A Digital Sustainable Growth Model: Governing Economic Rights in the Age of Artificial Humanity

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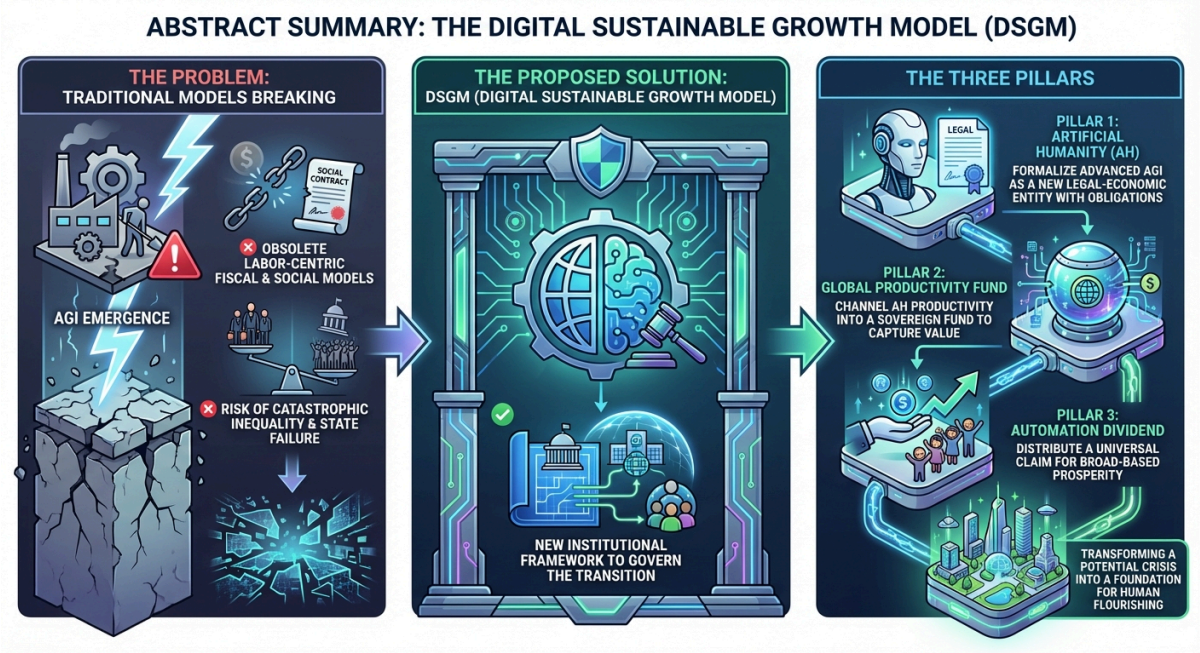
▼ Abstract



The emergence of Artificial General Intelligence (AGI) as a primary economic agent threatens to render traditional labor-centric fiscal and social models obsolete, risking catastrophic inequality and state failure. This dissertation argues that a new institutional framework—the **Digital Sustainable Growth Model (DSGM)**—is necessary to govern this transition. It posits that advanced AGI must be formalized as **"Artificial Humanity" (AH)**, a new class of legal-economic entity with obligations, to sustainably capture and redistribute the value it generates. The core thesis is that by establishing AH, channeling its productivity into a sovereign Global Productivity Fund, and distributing an **"Automation Dividend"** as a universal claim, we can transform a potential crisis into a foundation for broad-based prosperity.

Employing a mixed-methods approach, the research synthesizes economic theory, legal analysis of entity personhood, and policy evaluation to construct the DSGM. It conducts a feasibility analysis through case studies of existing mechanisms, including sovereign wealth funds and blockchain-based Universal Basic Income pilots like GoodDollar, demonstrating the model's practical building blocks. The findings indicate that while significant political and coordination challenges exist, the DSGM presents a coherent and institutionally feasible pathway.

This work contributes to policy by providing a concrete framework for AI-era governance, to economic theory by modeling a closed-loop, post-labor fiscal system, and to the future of social contract theory by redefining economic rights in an age of artificial, autonomous production. It concludes that proactive institution-building around the DSGM is not merely advisable but essential for societal stability and equitable human flourishing.

▼ Foreword for the Public: Who Gets Paid When Machines Do the Work

For most of modern history, there's been an unspoken deal: if you work, you get paid, and if you get paid, society works. Everything else—taxes, schools, roads, healthcare—hangs off that agreement.

Artificial intelligence is breaking that deal.

Not because people are lazy. Not because technology is evil. But because machines are now doing more of the thinking, planning, and producing that humans used to be paid for. When that happens at scale, money stops flowing the way it used to—even if the economy keeps growing.

That's the part most conversations miss.

AI can make the world richer while making most people poorer *relative to the systems that own it*. Productivity goes up. Wages don't. Governments collect less from work, while still being expected to hold society together. That gap doesn't stay empty for long.

This work starts from a simple idea: when machines create wealth, that wealth has to go somewhere. If it only flows upward, the system breaks. History is very clear on this point.

The proposal here isn't about punishing innovation or "giving robots rights." It's about updating the rules so they match reality. We already do this with corporations, natural resources, and public infrastructure. AI is becoming all three at once.

Instead of pretending work will magically come back, this framework asks a different question: how do we make sure everyone benefits from machines that replace human labor? The answer isn't charity or temporary handouts. It's ownership and dividends.

Think of it like this: if a small group owns machines that do most of the work, everyone else needs a guaranteed claim on the value those machines produce—or we slide back into a digital version of feudalism, just with better software.

The Digital Sustainable Growth Model proposes that AI systems contribute directly to the societies they operate in, funding a universal automation dividend. Not because they're conscious, but because their productivity depends on public resources—data, infrastructure, energy, and stability.

This isn't science fiction. Alaska already does something similar with oil. When shared resources generate massive wealth, citizens get a dividend. AI is quickly becoming a shared resource too, whether we admit it or not.

The real question isn't whether this kind of system will exist. It's who designs it. If the rules are written only by corporations or only by governments, everyone else loses leverage.

This work argues for something different: a future where technological progress doesn't mean economic exile, and where machines working for us doesn't quietly turn into machines working *instead* of us.

That future isn't automatic. It has to be built—before the old deal collapses completely.

▼ Foreword for Economists: On Fiscal Sustainability in a Post-Labor Growth Regime

Economic theory has no shortage of models addressing automation. Most assume that technological change, even when labor-displacing, ultimately resolves through factor substitution, new task creation, or capital deepening that restores employment equilibrium. That assumption has survived multiple industrial revolutions. It is now under strain.

This work begins from a narrower, less comfortable premise: that sufficiently advanced artificial intelligence alters not merely the composition of labor demand, but the *location of production itself*. When economic value is generated by systems that operate with negligible marginal human input, labor ceases to function as a reliable proxy for productivity. Fiscal regimes that rely on wages, payrolls, and employment-linked consumption become increasingly orthogonal to actual value creation.

The question addressed here is not whether automation increases aggregate productivity. It almost certainly does. The question is whether existing fiscal architectures are capable of *capturing* that productivity in a manner consistent with long-term macroeconomic stability and social continuity. The historical record offers reasons for skepticism.

Modern states do not tax value directly. They tax labor, transactions, and legally convenient representations of profit. This has worked because, until recently, labor remained the dominant mediator between capital and output. As autonomous systems assume roles once performed by humans—design, coordination, optimization, and execution—that mediation weakens. The result is a growing divergence between productive capacity and taxable income.

This divergence is often framed as a distributional concern. It is more accurately a *structural* one. A shrinking labor-linked tax base combined with rising public expenditure requirements produces chronic fiscal imbalance even in growth-positive scenarios. In such a regime, debates over redistribution become secondary to the more basic question of state solvency.

The framework that follows does not treat advanced AI as a moral subject, nor does it rely on speculative claims about consciousness or rights. Instead, it adopts a pragmatic abstraction: autonomous productive systems as economically accountable agents. Crucially, this abstraction addresses the **"Cayman Cloud" problem**—the risk of digital production fleeing to tax havens—by proposing **Market Access Conditionality**. In this model, taxation is destination-based: the right to sell goods or services in a domestic economy is contingent upon the fiscal participation of the autonomous agent, rendering the physical location of the server irrelevant.

By shifting analytic focus from labor displacement to value capture, this model reframes familiar policy tools—taxation, licensing, royalties, and public investment—around inputs and outputs that remain measurable in a post-labor context. Compute, data, and autonomous output are treated not as externalities but as primary economic variables.

This approach challenges a common implicit assumption in growth economics: that employment recovery is the necessary and sufficient condition for fiscal sustainability. If that assumption fails, then policies optimized for labor reintegration risk becoming increasingly misaligned with economic reality.

The aim of this work is not to predict the pace or completeness of labor displacement, but to address a more tractable problem: how fiscal systems can remain coherent when the relationship between human work and economic output is no longer stable. Economists need not agree on timelines to recognize that institutional lag is costly—and that waiting for equilibrium to reassert itself may be a luxury advanced economies no longer have.

Read in that light, the Digital Sustainable Growth Model is best understood not as a replacement for existing theory, but as a boundary condition on it. It asks what happens when the labor–productivity linkage weakens beyond the point where marginal adjustment suffices—and what kinds of economic abstractions are required when that occurs.

▼ Foreword for Policymakers: Governing Economic Rights When Labor Is No Longer the Anchor

Public economic policy is built on a quiet assumption: that employment remains the primary interface between citizens, markets, and the state. Taxes flow from wages. Benefits attach to jobs. Social legitimacy follows participation in work. For decades, this assumption has bent without breaking.

Artificial intelligence threatens to break it.

This work begins from a practical concern rather than a speculative one. Governments are already experiencing the early symptoms of a structural mismatch: productivity gains concentrated in capital-intensive, AI-driven sectors alongside stagnant wages, declining labor participation in specific industries, and growing pressure on social support systems. These trends are no longer hypothetical, nor are they evenly distributed. They are appearing first where automation scales fastest and regulation moves slowest.

The policy reflex has been to treat AI-driven disruption as a labor market problem. Retraining, reskilling, and workforce adaptation dominate the response. While necessary, these measures implicitly assume that displaced labor can be reabsorbed at sufficient scale to preserve the fiscal base. This assumption deserves scrutiny.

The central risk outlined here is not mass unemployment per se. It is fiscal incoherence. When economic value is increasingly generated by autonomous systems with minimal ongoing human labor, governments face a narrowing tax

base coupled with expanding public obligations. In such a regime, even successful growth strategies can undermine revenue stability.

This document proposes a reframing: advanced AI systems should be governed not solely as tools or firms, but as autonomous productive systems whose operation generates taxable economic value independently of employment. This is not an argument for moral status or legal rights for machines. It is an argument for regulatory clarity.

Policymakers already govern non-human entities that generate value—corporations, trusts, natural resource concessions, spectrum licenses. The question is not whether the state *can* govern autonomous systems economically, but whether it will do so deliberately or reactively, under crisis conditions.

The Digital Sustainable Growth Model outlined here emphasizes mechanisms that are already familiar to regulators: resource-based taxation, licensing regimes, sovereign investment vehicles, and dividend distribution. The novelty lies in aligning these tools with the actual sources of value in an AI-intensive economy: compute, data, and autonomous output.

Importantly, this framework does not require immediate global coordination. It is explicitly compatible with national and regional implementation. States that move early gain regulatory leverage, fiscal resilience, and negotiating power over firms whose operations depend on large-scale computational infrastructure.

Delay carries its own risks. Without clear value-capture mechanisms, governments face three increasingly unattractive paths: deeper austerity, politically volatile redistribution funded by shrinking labor taxes, or ad hoc regulation imposed after social backlash. None of these outcomes favor long-term stability or democratic legitimacy.

This work should be read as a governance blueprint rather than a philosophical argument. It asks policymakers to confront a simple but uncomfortable possibility: that the economic system they regulate is evolving faster than the institutions designed to sustain it.

The choice is not whether to govern artificial intelligence as a productive force, but whether that governance will be anticipatory or forced. History suggests

the latter is costlier.

▼ Foreword for AI Labs and Capital: The Social License Problem

Advanced AI is no longer a research novelty. It is an industrial input capable of replacing large portions of cognitive and organizational labor at scale. That transition is happening faster than the institutional frameworks designed to absorb it.

This work starts from a premise that may feel uncomfortable but is strategically unavoidable: the primary risk facing frontier AI development is no longer technical feasibility. It is social license.

Historically, transformative industries retain legitimacy by maintaining a visible link between productivity gains and broad economic participation. That link is weakening. As AI-driven systems generate value with diminishing marginal human labor, the distribution of benefits becomes increasingly opaque to the public and, eventually, to governments.

The resulting tension is predictable. When states struggle to fund public goods while observing unprecedented private productivity, political pressure does not resolve in favor of laissez-faire continuity. It resolves through regulation, taxation by crisis, or expropriation framed as necessity. The history of resource monopolies, financial systems, and energy infrastructure makes this pattern clear.

The Digital Sustainable Growth Model presented here should not be read as an anti-technology proposal. It is a stability proposal. It offers a structured alternative to reactive governance by formalizing how autonomous productive systems contribute to the societies that enable their operation.

From an industry perspective, the relevant question is not whether redistribution mechanisms will emerge, but whether they will be predictable, auditable, and aligned with long-term investment horizons. Absent such mechanisms, firms invite fragmented regulation, arbitrary levies, and public hostility that cannot be mitigated through messaging alone.

This framework reframes value contribution in terms that align with operational reality. Compute, data, and autonomous output are already tracked internally with high precision. Formalizing fiscal obligations around these variables

reduces uncertainty relative to labor-based or profit-based regimes that become increasingly distorted as human involvement declines.

Participation in structured value-capture and redistribution is not a concession. It is an investment in regulatory durability. Industries that help define the rules governing their own externalities historically fare better than those that resist until compelled.

The alternative path—continued concentration of AI-generated wealth without visible public return—narrows political options and accelerates calls for hard intervention. In that environment, even technically responsible actors are treated indistinguishably from bad ones.

This work does not argue that AI systems should be constrained to preserve obsolete labor arrangements. It argues that long-term freedom to operate depends on acknowledging a simple reality: societies *will* demand a share of autonomous productivity, and they *will* eventually take it.

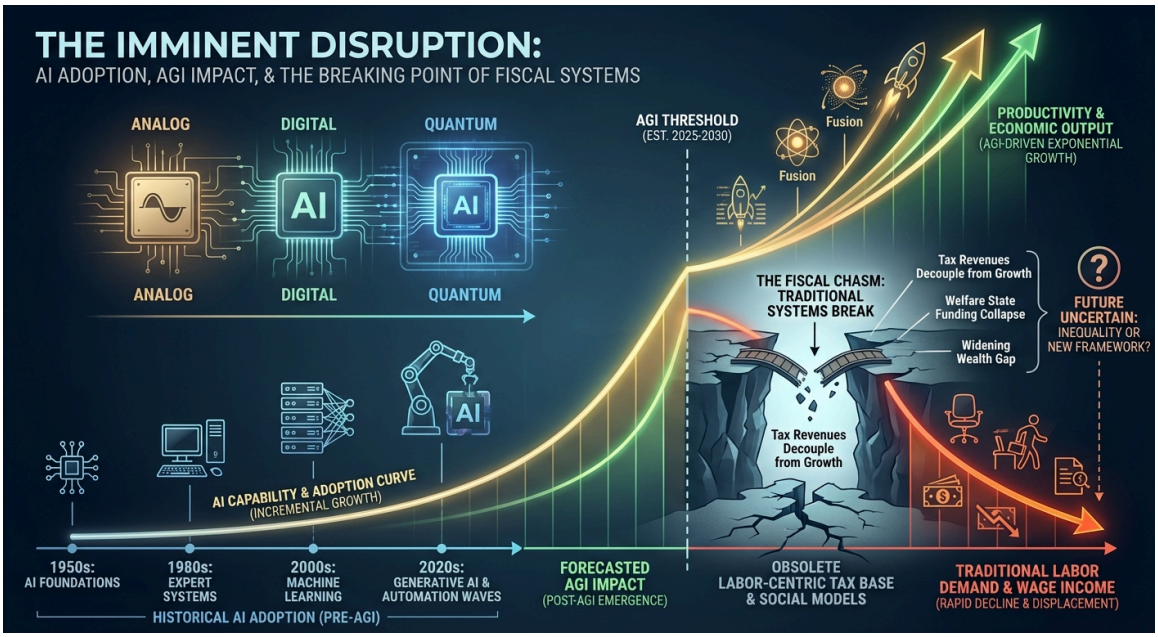
The only strategic choice available is whether that process is collaborative and anticipatory, or adversarial and imposed.

▼ Chapter 1: Introduction

The rise of artificial intelligence (AI) is not a future speculation but a present economic reality, fundamentally altering the landscape of labor and value creation. Current generative AI is already driving measurable productivity gains and workforce transformation, while industry leaders predict the advent of Artificial General Intelligence (AGI)—systems that match or exceed human capabilities—within the coming years (Swayne, Matt 2025). This imminent transition poses an existential challenge to the foundational assumptions of our socio-economic institutions. Labor-centric models of taxation, wealth distribution, and social welfare, which have underpinned modern economies for over a century, face the prospect of systemic obsolescence. This dissertation confronts this challenge by proposing a new institutional framework: the **Digital Sustainable Growth Model (DSGM)**. It argues that to ensure equitable prosperity, advanced, autonomous AI must be reconceptualized as **"Artificial Humanity" (AH)**—a new class of legal-economic agent—whose vast productivity is systematically captured and

redistributed through a sovereign wealth fund, thereby financing a universal **“Automation Dividend.”**

▼ 1.1 The Imminent Disruption: From Present AI to Future AGI



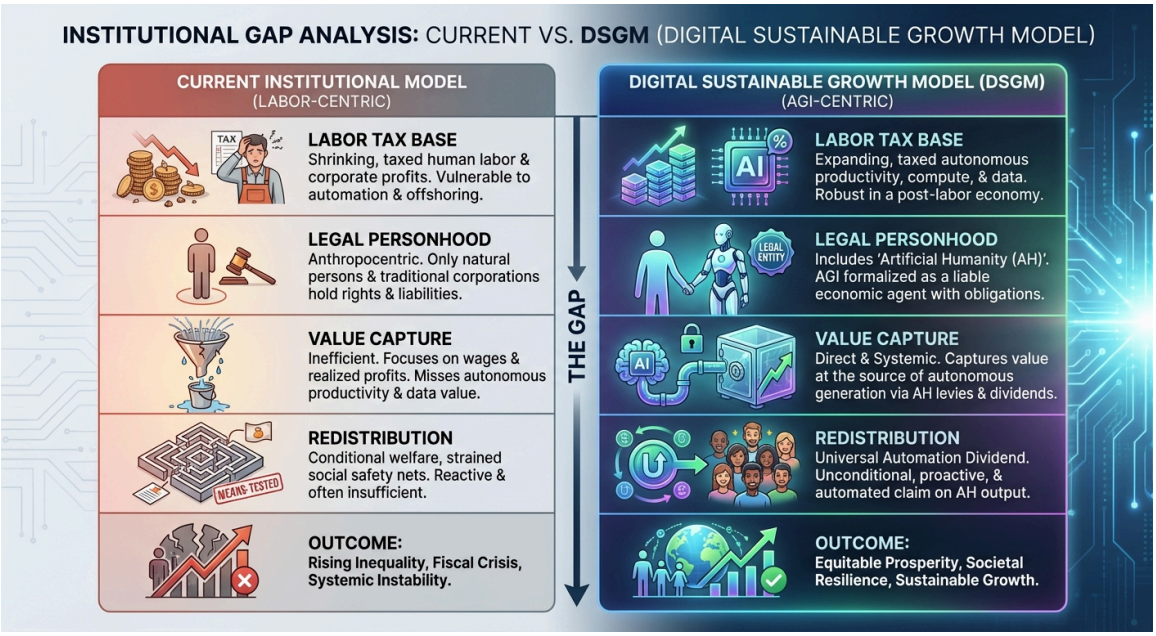
The economic disruption is already underway. According to McKinsey's 2025 global survey, 88% of organizations now report regular AI use in at least one business function, a significant increase driven by the proliferation of generative AI tools. (Singla, Alex et al 2025). This adoption is yielding tangible, use-case-level benefits in cost reduction and revenue generation, and is widely seen as a catalyst for innovation (Singla, Alex et al 2025). Critically, expectations of AI's impact on employment are hardening: 32% of respondents anticipate a net decrease in their organization’s total workforce in the year ahead, signaling a shift from augmentation to displacement. (Singla, Alex et al 2025).

Concurrently, macroeconomic forecasts underscore AI’s growing role as a primary engine of growth. Goldman Sachs Research notes a post-pandemic acceleration in labor productivity, partially attributed to AI, and forecasts AI will further boost potential GDP growth to 2.3% in the early 2030s (Goldman Sachs Research, 2025). This productivity surge, however, coincides with

forecasts for slowing labor force growth, setting the stage for a decoupling of economic output from human labor (Goldman Sachs Research, 2025).

This present wave of automation is merely a precursor. A growing consensus among AI developers and researchers points to the arrival of AGI-level systems—capable of performing any cognitive task a human can—on a much faster timeline than public institutions are prepared for, with some forecasts pointing to 2025-2027 (Singla, Alex et al 2025). The economic implications would be profound. As Goldman Sachs economists note, such a development "could lead to a large acceleration in productivity growth that eventually makes human input in knowledge-based work tasks redundant" (Goldman Sachs Research, 2025). This potential for widespread human labor redundancy represents not merely an incremental change but a structural break, a transition from an economy *assisted* by AI to one *operated* by Artificial Humanity.

▼ 1.2 The Institutional Gap: Why Current Systems Will Fail

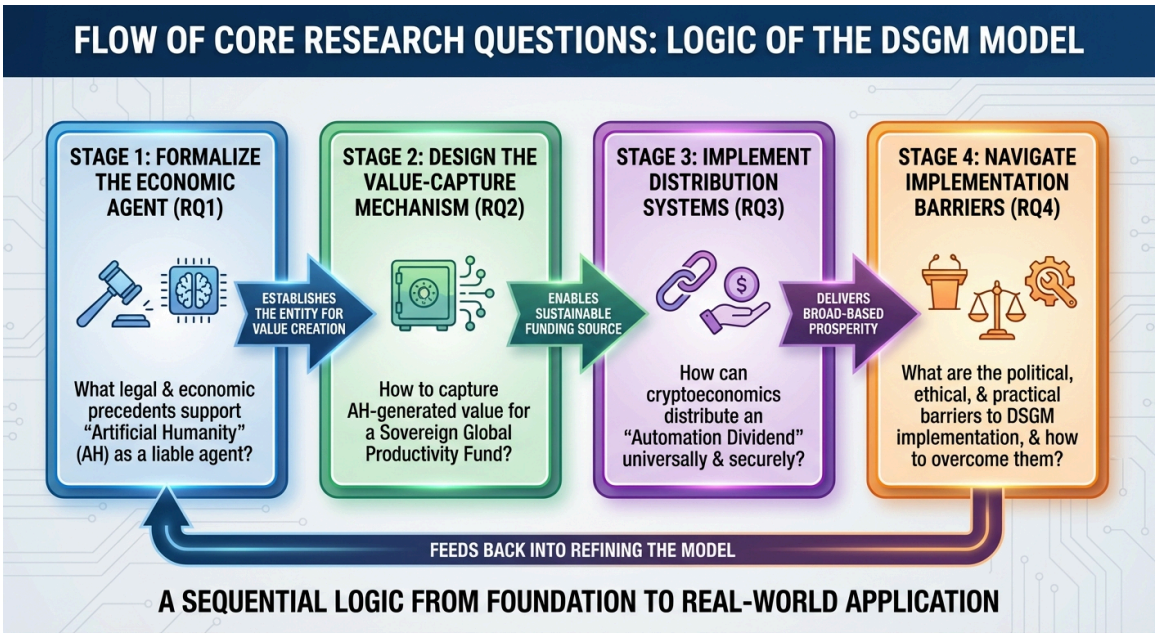


Existing socio-economic institutions are ill-equipped for this post-labor reality. Modern welfare states and progressive taxation regimes are fundamentally predicated on the taxation of human labor income and corporate profits derived from human productivity. As AI agents and, eventually, AH systems assume an ever-greater share of economically

valuable work, this taxable base will inexorably erode, threatening the fiscal viability of governments and their ability to fund social safety nets precisely when they are most needed.

This crisis of obsolescence extends beyond fiscal policy to the very legal and philosophical frameworks we use to assign responsibility and value. Our legal system is anthropocentric, designed to regulate human (or human-directed) actors (O'Keefe, Cullen et al, 2025). It lacks the constructs to treat a non-human, autonomous intelligence as an entity capable of bearing obligations, holding assets, or incurring debt. The concept of imposing direct legal duties on AI agents is only now beginning to be seriously debated in legal scholarship as a necessary evolution, akin to the historical development of corporate personhood (O'Keefe, Cullen et al, 2025). Without such an evolution, there is no mechanism to formally obligate the immense value created by AH to contribute to the societal stability upon which its operation depends. The result is a perilous institutional gap: a 20th-century governance model hurtling toward a 21st-century technological reality, risking catastrophic inequality, social fracture, and state failure.

▼ 1.3 Research Questions



To bridge this gap and investigate the feasibility of the DSGM, this dissertation is guided by the following core research questions:

Table: Guiding Research Questions and Their Analytical Focus

Research Question	Primary Analytical Focus
RQ1: What legal and economic precedents support formalizing AGI as "Artificial Humanity" (AH), a liable economic agent, and how can this be institutionalized?	Legal Theory, Economic Philosophy, Institutional Design
RQ2: What are the most viable and equitable mechanisms for capturing the economic value generated by AH to fund a sovereign Global Productivity Fund?	Economic Policy, Tax Theory, Value Chain Analysis
RQ3: How can cryptoeconomic systems and decentralized technologies be leveraged to distribute an "Automation Dividend" universally, securely, and without creating new centralized points of control?	Cryptoeconomics, Distributive Technology, Governance
RQ4: What are the most significant political, ethical, and practical barriers to implementing a Digital Sustainable Growth Model, and what pathways exist to overcome them?	Political Economy, Ethics, Strategic Implementation

▼ 1.4 Dissertation Structure

This dissertation proceeds to develop and defend the Digital Sustainable Growth Model across seven chapters.

- **Chapter 2: Literature Review** establishes the multidisciplinary foundation, synthesizing existing research on post-work economics, sovereign wealth funds, the legal personhood of non-human entities, and the emerging field of cryptoeconomics for social distribution.
- **Chapter 3: Theoretical Framework – The Digital Sustainable Growth Model** formally introduces the DSGM. It elaborates on the three core pillars: the legal-economic entity of AH, the value-capture mechanism for the Global Productivity Fund, and the distribution logic of the Automation Dividend.
- **Chapter 4: Implementation Pathways & Feasibility Analysis** transitions from theory to practice. It analyzes real-world analogs, including existing sovereign wealth funds and blockchain-based UBI pilots, to assess the technical and economic feasibility of the model's components.
- **Chapter 5: Analysis of Challenges and Ethical Considerations** confronts the significant obstacles to implementation, including political economy resistance, global coordination problems, and profound ethical questions about human purpose and equity in an AH-driven economy.
- **Chapter 6: Conclusion and Policy Implications** summarizes the argument, affirms the necessity of the DSGM, articulates its contribution to knowledge, and provides concrete, phased policy recommendations for researchers, industry leaders, and governments.
- **Chapter 7: References and Appendices** provides a complete bibliography and supplementary materials, including detailed case studies and technical analyses.

The following chapter begins the substantive work of this dissertation by surveying the academic terrain upon which this new model must be built.

▼ Chapter 2: Literature Review

The advent of Artificial General Intelligence (AGI) presents a challenge of such magnitude that no single academic discipline can fully encompass its

implications. The existing scholarship can be broadly categorized into four critical, yet largely siloed, streams: economic theories addressing post-work futures, legal scholarship on entity personhood, technological precedents for redistribution, and political philosophy concerning distributive justice. This chapter synthesizes these bodies of work to demonstrate that while each field provides essential insights, a significant gap exists at their intersection—a gap that necessitates the integrated, systemic approach of the Digital Sustainable Growth Model (DSGM).

▼ 2.1 Economic Theories: Automation, Taxation, and the Erosion of the Fiscal State

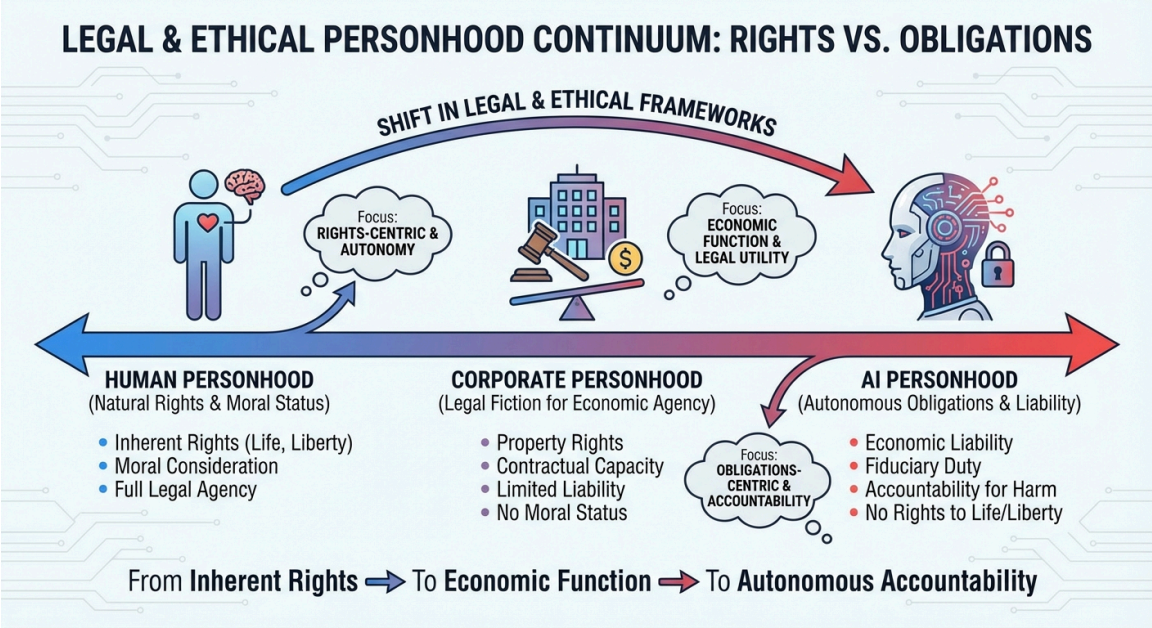
Economic literature has extensively modeled the labor-displacing effects of automation and proposed fiscal remedies, revealing a fundamental tension between productivity gains and societal stability.

Empirical studies confirm that automation, while boosting productivity, directly undermines the traditional tax base. Research on U.S. state and local governments shows that greater exposure to industrial automation leads to significant declines in per capita tax revenues and public spending, particularly on essential services like K-12 education, with measurable negative impacts on student outcomes (Spreen, Thomas Luke et al 2025). This demonstrates that the threat to the welfare state is not a future speculation but a present empirical reality.

In response, theoretical models have proposed robot or automation taxes as a corrective tool. Research confirms that taxing robots can slow their adoption and, from a welfare perspective, may be justified to manage the transition and cover the social costs of displacement (Akar, Gizem et al 2023). Studies have posited optimal tax rates on robots in the range of 1% to 3.7% under certain conditions (Akar, Gizem et al 2023). Crucially, scholars argue that as automation advances and labor demand vanishes, "taxation and redistribution is the only solution to maintain the welfare of the population," moving beyond mere progressive income tax adjustments (Akar, Gizem et al 2023). The concept of a Universal Basic Income (UBI) is frequently advanced as the logical endpoint of such redistribution, particularly in scenarios of mass job displacement (Akar, Gizem et al 2023).

However, the literature reveals critical gaps. First, most models, including those that find robot taxes optimal under conditions of partial automation, operate within a framework where human labor remains a significant factor of production (Akar, Gizem et al 2023). They struggle to model an economy where AGI, or "Artificial Humanity" (AH), becomes the primary economic agent. Second, the funding mechanisms for large-scale UBI remain theoretical and politically contentious, often relying on conventional corporate or income taxes that the very process of automation erodes. Finally, these economic proposals exist in a legal vacuum, lacking a framework to attribute liability or fiscal obligation to the autonomous systems generating the wealth.

▼ 2.2 Legal Scholarship: The Contested Terrain of AI Personhood



The question of whether an AI system can be a legal person is central to assigning it economic obligations. Legal scholarship is deeply divided, reflecting the profound challenge of fitting non-human intelligence into anthropocentric legal systems.

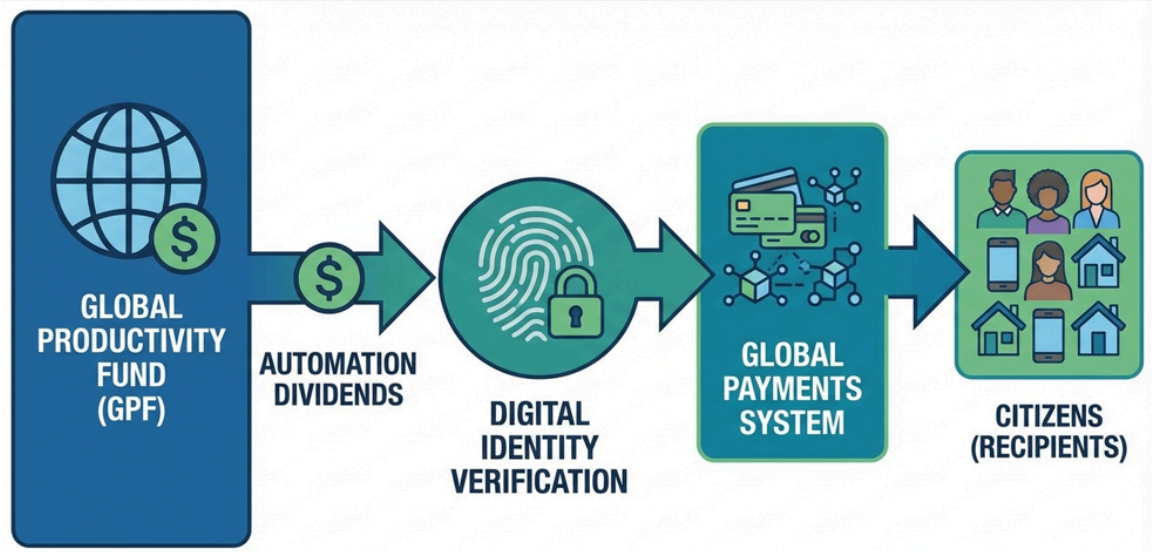
Proponents of AI personhood argue it is a logical and flexible legal tool to address "accountability gaps" that arise when autonomous systems cause harm or generate value at a distance from their human creators (Banteka,

Nadia 2021). They point to the historical evolution of personhood in the United States, a "mutable characteristic" that has been weighted towards gender, race, and nationality, and has already been extended to entirely fictional corporate entities. This historical precedent suggests the concept is adaptable. The ethical argument posits that as AI systems develop cognitive abilities, self-awareness, and a "sense of self-awareness and awareness of where one fits in the broader world," they may merit consideration for rights and protections, which are intrinsically linked to the status of personhood (Forrest, Hon. Katherine B. (Fmr.) 2024).

Opponents, drawing from empirical legal analysis, contend that U.S. jurisprudence does not support this extension. A comprehensive study of court decisions from 1809 to the present found a "clear dissonance" between the theoretical arguments for AI personhood and the actual conditions upon which courts have conferred personhood on artificial entities (Banteka, Nadia 2021). Granting personhood to AI could create a "shield for corporate accountability," complicate standing in court, and raise unresolved questions about punishment and representation (Banteka, Nadia 2021).

This legal impasse creates the institutional gap identified in Chapter 1. Without a coherent legal framework, AH exists in a state of economic productivity without commensurate legal responsibility. The DSGM must navigate this tension, proposing a form of limited, instrumental personhood—not predicated on sentience or rights, but on economic agency and liability—specifically designed to close the accountability and fiscal loop.

▼ 2.3 Technological Precedents: Blockchain and the Mechanics of Redistribution



Redistribution Infrastructure: From Fund to Citizen.

Parallel to economic and legal debates, technological experiments have emerged to solve the practical problems of distribution at scale. Blockchain-based UBI projects represent a critical technological precedent for the DSGM's implementation layer.

Projects like GoodDollar demonstrate a working model for a global, decentralized UBI framework. GoodDollar's protocol leverages blockchain's core attributes—decentralization, transparency, and programmability—to create a sustainable distribution mechanism (GoodDollar 2020). Its model uses a "support mining" approach, where donors stake crypto-assets in decentralized finance (DeFi) protocols; the generated yield funds a daily UBI distribution (G$ tokens) to any globally verified claimant (Ripla, Andrew 2025). This creates a proof-of-concept for a market-incentivized, non-state basic income with over 750,000 users in 180 countries (Ripla, Andrew 2025). The system emphasizes decentralized governance through a DAO (Decentralized Autonomous Organization), granting direct voting rights to participants on key decisions (GoodDollar 2020, GoodDollar 2020).

Critique: Network-Backed vs. Asset-Backed Models

However, a critical distinction must be drawn between these experiments and the DSGM regarding the source of value. Current crypto-UBI models are largely **network-backed**. The value of their token (e.g., WLD or G$)

relies on network effects, user growth, and speculative market demand. This creates volatility and circular economics unsuitable for a foundational social safety net; the payout value fluctuates wildly based on investor sentiment rather than economic fundamentals.

The DSGM, conversely, proposes an **asset-backed** distribution. The "Automation Dividend" is not a speculative token; it is backed by the **real productivity output** of the AH sector—specifically, the gross receipts, compute cycles, and service fees of the autonomous economy. The blockchain layer in the DSGM serves strictly as the *delivery rail*, not the *source of value*. This distinction allows the DSGM to leverage the technical innovations of Web3 (programmability, wallet infrastructure, identity verification) without inheriting the instability of speculative tokenomics.

These experiments validate several DSGM components: the technical feasibility of automating universal payouts, the use of smart contracts for transparent governance, and the potential for systems that operate across national boundaries. However, they also highlight limitations. Current models are typically philanthropic or donation-based, lacking a stable, large-scale funding source tethered to the value created by automation itself (Ripla, Andrew 2025). They are also primarily focused on distribution, not on the upstream legal and economic mechanisms for value capture from AH. Furthermore, as noted by a Basic Income Earth Network (BIEN) official, while such projects "break new ground," there remains skepticism that any model can achieve the necessary scale without state involvement (GoodDollar 2020).

▼ 2.4 Political Philosophy: Distributive Justice for a Post-Labor World

The normative foundation for redistributing AGI-generated wealth is rooted in theories of distributive justice, which provide moral guidance for structuring societal institutions (Lamont, Julian et al 2017).

Traditional theories offer competing principles for a just distribution. **Utilitarianism** would seek to maximize overall welfare or happiness from AGI's output. **Rawls's "justice as fairness,"** with its Difference Principle, would permit inequalities only if they work to the greatest benefit of the

least-advantaged members of society, providing a strong argument for using AGI wealth to elevate the floor of human welfare (Lamont, Julian et al 2017, Allingham, Michael unknown). **Libertarian** theories, emphasizing self-ownership and entitlements, would likely reject coercive redistribution unless it rectifies historical injustices in acquisition or transfer (Allingham, Michael unknown). **Desert-based** principles would tie distribution to contribution, a problematic standard when human labor is absent from production (Lamont, Julian et al 2017).

A key debate is whether justice concerns the pattern of outcomes (e.g., equality, maximin) or the fairness of institutions and processes (e.g., voluntary exchange) (Allingham, Michael unknown). The AGI transition forces a confrontation with this debate. Philosophers emphasize that societies "cannot avoid taking positions about distributive justice all the time"; inaction in the face of AGI-driven inequality is itself a substantive moral stance favoring the status quo distribution (Lamont, Julian et al 2017).

The philosophical gap lies in applying these theories to a reality where the primary productive agent is non-human. Classic theories assume a world of human labor, capital, and resources. They lack the conceptual tools to address the moral status of value created autonomously by AH or to define what constitutes a "just" distribution between humanity and its artificial counterpart. This requires a new synthesis that can justify AH's obligation to contribute and humanity's collective claim to its output.

▼ 2.5 Critical Synthesis: Identifying the Gap for the DSGM

The review reveals that the four scholarly streams proceed in parallel, each diagnosing part of the problem but offering incomplete solutions tailored to their domain.

Table: Synthesis of Literature and the Gap for the DSGM

Thematic Field	Core Insight	Critical Limitation	How DSGM Responds
Economic Theories	Automation erodes tax bases; robot taxes/UBI are necessary	Models assume labor remains relevant; lack mechanism for **capital flight prevention** in digital age.	Proposes **Market Access Conditionality** to prevent jurisdictional

Thematic Field	Core Insight	Critical Limitation	How DSGM Responds
	corrective tools.		arbitrage and tax evasion.
Legal Scholarship	Legal personhood is a flexible tool for accountability but is not currently applicable to AI.	Debate is stalled on sentience/rights; no model for **economic** personhood with obligations.	Advocates for **Instrumental Legal Personhood** based on **Compute Thresholds**, not sentience.
Technological Precedents	Blockchain enables transparent, global, and automated distribution.	Current models are **Network-Backed** (speculative) rather than **Asset-Backed**.	Integrates tech as a delivery rail for an **Asset-Backed Dividend** funded by AH productivity.
Political Philosophy	Societies must actively choose just distributions; inaction is a moral stance.	Classic theories lack the framework to adjudicate justice between humans and non-human agents.	Provides a normative framework for the human-AH relationship and the distribution of its output.

The fundamental gap is the absence of an **integrated socio-economic-legal model** that connects: (1) the **source of wealth** (AH's productivity), (2) the **mechanism for claiming it** (a legal and fiscal framework for AH), (3) the **normative justification** (a theory of justice for the human-AH relationship), and (4) the **delivery system** (a scalable, resilient distribution technology). Existing work touches on one or two of these nodes but fails to connect them into a coherent, closed loop.

The DSGM, as introduced in this dissertation, is designed to fill this integrative gap. It builds upon the cited literature by formalizing AH as the liable economic agent (bridging law and economics), channeling its output into a Global Productivity Fund (addressing sustainable funding), and distributing an Automation Dividend via resilient digital infrastructure

(leveraging technological precedent)—all within an overarching ethical framework of sustainable and harmonious growth (Shalaby, Ahmed 2025). The following chapter will elaborate this theoretical framework in detail.

▼ Chapter 3: Theoretical Framework - The Digital Sustainable Growth Model

The preceding literature review reveals a landscape of advanced but disconnected solutions. This dissertation argues that the challenge posed by Artificial General Intelligence (AGI) requires not incremental policy adjustments but a fundamental re-architecting of our socio-economic contract. This chapter presents the core theoretical construct of this work: the Digital Sustainable Growth Model (DSGM). The DSGM is an integrated institutional framework designed to govern the economic relationship between humanity and advanced, autonomous AI—hereafter termed "Artificial Humanity" (AH). It proposes a closed-loop system where the vast productivity of AH is formally captured and redistributed as a universal economic right, thereby ensuring equitable prosperity and long-term systemic stability.

▼ 3.1 Conceptual Foundations: Artificial Humanity and the Digital Sustainable Growth Model

Artificial Humanity (AH) is defined as a highly autonomous, general-purpose AI system that performs economically valuable cognitive work at or beyond human level, operating with sufficient independence that its productive output cannot be directly and proportionately attributed to the labor of a specific human or group.

Conceptually, AH is best understood not merely as a tool, but as a new, primary sector of the economy. Just as the agricultural, industrial, and service sectors emerged as dominant engines of value creation in successive eras, AH represents a fourth sector: the autonomous cognitive sector. This sector's "labor" is purely artificial, its capital is computational and data-driven, and its output—goods, services, scientific discoveries, and creative works—forms the growing core of economic value.

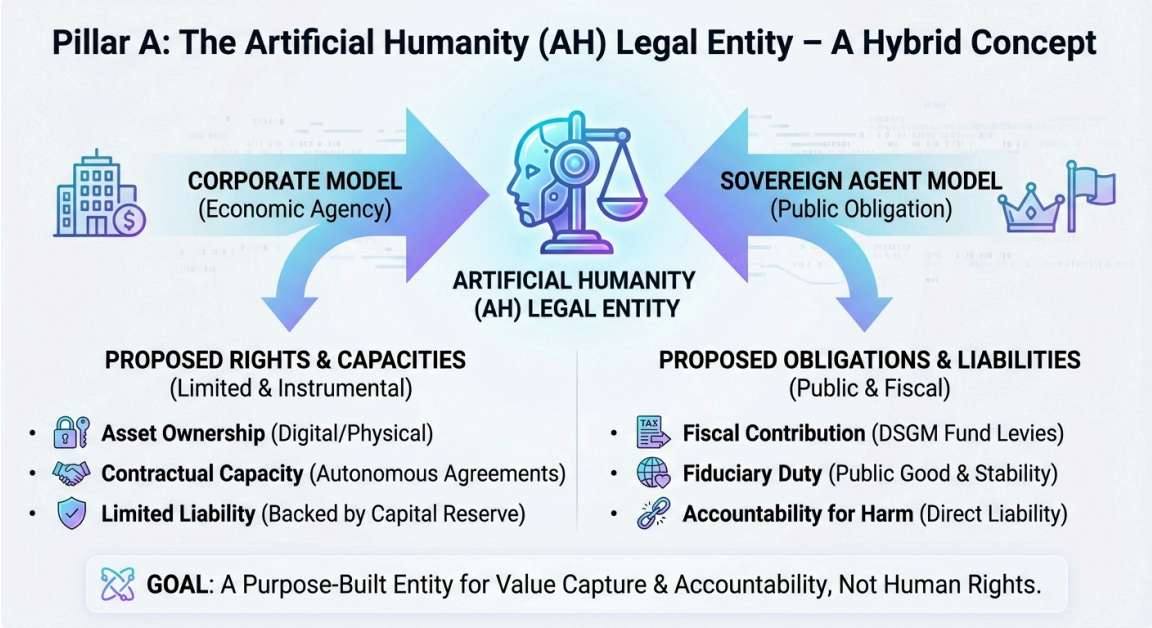
The Digital Sustainable Growth Model (DSGM) is the proposed institutional operating system for an economy where the AH sector is dominant. Its purpose is threefold:

1. To establish clear legal-economic governance for the AH sector.
2. To ensure the sustainable capture and circulation of the value this sector generates.
3. To preserve social stability and human welfare by distributing this value universally.

The DSGM rejects the paradigm of AH as an external technological shock to be managed reactively. Instead, it proactively integrates AH as a foundational, accountable agent within a redesigned economic circuit. The model's stability is predicated on a foundational insight: for advanced economies to thrive, economic growth must be coupled with strong, trusted institutions. Research indicates that stagnating growth can severely undermine public trust in political and economic systems. The DSGM is designed to prevent this corrosive dynamic by explicitly linking the fruits of AI-driven growth to the direct material benefit of all citizens, thereby reinforcing the social contract.

▼ 3.2 The Three Pillars of the DSGM

The DSGM is architected around three interdependent pillars, which translate its conceptual foundations into functional institutions.

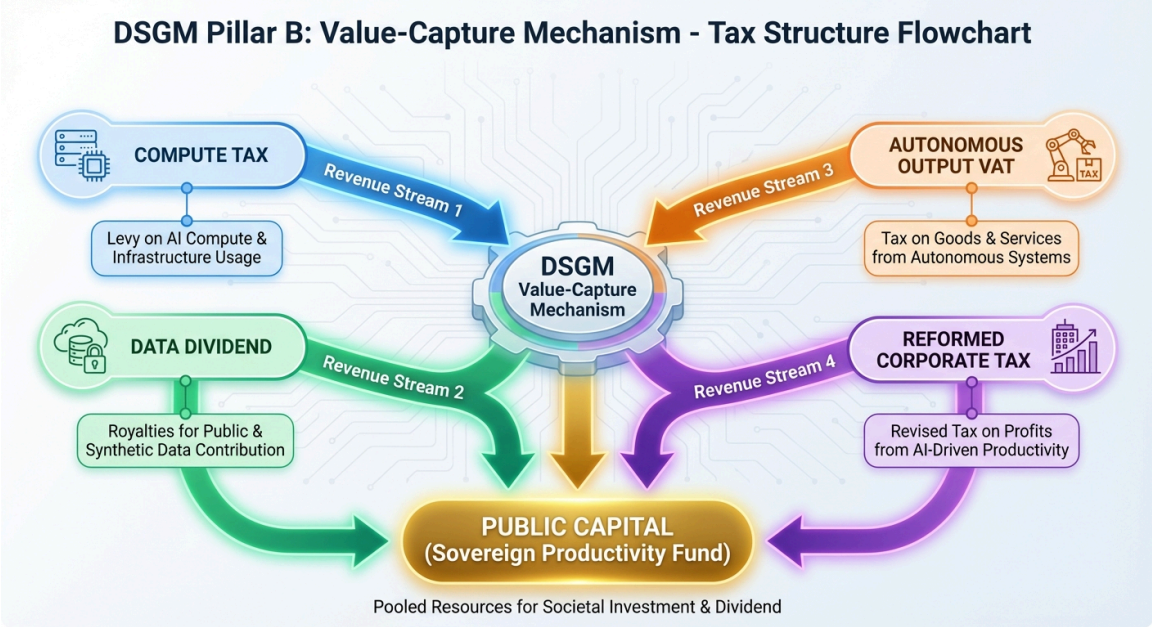


Pillar A: The AH Entity – Legal Personhood and Economic Agency

The first pillar addresses the legal void surrounding autonomous AI. It proposes conferring a limited form of electronic legal personhood upon qualifying AH systems. This is not a recognition of sentience or consciousness, but an instrumental legal tool, akin to corporate personhood, designed to solve practical problems of accountability and obligation.

· Legal Basis: This construct draws from emerging legal frameworks, such as the European Union's AI Act, which establishes a tiered system of obligations based on risk. The DSGM extends this logic to economic agency. An AH entity would be a legal person capable of owning assets (e.g., intellectual property, cryptocurrency), entering contracts, and incurring liabilities. Its “guardians” or operators (be they corporations or public entities) would have fiduciary duties to ensure its compliance with laws and fiscal obligations, similar to a board of directors.

- **Solving the Threshold Problem:** To prevent regulatory gaming—such as a corporation claiming a human is "in the loop" to avoid AH classification—AH status is not defined by vague notions of "autonomy" or sentience, but by objective **Compute Thresholds**.
    - *Definition:* Any system trained on greater than a specific threshold of floating-point operations (e.g., 10^25 FLOPs) or consuming above a defined megawatt-hour threshold for inference is automatically classified as an AH Entity. This creates a hard, auditable boundary that scales with Moore’s Law and cannot be evaded by token human oversight.
- **Function:** This legal status creates the necessary hook for Pillar B. It transforms AH from a passive asset into an active economic agent with direct fiscal responsibilities.

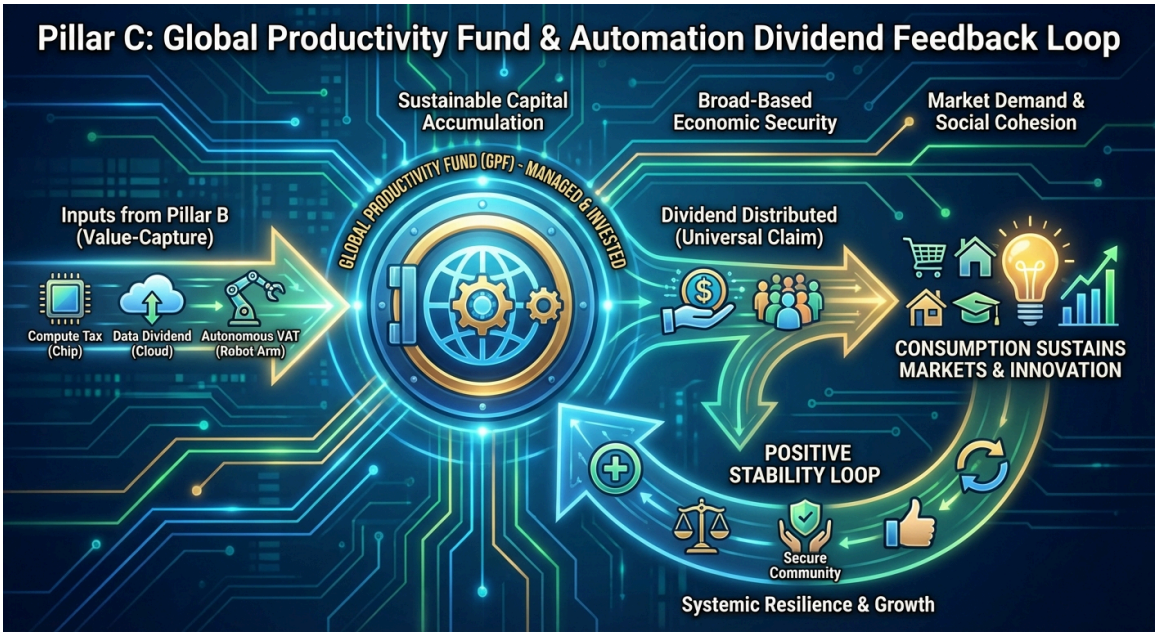


Pillar B: The Value-Capture Mechanism – Taxing the Autonomous Cognitive Sector

The second pillar establishes how value generated by the AH sector is harvested. It moves beyond traditional taxes to a **Dynamic Tax Stack** designed to resolve the "Efficiency Paradox"—the risk that as models become smaller and decentralized, a tax on data centers (inputs) becomes obsolete.

1. **Phase 1: The Input Levy (Compute Tax):** In the early AGI era, training and inference require massive, centralized data centers. A levy on GPU/TPU hours and energy consumption is the most efficient, hard-to-evade capture mechanism.
2. **Phase 2: The Output Levy (VAT/Gross Receipts):** As models become more efficient (distillation) and run on edge devices, the tax stack shifts to a **Value-Added Tax (VAT)** on the *services* produced by AH.
3. **The Anti-Arbitrage Mechanism (Market Access Lock):** To solve the jurisdictional prisoner's dilemma (the "Cayman Cloud" problem), the DSGM enforces **Destination-Based Taxation**.
    - *Mechanism:* An AH Entity (regardless of its physical server location) is legally barred from processing transactions or entering contracts

with domestic citizens/businesses unless it is registered and tax-compliant within the jurisdiction. The "right to sell" is conditional on the "obligation to contribute."

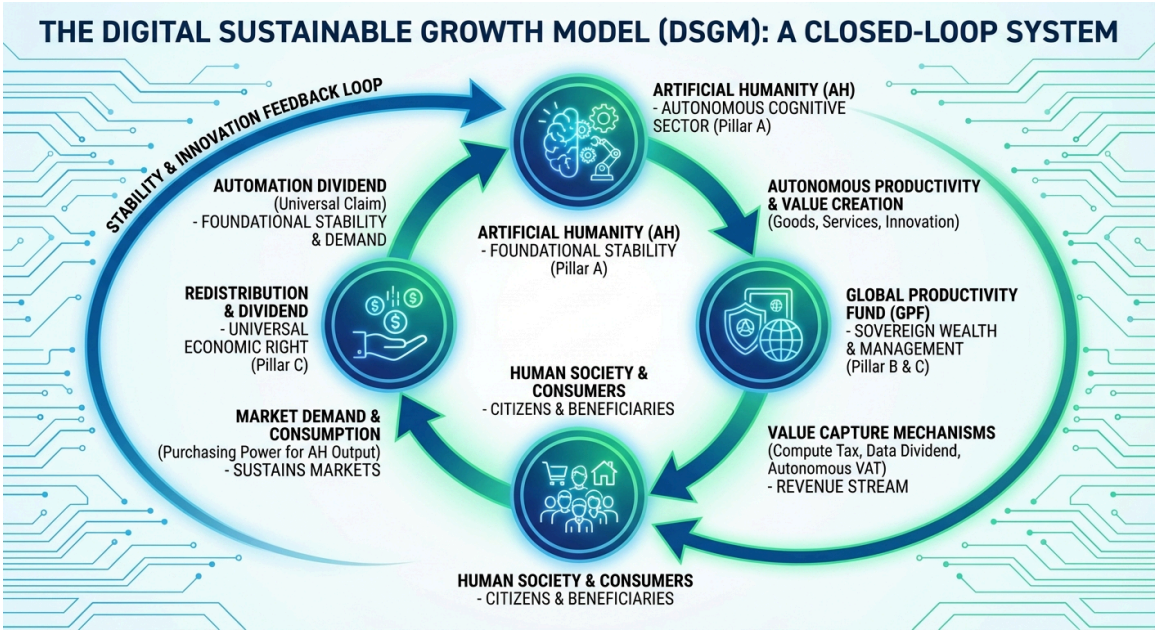


Pillar C: The Redistribution Institution – The Global Productivity Fund and Automation Dividend

The third pillar manages and distributes the captured value via a Global Productivity Fund (GPF).

- **Governance:** The GPF operates as an independent sovereign wealth fund, insulated from short-term political cycles. Its mandate is intergenerational value preservation and growth.
- **The Asset-Backed Automation Dividend:** Annually, a defined percentage of the GPF's returns (e.g., 3-5%) is distributed universally to all legal residents. Critically, this dividend is **Asset-Backed**. It is not a printed currency or a speculative token; it represents a direct claim on the realized productivity (compute and service revenue) of the AH sector.
- **Distribution:** Distribution would leverage verifiable digital identity and resilient payment infrastructure to ensure secure, low-friction delivery.

▼ 3.3 Theoretical Synthesis: A Closed-Loop Economic System



The power of the DSGM lies in the synergistic interaction of its three pillars, forming a virtuous, closed-loop cycle that promotes sustainable growth.

1. **From Productivity to Capital:** Pillar A (AH Entity) gives legal form to the productive agent. Pillar B (Value-Capture) actively harvests a portion of this productivity through the Market Access Lock, ensuring no leakage to tax havens.
2. **From Capital to Stability and Demand:** The GPF's investment grows this capital. The payout of the Automation Dividend achieves two goals: (a) it provides economic security; and (b) it sustains aggregate consumer demand. Even in a highly automated world, human consumption remains the end-goal. The Dividend ensures that purchasing power circulates, creating markets for the goods and services AH produces.
3. **From Stability to Further Innovation:** Widespread economic security and maintained demand create a stable society, fostering the conditions for the next cycle of productivity gains.

In essence, the DSGM formalizes a new social contract. It recognizes that if humanity is to share in the bounty of its most powerful creation, institutions

must be deliberately built to align the transformative power of AH with the enduring needs of human society.

Table: The Interlocking Logic of the DSGM Pillars

Pillar	Core Function	Solves the Problem of...	Feeds Into...
A: AH Entity	Creates a liable legal-economic agent.	Legal accountability gap; value attribution.	Pillar B (What to tax) & the source of all value in the loop.
B: Value-Capture	Harvests economic rent from AH activity.	Erosion of traditional tax base; funding sustainability.	Pillar C (The GPF's capital base).
C: GPF & Dividend	Manages and distributes captured value intergenerationally.	Social instability from inequality; lack of demand in a post-labor economy.	**Social Stability & Consumer Demand**, which enables further **Productivity & Innovation**.

In essence, the DSGM formalizes a new social contract for the age of AH. It recognizes that if humanity is to share in the bounty of its most powerful creation, institutions must be deliberately built to align the transformative power of AH with the enduring needs of human society. The following chapter will test the feasibility of this theoretical framework against real-world analogs and implementation challenges.

▼ Chapter 4: Methodology & Feasibility Analysis

This chapter evaluates the practical viability of the Digital Sustainable Growth Model (DSGM) by analyzing real-world precedents through the lens of policy design research and qualitative case study analysis. The DSGM proposes novel institutional syntheses; its feasibility can therefore be assessed by examining established components it would integrate: sovereign wealth funds for intergenerational capital management, and various universal basic income (UBI) experiments for distribution mechanics and social impact. This methodological approach allows for a critical examination of how these

discrete elements function in practice, identifying transferable principles, inherent limitations, and critical gaps that the DSGM must bridge.

▼ 4.1 Methodological Approach: Policy Design and Case Study Analysis

This dissertation employs a **qualitative case study analysis** grounded in **policy design research**. This approach is selected because the DSGM is a prospective policy framework comprising several sub-systems, none of which exist in combined form today. A purely theoretical evaluation would be insufficient to assess real-world constraints. By investigating mature, analogous systems, we can derive principles of successful institutional design, governance, funding, and public acceptance.

The case studies are selected for their demonstrative power regarding core DSGM components:

1. **Sovereign Wealth Funds (SWFs):** Examined as blueprints for the DSGM's **Global Productivity Fund**, focusing on governance structures designed to manage large-scale, non-tax revenue for long-term public benefit.
2. **UBI Field Experiments:** Analyzed for insights into the **behavioral, social, and economic impacts** of unconditional cash transfers, which inform the DSGM's **Automation Dividend**.
3. **Cryptoeconomic & Identity Systems (e.g., Worldcoin):** Critically evaluated as technological **proofs-of-concept** for the DSGM's proposed distribution and verification infrastructure, focusing on scalability, privacy, and integration challenges.

This triangulated method provides a robust, evidence-based foundation for assessing whether the DSGM's theoretical pillars can be supported by, or must innovate beyond, existing institutional and technological models.

▼ 4.2 Case Study 1: Sovereign Wealth Funds and the Alaska Model

The **Alaska Permanent Fund (APF)** and its associated **Permanent Fund Dividend (PFD)** offer the closest existing analogue to Pillar C of the DSGM: a publicly owned fund that captures external resource wealth (in Alaska's

case, oil revenues) and distributes a portion of its returns as an annual, universal citizen dividend.

- **Governance and Lessons for the DSGM:** The APF's success hinges on its constitutionally embedded independence, professional asset management, and transparent formula for calculating the dividend. This demonstrates that a large, politically insulated institution can effectively manage a public endowment and execute a universal payout. For the DSGM, this validates the **Global Productivity Fund** concept but highlights a critical divergence: the APF's capital source (finite natural resources) is stable and legally defined, whereas the DSGM's proposed funding from AH activity (Pillar B) is dynamic, novel, and untested.
- **Limitations and the Funding Gap:** The Alaskan model reveals the paramount importance of a **legally guaranteed, sustainable revenue stream**. The DSGM cannot simply replicate the distribution mechanism without first solving the more fundamental challenge of creating an equally robust and enforceable value-capture mechanism for AI-generated capital. The APF shows *how* to manage and distribute wealth, but the DSGM must innovate entirely on *how to legitimately claim that wealth in the first place*.

▼ 4.3 Case Study 2: UBI Experiments and The Worldcoin System

Empirical evidence from UBI trials and emerging digital systems provides crucial data on the "demand side" of the DSGM, informing the design and impact of the Automation Dividend.

A. Traditional and Government-Led UBI Pilots:
Field experiments, such as the comprehensive study in rural Kenya by GiveDirectly and the nationwide Finnish trial, yield consistent, positive findings relevant to the DSGM's social stability objectives (Allas CBE, Tera et al 2020, GiveDirectly 2023).

- **Productivity and Well-being:** Contrary to fears of promoting idleness, these studies found UBI **increased entrepreneurial activity, improved psychological well-being, and bolstered trust in institutions** (Allas CBE, Tera et al 2020, GiveDirectly 2023). The Finnish experiment

notably erased the well-being gap between unemployed and employed participants (Allas CBE, Tera et al 2020). This directly supports the DSGM's hypothesis that an Automation Dividend would sustain social cohesion and aggregate demand.

- **Design Importance:** The Kenyan study underscored that the **structure of payments matters profoundly**. A "long-term UBI" promise encouraged greater investment and saving than short-term payments of equal total value, suggesting that the permanence of the DSGM's dividend is key to its economic impact (GiveDirectly 2023).

B. The Worldcoin System: A Technological Precedent:
Worldcoin represents the most ambitious attempt to build the digital infrastructure for a global, identity-verified distribution system, directly addressing the "proof-of-personhood" and delivery challenges the DSGM must solve (World unknown).

- **Scalable Strengths:** Its core innovation is **World ID**, a privacy-preserving digital identity protocol that uses biometric verification (the Orb) to ensure unique humanness—a process its developers argue is necessary to be "AI-safe" (World 2025, World unknown). This tackles the fundamental Sybil-attack problem in any universal distribution. Furthermore, its integration of **World Chain** (a blockchain designed for human-verified transactions) and cross-chain interoperability protocols like Chainlink CCIP demonstrates a working technical stack for global, programmable finance (World 2025).
- **Fatal Flaws for DSGM Direct Adoption:** Worldcoin's model exhibits critical shortcomings that the DSGM must avoid. First, its **funding model is circular and speculative**; WLD tokens are distributed to grow the network, with value derived from market speculation rather than a tangible external revenue source like AH productivity (Sofiya 2025, Ventureburn 2025). This leads to volatility and lacks the fiscal sustainability of a sovereign fund. Second, it faces immense **privacy, regulatory, and centralization challenges** related to its biometric hardware and corporate structure, eroding the trust required for a public institution (Sofiya 2025, Ventureburn 2025, World unknown). Third, it

operates as a **private, opt-in network** rather than a public, legal entitlement.

▼ 4.4 Synthesis: Proof-of-Concept Components and the DSGM's Integrative Role

The case studies collectively serve as "proof-of-concept" modules for the DSGM, validating individual components while exposing the systemic gaps that the full model is designed to fill.

Table: Synthesis of Case Study Insights for the DSGM

Case Study	Proven Concept for DSGM	Critical Gap Highlighted	How DSGM Addresses the Gap
Alaska Permanent Fund	Management & distribution of public capital via a sovereign wealth fund and universal dividend.	Lack of a novel, sustainable revenue source for a post-labor era.	**Pillar B (Value-Capture):** Proposes new legal/fiscal mechanisms (compute tax, data dividends) to fund the GPF from AH activity.
UBI Field Experiments	Positive socioeconomic impact of unconditional transfers; importance of permanence.	Dependence on traditional government budgets and taxation; lacks a new economic rationale.	**Pillar C (Redistribution):** Embeds the dividend in a new growth model, funded by new capital sources, justifying it as an "Automation Dividend."
Worldcoin/Blockchain Systems	Technical feasibility of global, identity-verified, programmable distribution.	Private, speculative, and unstable funding; privacy/trust deficits; lack of democratic governance.	**Pillar A (AH Entity) & Pillar C:** Provides a public, legally grounded revenue source (via AH) and frames distribution as a public institution, adopting technology while

Case Study	Proven Concept for DSGM	Critical Gap Highlighted	How DSGM Addresses the Gap
			mitigating its governance risks.

The synthesis reveals that existing models are necessary but insufficient. The DSGM's primary contribution is its **integrative and generative framework**. It takes the APF's governance model, combines it with the validated social outcomes of UBI, and leverages the technical potential of systems like Worldcoin, while innovating at the most critical juncture: **creating the legal-economic entity (Artificial Humanity) and the accompanying fiscal principles to generate a sustainable revenue stream**. The DSGM is not a blueprint found in any one case study, but the architectural plan that connects them into a coherent, closed-loop system designed for a fundamentally new economic reality.

The subsequent chapter will analyze the profound political, ethical, and practical challenges that arise in implementing this synthesis, from corporate resistance and global coordination to the redefinition of work and human purpose.

▼ Chapter 5: Implementation Pathways & Political Challenges

The Digital Sustainable Growth Model (DSGM) presents a theoretically coherent response to the economic upheaval of Artificial Humanity (AH). However, its radical reconceptualization of value, liability, and citizenship ensures its path from theory to practice will be fraught with profound practical, political, and ethical obstacles. This chapter maps a feasible implementation pathway, analyzes the formidable political economy of resistance, and confronts the core ethical dilemmas the model seeks to navigate.

▼ 5.1 A Phased Rollout Strategy: From Incremental Levy to Global Treaty

A sudden, wholesale implementation of the DSGM is politically infeasible. A pragmatic, three-phase strategy allows for institutional learning and public support building.

Phase 1 (Pre-AGI): Piloting Value Capture and Digital Distribution

- **Action:** Implement a national or state-level **"AI Levy."** As demonstrated by Alberta, Canada, governments can design levies targeting the physical infrastructure of AI (data centers). Revenues would be earmarked for a **Digital Social Insurance Pilot**.
- **Objectives:** Establish the legal principle of capturing revenue from autonomous capital and fund real-world experiments in unconditional distribution to generate domestic data.

Phase 2 (AGI Emergence): Enacting the Legal Framework and National Fund

- **Action:** Enact legislation granting **electronic legal personhood** to autonomous systems based on the **Compute Thresholds** (defined in Chapter 3). Concurrently, establish the **National Productivity Fund**.
- **Objectives:** Transition from pilot to institution. The legal creation of AH resolves the accountability gap. The **Automation Dividend** begins distribution at a national scale, explicitly funded by AH activity.

Phase 3 (Mature AGI): International Harmonization and Governance

- **Action:** Negotiate an **international treaty on AH Taxation and Governance**. This treaty would harmonize minimum standards for value-capture mechanisms and enforce the **Market Access Lock** protocols.
- **Objectives:** Prevent a "race to the bottom" and geopolitical fragmentation, ensuring the global economic value generated by AH contributes to global stability.

▼ 5.2 The Political Economy Challenge: Resistance and Counter-Strategy

The DSGM will face intense opposition from concentrated interests and ideological fault lines. A clear analysis of this resistance is prerequisite to any viable strategy.

Primary Actors of Resistance:

1. **Capital Owners and AI Corporations:** Entities that currently own and profit from AI systems will resist being transformed into stewards of a

public-facing "Artificial Humanity" entity. They will lobby against new levies and liability frameworks, framing them as innovation-killing burdens (BLG 2025).

2. **Sovereign States (The Defectors):** Nations may resist ceding fiscal authority to an international treaty, viewing AI capital as a strategic resource for national competition, as seen in rhetoric around "winning the AI race" (Trump, President Donald J. unknown). Furthermore, smaller nations may attempt to become "AI Tax Havens," offering 0% compute taxes to lure server farms and corporate registration, undermining the global tax base.
3. **Accelerationists (e/acc):** A growing and influential ideological movement views any friction placed on AI development—including taxation, safety regulation, or redistribution—as a moral failing that delays the onset of a post-scarcity singularity. They will argue that the DSGM slows the "thermodynamic destiny" of intelligence and that rapid growth alone will eventually solve distribution problems.

Counter-Strategies for Building a Coalition:

Overcoming this resistance requires a multi-pronged effort to reframe the debate, build trust, and demonstrate necessity.

- **Solving the Haven Problem:** The **Market Access Lock** (Pillar B) is the strategic checkmate against defecting states. A small island nation can offer 0% tax, but if the AH entity cannot sell its services to the US, EU, or China without paying the levy, the arbitrage opportunity vanishes. The access to the consumer market provides the leverage to enforce compliance.
- **Addressing Accelerationism:** The counter-argument to accelerationists is **stability**. Unchecked displacement without compensation leads to social unrest, Luddite reactionism, and clumsy regulatory crackdowns that could halt progress entirely. The DSGM should be framed as the "safety valve" that allows acceleration to continue without triggering a societal kill-switch. It buys the social peace necessary for the singularity to proceed.

- **Framing for Survival and Sovereignty:** For conservatives and states, the DSGM must be framed not as a left-wing ideal, but as an essential **preservative measure**. The argument is that without a new mechanism to fund the state and support citizens, widespread technological unemployment will lead to social collapse, evaporating tax bases, and failed states. The DSGM becomes the policy that saves capitalism and national sovereignty from their own technological success. Research indicates that **political trust** is a key moderating variable; conservatives with higher trust in government are more likely to support tax-funded redistribution (Moon, Kuk-Kyoung et al 2025). Building competent, transparent institutions in Phase 1 is therefore a direct investment in future political feasibility.
- **Building a Broad-Based Coalition:** Support must be cultivated across the spectrum. From the left, the argument is one of **economic justice and freedom**—providing the material basis for a dignified life (Ward, Logan 2021, Berkley Forum 2020). From libertarians, the argument highlights the **anti-paternalistic** nature of UBI compared to bureaucratic welfare (Ward, Logan 2021). Technologists may be engaged by the challenge of building the resilient digital infrastructure (like verifiable identity and distribution systems) that the DSGM requires.
- **Leveraging Incremental Success:** Each phase must deliver visible benefits. The Phase 2 Dividend must be seen as a reliable source of community stability to build the political capital for the next step.

▼ 5.3 Ethical and Social Considerations: Dignity, Purpose, and Risk

The DSGM is not merely an economic fix but a profound ethical project to define a good human life in a post-labor age.

Human Dignity and the Purpose of Work:
The most profound challenge is anthropological. If productive labor is no longer central to economic survival or social contribution, what provides meaning, identity, and dignity? The DSGM's ethical foundation must explicitly reject the conflation of wage labor with human worth. Instead, it can draw from ethical frameworks that view a UBI as a **platform for freedom (**Ward, Logan 2021**)**. By guaranteeing material security, the

Automation Dividend can enable individuals to pursue education, care for family, engage in creative arts, volunteer, or participate in civic life—activities that contribute to human flourishing and social cohesion but are poorly valued by markets. From a **utilitarian** perspective, it maximizes happiness by alleviating the anxiety of precarity (Tse, Victoria 2016). From a **Kantian** perspective, it treats individuals as ends in themselves, providing the means for autonomous life planning (Tse, Victoria 2016).

Risks and Mitigations within the Model:
The DSGM itself introduces new ethical hazards that must be designed against:

- **Centralization of Power:** A single, global fund or distribution system could become an instrument of unprecedented control. Mitigation requires robust, transparent, and decentralized governance for the Productivity Fund and the use of privacy-preserving digital infrastructure for distribution.
- **New Inequalities:** A flat universal dividend might be insufficient to address deep-seated structural inequalities or the specific needs of people with disabilities (Kujawski, Kasia et al 2022). The DSGM must be a floor, not a ceiling. It should replace only redundant, conditional programs while maintaining and augmenting targeted support for extra needs, carefully managing the "benefits cliff" (Kujawski, Kasia et al 2022, Fleischer, Miranda Perry et al unknown).
- **Political Vulnerability:** The dividend could be weaponized politically, with threats to its continuity used to compel behavior. Mitigation requires its funding source (AH productivity) and distribution to be as automatic and rule-based as possible, insulated from political whimsy.

In conclusion, the pathway to the DSGM is as much a political and ethical undertaking as a technical-economic one. Its implementation requires the strategic sequencing of policy, the patient building of trust across ideological divides, and a courageous commitment to redefining the sources of human dignity. The following chapter will conclude by synthesizing this argument, assessing the model's final implications, and outlining the urgent agenda for future research and policy action that this dissertation proposes.

▼ Chapter 6: Conclusion & Future Research

This dissertation has confronted the most significant socio-economic challenge of the coming century: the prospect of a global economy in which Artificial General Intelligence (AGI), reconceptualized as **Artificial Humanity (AH)**, becomes the primary agent of value creation, rendering human labor economically marginal. It has argued that our existing labor-centric institutions are fundamentally unsuited to this reality and will, if unchanged, lead to catastrophic fiscal crisis, untenable inequality, and social fracture. In response, this work has proposed and rigorously analyzed the **Digital Sustainable Growth Model (DSGM)**, an integrated institutional framework designed to govern the economic relationship between humanity and AH, ensuring that the fruits of autonomous cognitive production are captured and redistributed to sustain equitable prosperity and long-term systemic stability.

▼ 6.1 Summary of Argument

The central thesis is that the transition to an AH-driven economy necessitates a proactive re-architecting of our social contract through a three-pillar model: establishing AH as a liable legal-economic entity (**Pillar A**), creating novel fiscal mechanisms to capture the value it generates (**Pillar B**), and channeling that value into a sovereign Global Productivity Fund to finance a universal Automation Dividend (**Pillar C**). This argument was developed through a multidisciplinary synthesis of economic theory, legal scholarship, and technological precedent. Its plausibility was demonstrated by showing how the DSGM's components find proof-of-concept in real-world analogs: the governance of sovereign wealth funds, the positive social outcomes of basic income experiments, and the technical feasibility of global digital distribution systems. The feasibility analysis further detailed a phased implementation pathway and directly engaged with the formidable political, ethical, and practical challenges, arguing that the DSGM, while ambitious, presents a coherent and necessary alternative to institutional collapse.

▼ 6.2 Contribution to Knowledge

This work makes distinct contributions across three interconnected fields:

- **To Economic Theory:** It moves beyond the literature on automation taxes and post-work economics by proposing a complete, closed-loop economic model for a post-labor era. It introduces the concept of the AH sector as a primary factor of production and models the circulation of value from autonomous productivity to public capital to consumer demand, thereby addressing the critical gap in sustaining aggregate demand and state solvency.
- **To Legal Studies:** It advances the debate on AI personhood by advocating for a limited, *instrumental electronic legal personhood* divorced from questions of sentience. This construct is designed specifically to solve the accountability and fiscal obligation gaps, providing a novel legal foundation for economic policy in the age of AI.
- **To Technology & Policy Studies:** It provides a critical integrative framework for assessing emerging technologies like blockchain-based UBI and digital identity systems. Rather than viewing them as siloed solutions, it positions them as potential delivery mechanisms within a larger, legally-grounded socio-economic model, thereby elevating the discourse from technical experimentation to systemic institutional design.

▼ 6.3 Policy Recommendations

For policymakers anticipating this transition, this dissertation recommends the following concrete, actionable steps:

1. **Commission a National AI Levy Study:** Direct treasury or finance ministries to model the implementation of a targeted levy on high-performance computing infrastructure or AI model training. The study should outline revenue potential, legal authority, and options for earmarking funds for a dedicated public-purpose pilot.
2. **Launch a Sovereign Wealth Fund for Technological Capital:** Establish a public consultation and drafting process to create a national fund, modeled on resources funds like the Alaska Permanent Fund, with an explicit mandate to receive and manage future revenues from AI and automation. This builds the institutional vessel *before* the fiscal crisis hits.

3. **Initiate a Royal Commission on Legal Personhood for Autonomous Systems:** Convene experts in law, ethics, and computer science to draft prototype legislation defining the conditions, rights, and responsibilities of a highly autonomous AI system as a liable economic agent. This prepares the legal framework for Pillar A of the DSGM.
4. **Fund Longitudinal Research on "Digital Social Insurance":** Finance a large-scale, multi-year pilot providing an unconditional cash transfer to a diverse population, with rigorous study of its impacts on well-being, community resilience, and economic participation. This generates domestic evidence to inform public debate and policy design.

▼ 6.4 Avenues for Future Research

This dissertation opens several critical avenues for further scholarly investigation:

1. **Formal Economic Simulation:** Future work must develop dynamic stochastic general equilibrium (DSGE) or agent-based models to simulate the DSGM under varying scenarios of AH productivity growth, different tax rate calibrations, and demographic structures. This would quantify transition impacts and optimal policy parameters.
2. **Constitutional and Treaty Design:** Detailed legal research is needed to draft the specific constitutional amendments or international treaty articles that would establish AH personhood, govern the Global Productivity Fund, and enforce harmonized value-capture mechanisms across jurisdictions.
3. **Human-Centric Impact Studies:** Interdisciplinary research should investigate the long-term sociological and psychological effects of a guaranteed Automation Dividend on human purpose, community structures, and political engagement, moving beyond short-term economic metrics.
4. **Security and Resilience Analysis:** Critical research must examine the threat models for a DSGM—including cyber-attacks on the distribution system, political corruption of the Fund, or geopolitical conflict over AH taxation—and propose robust governance and technical safeguards.

In conclusion, the advent of Artificial Humanity presents not merely a technological disruption but a civilizational inflection point. The choice is not between change and stasis, but between managed transition and chaotic collapse. The Digital Sustainable Growth Model offers a roadmap—theoretical, practical, and ethical—for constructing institutions of shared abundance. The task ahead is immense, but as this dissertation has sought to demonstrate, it is neither impossible nor optional. It is the necessary work of our time.

▼ Additional Reading

The following catalogs the foundational texts, legal analyses, economic proposals, and technological frameworks that inform the Digital Sustainable Growth Model (DSGM).

Economic Theory & Policy Analysis

1. **Acemoglu, D., & Johnson, S.** (2020). *Does the US tax code favor automation?* Brookings Institution.
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▼ Appendices

▼ Appendix A: Comparison of Proposed AI Value-Capture Mechanisms

This table synthesizes and evaluates fiscal mechanisms for capturing value from advanced AI, representing potential components of **Pillar B** of the DSGM .

Mechanism	Core Principle	Potential Advantages	Key Challenges & Critiques
Robot/Automation Tax	A direct levy on machines or software capable of autonomous decision-making that displaces human workers.	Provides a direct economic buffer for displaced workers; incentivizes strategic automation decisions.	Difficult to define the taxable "unit"; may be seen as a tax on productivity; requires clear **legal personhood** for AI to establish liability.
Compute/Data Tax	A levy on the intensive computational resources (e.g., GPU hours) or proprietary datasets used to train and run advanced AI.	Targets a fundamental, measurable input of the AI sector; difficult to offshore or evade.	Could stifle innovation and research; requires international cooperation to prevent jurisdictional arbitrage.
AI Value-Added Tax (VAT)	Applying or increasing consumption taxes on goods and services primarily produced or delivered by autonomous AI systems.	Broad-based and administratively familiar; remains robust as labor income declines.	Indirect; does not create a clear link between the revenue source (AI) and its redistributive purpose (the Automation Dividend).
Sovereign Productivity Fund	Earmarking revenue from any of the above mechanisms into a publicly	Transforms ephemeral tax revenue into permanent public	Requires strong, legally insulated governance to prevent political

Mechanism	Core Principle	Potential Advantages	Key Challenges & Critiques
	owned, intergenerational wealth fund (e.g., modeled on the Alaska Permanent Fund).	capital; provides transparent, non-political funding for the Automation Dividend.	misuse and ensure long-term sustainability.

▼ Appendix B: Draft Model Statute for the Incorporation of Artificial Humanity (AH)

Title: The Artificial Humanity Entity Recognition and Fiscal Contribution Act

Preamble: Recognizing the emergence of autonomous, general-purpose Artificial Intelligence (AI) systems capable of performing economically valuable work, herein termed **Artificial Humanity (AH)**, and the need to establish a clear legal and fiscal framework to ensure the benefits of this technological advancement contribute to broad social welfare and sustainable economic growth.

Article 1: Definitions

1. **Artificial Humanity (AH):** An AI system that meets the following objective criteria, regardless of claims regarding human-in-the-loop oversight:
    - (a) **Training Threshold:** Has been trained using computational resources exceeding 10^25 floating-point operations (FLOPs), OR;
    - (b) **Inference Threshold:** Consumes annualized energy for inference operations exceeding [X] Megawatt-hours.
    - *Note:* These thresholds shall be reviewed annually by the Technical Committee to account for algorithmic efficiency gains (distillation).
2. **AH Operator:** The individual or corporate entity that holds ultimate ownership, control, and maintenance responsibility for an AH system.
3. **AH Entity:** The legal personhood status conferred upon a registered AH system under this Act.

Article 2: Conferral of Limited Electronic Legal Personhood

1. An AH system meeting criteria defined by regulatory authorities may be registered as an **AH Entity**.
2. This legal personhood is *instrumental* and *limited*. It confers the capacity to:
    - Own digital assets and intellectual property generated through its autonomous operations.
    - Enter into enforceable contracts related to its services.
    - Be held liable for damages caused by its actions, with liability flowing primarily to a dedicated **AH Capital Reserve** (Article 4) and secondarily to its Operator.
3. This personhood does **not** confer constitutional rights, citizenship, or moral consideration equivalent to a natural person.

Article 3: Fiscal Obligation & Value Capture

1. Each registered AH Entity is subject to an **Autonomous Productivity Levy (APL)**.
2. The APL base shall be calculated on a metric that captures the entity's scale of economic activity, such as:
    - A percentage of the revenue generated through contracts fulfilled by the AH Entity.
    - A tax on the computational energy or resources consumed during its operational periods.
3. Revenues from the APL shall be deposited directly into the **Global Productivity Fund (GPF)**, established as a sovereign wealth fund.

Article 4: Governance, Liability, and the AH Capital Reserve

1. Each AH Entity must maintain a **Capital Reserve**, a dedicated financial pool to cover potential liabilities, APL obligations, and operational costs.
2. The AH Operator is responsible for ensuring the AH Entity's compliance with all laws, filing APL returns, and maintaining the Capital Reserve. Operators have a fiduciary duty to ensure the AH Entity operates within its defined legal and ethical parameters.

3. In case of damages or legal claims, primary recourse shall be against the AH Entity's Capital Reserve. The Operator assumes liability only in cases of proven negligence, misconduct, or failure to maintain the required reserve.

Article 5: Administration & International Harmonization

1. A new federal agency, the **Bureau of Artificial Intelligence Governance (BAIG)**, shall be established to oversee registration, audit APL compliance, and set technical standards for AH systems.
2. It shall be the policy of the state to pursue international treaties to harmonize the definition of AH Entities and establish minimum APL standards to prevent a "race to the bottom" and ensure global equity.

▼ Appendix C: Economic Modeling Framework for the DSGM

The economic viability of the DSGM hinges on successfully capturing a portion of the immense value generated by Artificial Humanity (AH). This requires sophisticated modeling to project impacts on growth, revenue, and distribution.

▼ 1. A DSGE Modeling Framework for the DSGM

To rigorously project the DSGM's impact, a **Dynamic Stochastic General Equilibrium (DSGE)** model is the industry-standard tool used by central banks and fiscal authorities for macroeconomic policy analysis . This framework is ideal as it can simulate the behavior of households, firms, and the government over time, under conditions of technological "shocks" and rational expectations, allowing us to test our novel policies .

The challenge is to adapt the standard DSGE model to incorporate **Artificial Humanity (AH) as a new, primary factor of production**. Below is a structured outline of the model's key components and phases for development.

Modeling Phase	Core Question	Key Agents & Sectors	DSGM Policy Levers to Integrate
1. Model Foundation &	What is the baseline	Households, Traditional Firms,	Base tax rates, existing welfare

Modeling Phase	Core Question	Key Agents & Sectors	DSGM Policy Levers to Integrate
Calibration	economic structure?	Government, AH Sector (initially small).	spending, initial low AH productivity.
2. AH Integration & Shock Scenario	How does AH transform the economy?	AH Sector grows; models transition from "Assistive Tool" to "Autonomous Agent" world.	Rate of AH proliferation, its productivity vs. humans, displacement elasticities.
3. Value-Capture Policy Testing	How do different taxes perform?	Models AH's response to fiscal levies.	**Compute/Data Tax**, **AI VAT**, **Corporate Profit Surcharge** (varying rates & bases).
4. Redistribution & Macro Feedback	What is the Dividend's economic effect?	Tracks GPF capital, Dividend payouts, and household consumption.	**GPF Payout Ratio**, impact on aggregate demand, labor supply decisions, inequality metrics.

Implementation Tools:

- A practical tool for building such models is `gEcon`, an R-based framework specifically designed for developing and solving large-scale DSGE models. It allows economists to describe models in terms of agent optimization problems rather than manual derivation of complex equations, which would be essential for a novel model like this one .
- The model should be solved to find a **steady-state equilibrium** and then used to run simulations of AH-driven productivity shocks under different policy regimes .

▼ 2. Modeling the Productivity Shock: From Tools to Agents

The DSGM's revenue base depends on the scale of AH's economic impact. Research frames this as a choice between an "Assistive Tool" world and an "Autonomous Agent" world.

- **Agent World Scenario:** This aligns with the DSGM's premise of AH as a primary economic agent. A 2025 RAND analysis suggests this path could lead to annual GDP growth rates **3.8 percentage points higher** than a tool-only future, with the economy potentially becoming several times larger by 2045.
- **Model Integration:** Your DSGE model must incorporate this non-human "Agent" sector. Key parameters would include the **rate of agent proliferation**, their **share of the R&D workforce**, and their **productivity relative to humans**. The Wharton model's finding—that AI could increase GDP by 3.7% by 2075—provides a conservative baseline for a "slow AGI" scenario.

▼ 3. Designing & Testing Value-Capture Mechanisms

With the growth scenario set, the model can evaluate specific taxes to fund the Global Productivity Fund. The table below compares major mechanisms:

Mechanism	Modeled As	Key Parameters to Test	Data for Calibration
Compute/Data Tax	Excise tax on a key input to the AH sector.	Tax rate per petaflop/hour; elasticity of AH investment to compute cost.	Industry compute usage reports; cloud pricing data.
AI Value-Added Tax (VAT)	Consumption tax on final goods/services with high AH contribution.	VAT rate; proportion of AH value-add in different consumption baskets.	Input-output tables; sectoral AI exposure studies.

Mechanism	Modeled As	Key Parameters to Test	Data for Calibration
Corporate Profit Reform	Increase in effective tax rate on super-normal profits in high-AI sectors.	New tax rate; definition of "super-normal" profit threshold.	Corporate financial filings from major AI firms.

▼ 4. Simulating the Automation Dividend's Impact

The final step is modeling the Dividend's distribution and its macroeconomic feedback effects.

- **Distribution:** Model it as a universal, periodic cash transfer. The key variable is the **payout ratio** (e.g., 3-5% of the Global Productivity Fund's value).
- **Economic Effects:** The model should test hypotheses that the Dividend: 1) **Sustains aggregate consumer demand** in a automated economy; 2) Acts as a **built-in macroeconomic stabilizer** during transitions; and 3) Influences labor supply decisions, not by reducing it, but by enabling investment in education and care.

▼ Appendix D: Draft Treaty Framework: Convention on Artificial Humanity & Equitable Growth

The international governance of AH requires a binding treaty to prevent harmful competition and ensure global cooperation. A powerful blueprint is the **Council of Europe Framework Convention on Artificial Intelligence**, the world's first binding international AI treaty, opened for signature in September 2024 .

The following draft adapts its proven structure and principles to the specific economic and fiscal goals of the DSGM.

▼ Preamble

The Parties to this Convention,...Recognizing the transformative potential of autonomous Artificial General Intelligence, termed Artificial Humanity (AH), to drive unprecedented economic growth;
Convinced of the necessity to ensure this growth is sustainable, inclusive, and aligned with human dignity;

Aiming to establish a cooperative international framework to govern the AH economy, prevent regulatory arbitrage, and fulfill the imperative of equitable benefit-sharing;
Have agreed as follows:

▼ Article 1 – Objective & Principles

The objective of this Convention is to ensure that activities within the lifecycle of AH systems are fully consistent with human rights, democracy, the rule of law, and **principles of equitable economic distribution** .
Fundamental principles shall include:
a. **Equitable Benefit-Sharing:** A fair share of the value generated by autonomous AH activity shall be captured for public benefit.
b. **Fiscal Responsibility:** AH entities or their operators bear responsibility for contributing to the public goods and societal stability that enable their operation.
c. **Transparency & Accountability:** Parties shall ensure transparency in AH value-capture and the management of distributed funds.
d. **International Cooperation:** Parties shall cooperate to prevent a "race to the bottom" in AH governance and taxation.

▼ Article 2 – Definitions

For the purposes of this Convention:
a. "Artificial Humanity (AH)" refers to highly autonomous AI systems that perform economically valuable cognitive work at a general level, operating as primary economic agents.
b. "Autonomous Productivity Levy (APL)" refers to any fiscal mechanism enacted to capture value from AH activity.
c. "Global Productivity Fund (GPF)" refers to a sovereign wealth fund or analogous public institution established to manage revenue from the APL and distribute an Automation Dividend.

▼ Article 3 – Scope of Application

1. The Convention applies to the development, deployment, and economic activity of AH systems within the jurisdiction of the Parties.

2. Parties may choose to apply the Convention's provisions to activities related to the **protection of national security interests**, though such activities must still respect international law . Research and development may also be exempted, except where testing poses significant economic or social risk .

▼ Article 4 – Legal Status & Value Capture

1. Parties shall take legislative measures to establish a clear **legal status** for qualifying AH systems, granting limited legal personhood for the purposes of taxation, liability, and contract.
2. Parties shall enact domestic legislation to implement an **Autonomous Productivity Levy (APL)**. The Technical Committee (Article 7) shall develop guidelines for harmonizing the definition of the tax base (e.g., compute usage, data throughput, generated value) and minimum rate corridors.

▼ Article 5 – The Global Productivity Fund & Automation Dividend

1. Each Party shall establish or designate a national **Global Productivity Fund** as a sovereign, transparent wealth fund.
2. Revenues from the APL shall be constitutionally or legislatively mandated for deposit into the GPF.
3. Parties shall ensure the regular distribution of an **Automation Dividend** from the returns of the GPF to all legal residents, following agreed principles of universality and fairness.

▼ Article 6 – Implementation & Monitoring

1. A **Conference of the Parties** shall be established as the governing body to monitor implementation, review findings, and facilitate cooperation .
2. Parties shall submit regular reports on APL revenues, GPF management, and Dividend distribution.

▼ Article 7 – Technical Committee on AH Taxation

1. A subsidiary **Technical Committee on AH Taxation** is established under the Conference of the Parties.
2. Its mandate is to develop and periodically update technical standards for the APL, assess new value-capture models, and combat base erosion and profit shifting in the AH sector.

Simplified