeply relational, embodied, and context-specific, limiting the scope for uniform automation. Capitalism no doubt has penetrated the care sector extensively, but large scale replacement with agentic AI seems remote. There are a few sci-fi movies like *Bicentennial Man* (1999), *Robot & Frank* (2012), *Android Kunjappan* version 5.25 (2019) have problematized the relationship of domestic care robots and the complexities of care work.

accessible minerals, and stable supply chains shapes how far AI can scale and at what social cost (Malm 2016). The resource limit interacts with labor limits in complex ways. If AI accelerates toward the zero-labor frontier, demand for computational resources intensifies, pushing the state toward more aggressive extractive and geopolitical strategies. If AI stabilizes labor demand, the pressure to expand computational capacity may ease, but the political economy of resource extraction remains central to maintaining technological competitiveness.

In the AI era, capitalism thus faces a triple constraint:

- the *zero-slack labor limit*, which threatens the value-theoretic basis of accumulation
- the *full-employment limit*, which threatens the political authority of capital
- the *resource limit*, which threatens the material feasibility of computational expansion

Capitalism must therefore navigate a narrow, historically unprecedented corridor between these boundaries. This will require not only technological adaptation but also political and institutional reconfiguration. This will require a profound reconfiguration of the state's role in organizing production, distribution, and accumulation to maintain the conditions under which capitalist social relations remain viable.

Despite persistent narratives of digital technologies as "immaterial," AI is profoundly resource-intensive. High-performance computing requires vast quantities of electricity, water, and, most critically, rare-earth minerals and strategic metals such as lithium, cobalt, nickel, and copper (Klinger 2018). These inputs are geographically concentrated, environmentally destructive to extract, and embedded in global supply chains marked by geopolitical rivalry and historically uneven patterns of exchange. The intensifying demand for rare-earth minerals has revived territorial logics reminiscent of earlier phases of imperial expansion. Scholars have argued that global capitalism increasingly relies on the appropriation of land, water, and mineral resources through mechanisms that resemble recolonization (Harvey 2003; Sassen 2014).

4. A Minimalist-Maximal State

In earlier epochs of neoliberalism, the state, as a political entity, was influenced and colluded with powerful capitalists who sought to shape state policy for profit, power, and policy. However, in the AI era, there is a shift from the neoliberal minimalist state to a more strategic, interventionist state. The transformation is a strategic reconfiguration of the state as a 'public policy laboratory' by techno-capitalists to test AI technologies in governance across domains, from welfare (Jørgensen 2023) to taxes (Reuter 2022) to borders (Amoore 2021). The transformation of the state's role is already underway in both the global south and the global north. The Indian government's biometric identity system, *Aadhaar*, launched in 2009 as a narrow administrative experiment to eliminate pseudo-beneficiaries of welfare benefits and public services, is seen as a defining example of the success of algorithmic governance.

The United Kingdom government's "AI Opportunities Action Plan" aims to implement AI across the public sector, with an emphasis on efficiency and becoming an "AI superpower" (Gov.uk 2025). This marks a fundamental transition toward algorithmic governance, in which AI is used across all domains of governance, especially in social protection to identify, automate, monitor, target, and punish (Alston 2019). The use of AI technology in governance has rendered the neoliberal ideal of a minimalist state with maximum control over its citizens. The use of AI technology in immigration is one of the most striking and fearful examples of the minimal state's maximum control through algorithmic technologies in governance.

At the same time, given that the resource constraint is a binding constraint for AI capitalism, the weaponization of the state to secure unhindered access to rare-earth minerals and other resources is now underway. This transformation of the state is evident. The United States, European Union, and China have launched aggressive critical-minerals strategies, subsidized domestic extraction, and forged new geopolitical alliances around supply-chain security (IEA 2021; European Commission 2023).

These developments suggest a profound transformation of the state: from an entity that is influenced and controlled by techno-capitalists to one in which the state itself becomes a techno-capitalist actor. In this new configuration, the state pursues neo-imperialist strategies to secure uninterrupted access to mineral resources, effectively evolving into a techno-empire-oligarchic state.

However, the transformation and reconfiguration of the state must also address the political viability of such an oligarchic techno-empire state under democracy. As the next phase of AI development unfolds, can such a techno-empire oligarchic state remain politically viable under conditions of political democracy? In other words, how can the state balance the accumulation needs of AI capital and the legitimacy needs of democratic governance (O'Connor 1973; Jessop 1990)? AI capitalism thus intensifies the tension between these imperatives. As automation erodes the wage relation and concentrates economic power in a small techno-capitalist elite, the traditional mechanisms through which democratic legitimacy has been secured, i.e., via employment, rising wages, and broad-based prosperity, begin to break down. The state must therefore find new instruments to maintain political viability.

In this context, Universal Basic Income (UBI)³ can be understood as a mechanism for reproducing political legitimacy amid accelerating automation. Rather than constituting a redistributive intervention grounded in social rights, UBI functions as a stabilizing "dispositif" that mitigates the social dislocations caused by labor-displacing technologies. Its enthusiastic endorsement by segments of the capitalist class, particularly when juxtaposed with more transformative proposals such as the socialization of AI infrastructures, signals its compatibility with prevailing regimes of accumulation.

³ Hayek (1979) advocated certain minimum income, *a sort of floor*, which is similar, but argued to be more conservative than the UBI proposal (Rallo 2019). On the concept of UBI, see Van Parijs and Vanderborght (2018)

As labor-saving AI systems push production toward a regime approaching the zero-slack limit, the political utility of UBI becomes increasingly evident. By providing a minimal income floor sufficient to sustain aggregate demand, UBI facilitates the continued circulation of commodities while depoliticizing the structural displacement of labor. In this sense, it operates as a strategic intervention that erodes workers' bargaining power, curtails the organizational capacities of the labouring classes, and narrows the horizon for antagonistic class politics.

From the vantage point of state–capital relations, UBI is a comparatively low-cost strategy for governing the contradictions of technological unemployment. Alternatives such as direct public employment, formalizing informal labor, or extending robust labor rights would require a redistribution of power toward workers, thereby altering the institutional architecture of capitalist labor relations. By contrast, UBI individualizes social reproduction and converts it into a depoliticized cash transfer, disarticulating income from collective labor rights. In doing so, it reconfigures the wage relation without challenging the structural imperatives of surplus extraction, keeping labor in a suspended, indefinitely precarious condition conducive to continued accumulation.

5. Conclusion

When AI hits the zero-slack labor limit, it will drastically reduce the demand for living labor, resulting in a sharp drop in effective demand and domestic market size. This raises the old problem and old solutions, i.e., seeking external markets and raising domestic demand. We might already be seeing signs of this in the tariff negotiations and in investments by some corporations to make outer space habitable. All these developments highlight the underlying awareness that market demand based on the income of living labor is increasingly insecure. In a way, renewed interest in UBI is a recognition of this. It is this double benefit of UBI that helps balance on the knife-edge between techno-capitalist accumulation and social democracy, leading to consensus among techno-capitalists, nation-states, and international development agencies in the AI era. From this perspective, UBI is not simply a redistributive policy but a structural response to the crisis of the labor-capital relation under AI. Therefore, cash transfers (unconditional or conditional) and UBI schemes should not be confused with efforts to assuage growing discontent with globalization or with some form of "compassionate" or "inclusive" capitalism, but rather reflect the pure self-interest of techno-capitalists in saving capital rather than labor!

A minimally maximal state could keep labor in a condition of managed economic suspension through transfers and basic income. The techno-capitalist class would not object to such an arrangement because the higher the public outlay required to sustain demand in a highly automated economy, the more secure profit realization becomes, along with a muted class struggle. The arrangement is reminiscent of an old Kaleckian theorem on the political consequences of state expenditure for labor discipline and control. The sustainability of such an economic system now will depend crucially on the political viability of an oligarchic democracy in which the state manages the economy on behalf of a small techno-capitalist

oligarchy. While this might sound like a political oxymoron, without considerable thoughtful control over AI, liberal democracies may be heading in that direction.

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