Citizens' Equity: Capital Democratization as a Policy Response to AI-Driven Labor Displacement

Mark B. Garman
Haas School of Business, University of California, Berkeley (Emeritus)

Abstract. I propose Citizens' Equity (CE), a mechanism in which corporations contribute a fraction of their capital liabilities to a sovereign superfund issuing one non-transferable share to each citizen. Contributions equal $X\% \times Y\%$ of liabilities, where $X\%$ is a policy-set ownership target and $Y\%$ is the firm's domestic share of global revenue. I show that CE dominates Universal Basic Income and tariffs on welfare grounds: dilution costs fall on global shareholders while product prices remain undisturbed, and the $Y\%$ mechanism generates cooperative equilibria favoring multilateral adoption. An appendix develops Markov chain methods for computing $Y\%$ through complex supply chains.

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I. Introduction

Three empirical regularities define the present macroeconomic moment. First, labor's share of U.S. national income has fallen from 54 percent in 1980 to approximately 50.5 percent by 2014, with acceleration since 2000 (McKinsey Global Institute 2019). Second, the pace of AI adoption is unprecedented: organizational deployment of generative AI doubled from 33 percent to 65 percent in the ten months between mid-2023 and early 2024 (McKinsey 2024). Third, wealth concentration has reached levels not observed since the 1920s—the Gini coefficient hit 0.494 in 2021, and the top 1 percent of U.S. households now hold 54 percent of public equity (Census Bureau 2023; Federal Reserve 2024).

These facts are not independent. AI automates cognition itself—not merely routine physical tasks but legal analysis, medical diagnosis, financial modeling, and software engineering. As the marginal product of human cognitive labor falls relative to the marginal product of capital, the distribution of income shifts toward asset owners. Goldman Sachs (2023) estimates that AI could affect 300 million full-time jobs globally. McKinsey's updated automation timeline projects a midpoint of 2045 for 50 percent displacement of current work activities—a full decade earlier than prior estimates.

The policy toolkit inherited from the industrial era is poorly adapted to this transition. Conventional fiscal redistribution—taxation of capital income followed by transfer payments—faces familiar obstacles: political fragility, deadweight losses, and incentive distortions. Universal Basic Income (UBI), despite generating encouraging results across more than 150 U.S. pilot programs (Stanford Basic Income Lab 2024), suffers from structural deficiencies I examine below. Tariffs, enjoying renewed political salience, are empirically regressive and welfare-destroying (Amiti, Redding, and Weinstein 2019; Fajgelbaum et al. 2020).

This paper proposes an alternative: *Citizens' Equity* (CE), a system of universal capital ownership in which every citizen holds one equal, non-transferable share in a sovereign superfund—the Citizens' Equity Fund (CEF)—capitalized by mandatory corporate contributions of diversified capital liabilities. The contribution mechanism operates through two parameters: a policy variable $X\%$ representing the aggregate ownership target, and a market-participation variable $Y\%$ equal to the firm's domestic-to-global sales ratio. The product $X\% \times Y\%$ determines each firm's obligation.

CE is not a novel concept in the history of ideas. Atkinson (2015) proposed capital endowments for young adults. The London School of Economics has explored "universal basic capital" as a springboard for new citizens (Lansley and Reed 2019). The Earth4All initiative advocates universal basic dividends funded through common-resource exploitation (Dixson-Declève et al. 2022). What distinguishes the present formulation is the $Y\%$-based mechanism, which (a) anchors obligations to the geography of sales rather than corporate domicile, neutralizing capital-flight incentives; (b) functions as a tariff-dominating equity-based market-access fee; and (c) produces a coordination game with cooperative Nash equilibria, creating self-reinforcing incentives for multilateral adoption.

The paper proceeds as follows. Section II positions CE within the existing literature on capital-sharing and social wealth fund proposals. Section III documents the empirical motivation. Section IV critiques UBI's structural limitations as a long-run policy response. Section V presents the CE mechanism. Section VI analyzes the $X\%$ and $Y\%$ parameters. Section VII demonstrates CE's dominance over tariffs. Section VIII examines the international coordination game. Section IX provides numerical projections under conservative assumptions. Section X discusses implementation, legal foundations, and risk mitigation. Section XI concludes. Appendix A develops the absorbing Markov chain framework for computing $Y\%$ allocations through complex supply chains.

II. Citizens' Equity in the Landscape of Capital-Sharing Proposals

The idea that citizens should share in the returns to collectively produced wealth has a long intellectual lineage. Lange (1936) argued for a social dividend paid from collectively owned capital stock. Meade (1964), in *Efficiency, Equality, and the Ownership of Property*, proposed an unconditional payment from returns on publicly held capital as a market-compatible tool for reducing inequality without nationalization—what he termed the "liberal socialist" approach. Roemer (1994) formalized a model of coupon-based public ownership of productive assets. Ackerman and Alstott (1999) proposed stakeholder grants—a one-time $80,000 endowment to each citizen at adulthood, financed by a 2 percent annual wealth tax. More recently, Corneo (2018, 2022) has developed the case for "progressive sovereign wealth funds" in which governments borrow at the risk-free rate to invest in global equity markets, capturing the equity risk premium as a social dividend—and has shown formally that such arrangements can be Pareto-improving.

CE belongs to this tradition but differs from each predecessor in three structural respects that address their principal limitations.

Funding mechanism. Meade, Corneo, and most sovereign-wealth-fund proposals rely on government borrowing, taxation, or natural-resource royalties to capitalize the fund. These create fiscal exposure and political vulnerability: the fund competes with other claims on public revenue, and its scale is constrained by sovereign borrowing capacity. Ackerman and Alstott's wealth tax faces well-documented enforcement and avoidance challenges (Saez and Zucman 2019). CE sidesteps these obstacles entirely. Contributions are mandatory corporate capital dilutions—analogous to business-licensing fees—requiring no government

appropriation, no new taxation, and no sovereign borrowing. The fund capitalizes itself from the private sector's existing equity base.

Revenue-geography anchoring. No prior proposal addresses the jurisdictional-assignment problem: when a multinational firm operates across borders, which country's citizens should benefit from its capital? Existing sovereign wealth funds (Norway, Singapore, Alaska) either derive from geographically fixed natural resources or invest passively in global markets without any mechanism linking contributions to market participation. CE's $Y\%$ parameter—the firm's domestic-to-global sales ratio—provides this missing link, simultaneously neutralizing capital-flight incentives and creating the tariff-dominating properties analyzed in Section VIII.

Automatic scaling. Ackerman and Alstott's stakeholder grant is a fixed, one-time payment that does not grow with the economy. UBI payments require legislative adjustment. Even Corneo's sovereign wealth fund generates returns that depend on exogenous market performance rather than scaling with the domestic economy's productive capacity. CE's contributions are proportional to firms' total capitalization, which grows automatically with economic output and technological progress. In the extreme limit of full automation, $X\%$ could approach unity—citizens own the productive capital that has replaced their labor.

These distinctions matter because the principal objection to social-wealth-fund proposals has been their dependence on politically fragile funding mechanisms (Piketty, Saez, and Zucman 2023). By eliminating the fiscal intermediary—the fund is capitalized by private dilution, not public expenditure—CE addresses what has historically been the binding constraint on this class of proposals.

III. Empirical Motivation: The Capital–Labor Transition

A. The Decline of Labor's Share

For a century—from 1880 to 1980—labor's share of income in advanced economies was remarkably stable, hovering near 54 percent across 35 OECD countries (McKinsey Global Institute 2019). Keynes called this stability "one of the best-established facts in the whole range of economic statistics." That fact no longer holds.

The decline since 1980 reflects several reinforcing mechanisms. The Philadelphia Federal Reserve documents that automation in manufacturing contributed to labor-share declines of 20.8 percentage points in automating firms (Koch, Manuylov, and Smolka 2021). Rising depreciation of fast-obsolescing digital capital—software, databases, AI models—accounts for roughly 26 percent of the increase in gross capital share (McKinsey 2019). Superstar-firm dynamics, in which a small number of platform companies capture disproportionate market value with minimal labor input, have intensified concentration (Autor et al. 2020). Globalization and export orientation have eroded workers' bargaining power across OECD countries (OECD 2018).

The Levy Economics Institute estimates that the labor share accruing to the bottom 99 percent has fallen 15 percentage points since 1980—equivalent to an annual transfer of $1–2.25 trillion from labor to capital (Giovannoni 2014). This is masked in aggregate statistics by the inclusion of top-percentile labor income (executive compensation), which properly belongs in the capital-income category for distributional purposes.

B. AI as Structural Acceleration

Previous waves of automation mechanized *routine* tasks while preserving demand for *cognitive* labor. AI inverts this pattern. The International Monetary Fund (2024) estimates that 40 percent of global employment is exposed to AI, with a critical distinction: high-skilled cognitive occupations—legal research, radiological diagnosis, financial analysis, software development—are often *easier* to automate than manual-dexterity tasks. The construction worker's job may prove more durable than the radiologist's.

The economics of AI capital differ qualitatively from physical capital in ways that amplify concentration:

1. *Zero marginal cost replication.* Once trained, an AI model serves unlimited users at near-zero incremental cost. This generates profit margins structurally unavailable to physical-goods producers.
2. *Self-improvement.* AI systems appreciate through use—accumulating data, refining parameters, expanding capability. Traditional capital depreciates. This asymmetry compounds the return advantage of AI-capital owners.
3. *Network effects and data moats.* Platform dominance feeds on itself: more users generate more data, producing better models, attracting more users. The resulting winner-take-all dynamics create natural monopolies that resist competitive entry.
4. *Capital-barrier escalation.* Training frontier AI models now costs hundreds of millions of dollars in compute alone, restricting participation to a handful of firms and their investors.

These properties imply that the labor-share decline is not cyclical but structural—and likely to accelerate as AI capabilities expand.

C. Distributional Consequences

The consequences are already visible. During 2020–2023, the richest 1 percent captured 63 percent of all new wealth globally ($26 trillion), while the remaining 99 percent shared $16 trillion (Oxfam 2023). In the United States, 59 percent of adults cannot cover a $1,000 emergency expense, and 53 percent live paycheck to paycheck—including 32.3 percent of households earning above $100,000 (Federal Reserve 2024).

The political science literature establishes economic inequality as one of the strongest predictors of democratic erosion, even in wealthy, long-standing democracies (Houle 2009; Acemoglu et al. 2015; University of Chicago 2023). This creates an urgency constraint: if capital concentration reaches sufficient levels, the political power of asset owners may render democratic reform infeasible.

IV. The Structural Limitations of Universal Basic Income

The academic literature on UBI is now substantial. Hoynes and Rothstein (2019), in their comprehensive review, develop a unified framework for comparing transfer programs along dimensions of generosity, phase-out rates, eligibility criteria, and conditionality. They demonstrate that a UBI would redirect transfers substantially—away from the poorest households (who currently receive concentrated benefits through SNAP, SSDI, and EITC) and toward middle-income, childless, nonelderly households that receive relatively little under the existing safety net. This reallocation is not a design flaw to be optimized away; it is a structural feature of universality itself. More than 150 U.S. pilot programs, with combined spending exceeding $2.35 billion, provide additional empirical evidence (Stanford Basic Income Lab 2024). Recipients spend responsibly—36 percent on retail, 32 percent on food, 18 percent on transport and housing, with only 4 percent on leisure (Guaranteed Income Pilots Dashboard 2024). Poverty rates decline. Mental health improves. Employment effects are modest: the Mincome experiment in Dauphin, Manitoba (1974–79) found only a 13 percent labor-supply reduction, concentrated among teenagers and new mothers (Forget 2011).

Yet five structural deficiencies limit UBI's viability as a long-run response to technological displacement.

Political fragility. Every UBI pilot has been time-limited and politically vulnerable. Arkansas banned guaranteed-income programs outright in 2023 (Act 841). Switzerland rejected basic income by 77 percent in a 2016 referendum. Finland terminated its experiment early. The political coalition required to sustain national-scale UBI—through recessions, inflationary episodes, and shifting electoral dynamics—has never been

demonstrated.

Disconnection from productivity growth. UBI recipients benefit from economic growth only if legislators vote to increase payment levels. In a rapidly growing AI economy, this creates an expanding gap between asset owners (who benefit automatically from rising capital values) and transfer recipients (whose real income erodes unless politically adjusted). This is the *growth disconnect*—a mathematical divergence that worsens over time.

Inflation vulnerability. Fixed nominal payments lose purchasing power during inflationary episodes. Unlike equity portfolios, which tend to appreciate with inflation through rising nominal earnings and asset values, cash transfers require legislative adjustment—a process that is both slow and politically contentious.

Dependency psychology. UBI creates a structural division between taxpaying contributors and payment recipients, generating the us-versus-them political dynamics that characterize means-tested welfare. This undermines the broad stakeholder coalitions necessary for program sustainability.

Scale infeasibility. The Heritage Foundation (2024) estimates that providing $1,000 monthly to eligible Americans would cost approximately $1.1 trillion annually—roughly five times the entire SNAP budget. As Hoynes and Rothstein (2019) calculate, replacing just six existing transfer programs (EITC, CTC, TANF, SNAP, SSDI, and UI) would cover only about one-fifth of a UBI's cost; the remainder requires new taxation or spending cuts on a scale without political precedent in advanced democracies. Stockton's $500 monthly payments to 125 people generated positive coverage; scaling to California's 39 million residents would exceed the state's entire budget.

These limitations do not imply that UBI is without value—Hoynes and Rothstein (2019) rightly note that a well-designed negative income tax or earned-income supplement may be preferable to the current patchwork of programs along several dimensions. The point is narrower: as a *long-run response to structural capital-labor substitution*, any system that distributes *income* while leaving *ownership* concentrated faces a mathematical divergence that worsens with each increment of automation. CE addresses the ownership dimension that income transfers, however well designed, cannot reach.

V. The Citizens' Equity Mechanism

A. Architecture

Citizens' Equity operates through a sovereign superfund—the Citizens' Equity Fund (CEF)—that acquires diversified corporate capital liabilities and distributes returns equally to all citizens. The mechanism requires no government spending on capitalization; contributions are mandatory corporate obligations analogous to business licensing fees.

The Fund. The CEF functions as a passively managed index fund holding the contributed capital liabilities of all eligible firms. Each citizen receives one non-transferable, non-alienable *supershare*—not subject to seizure, bankruptcy, or sale. Supershares are issued at birth and extinguished at death.

The Contributions. Eligible firms contribute $X\% \times Y\%$ of their total capital liabilities to the CEF, where $X\%$ is the policy-determined aggregate ownership target and $Y\%$ is the firm's ratio of domestic revenue to global revenue. Contributions may take the form of newly issued equity, treasury shares, bonds, IOUs replicating the rights of specific capital instruments, or cash sufficient to purchase equivalent securities on open markets.

The Distributions. The CEF distributes net income—dividends, interest, bond maturities, pro rata buyback proceeds—quarterly to all supershare holders in equal portions.

B. Illustrative Example

Consider a firm with 99 million shares outstanding at $10 per share and no other capital liabilities, yielding a $990 million capitalization. Under CE with $X\%$ = 10% and $Y\%$ = 100% (purely domestic firm), the firm issues 1 million new shares to the CEF. The share price adjusts from $10 to approximately $9.90, preserving total firm value while diluting existing shareholders by the required amount.

The cost is borne entirely by the existing shareholder base—predominantly the top wealth percentiles, given that the wealthiest 1 percent hold 54 percent of equity market wealth. Critically, the firm's production costs, pricing decisions, and competitive behavior are unaffected. No product price increases are required or incentivized.

C. Coverage

The contribution base must be comprehensive to prevent avoidance through restructuring:

- All securities as defined by the SEC: common stock, preferred shares, corporate bonds, convertible instruments, warrants
- Executive compensation contracts for senior management (e.g., top-five compensated individuals when collectively holding >10% of any class of capital liability)
- Private capital stakes, ensuring parity between public and private firms

A graduated implementation timeline—beginning with firms above $10 billion market capitalization (approximately 1,000 firms representing 80 percent of market value) and expanding over ten years—minimizes disruption while building institutional capacity.

VI. Parameter Design: $X\%$ and $Y\%$

A. X% as Dynamic Policy Instrument

The $X\%$ parameter embodies the democratic choice about the extent of capital sharing. It must balance three objectives: meaningful citizen income, preservation of private-ownership incentives, and political sustainability.

I propose calibrating $X\%$ to measurable displacement indicators rather than fixing it legislatively. A displacement-indexed $X\%$ might begin at 2–3 percent during low-automation periods, rise to 10–15 percent during moderate displacement, and potentially reach 25–30 percent in advanced technological-unemployment scenarios. This approach, delegated to an independent body analogous to the Federal Reserve, insulates the parameter from electoral cycles while maintaining democratic accountability through appointment processes and public hearings.

The economic logic is straightforward: as human labor contributes a declining share of economic output, the share of capital returned to citizens as owners (rather than workers) should increase correspondingly. In the limiting case of full automation, $X\%$ could, in theory, approach unity—universal ownership of productive capital; but this would incur the cost of stifling any economic incentives for innovation or risk-taking. Is there instead a hidden wisdom in the "Keyes constant," so that $X\%$ should be limited to 54%, restoring the post-industrial division? This is clearly a matter for future policy-makers to decide.

B. Y% as Market-Participation Anchor

The $Y\%$ parameter is the mechanism's most novel feature. By basing obligations on revenue geography rather than corporate domicile, CE achieves three critical properties:

Avoidance neutrality. A firm can relocate its headquarters to any jurisdiction; if it continues selling to domestic consumers, its obligation is unchanged. Decades of profit-shifting and corporate inversion demonstrate that domicile-based regulation invites avoidance. Revenue is harder to misrepresent—a firm either sells to customers in a jurisdiction or it does not.

International coordination incentives. When the United States requires foreign firms to contribute based on U.S. sales, trading partners face pressure to implement reciprocal systems or forgo analogous claims on American firms' overseas revenues. This produces a coordination game analyzed in Section VIII.

Automatic rebalancing. As firms' geographic revenue mixes shift—through market entry, exit, or changing trade patterns—CEF allocations adjust automatically without legislative intervention, in contrast to tariff schedules that require constant political renegotiation.

C. The Combined Formula

A firm's effective contribution rate is $X\% \times Y\%$. A firm with $X\%$ = 10% and 60 percent domestic sales contributes 6 percent of its capital liabilities to the domestic CEF and, if the foreign jurisdiction also operates a CE system, 4 percent to that jurisdiction's fund. Total contributions across all jurisdictions sum to exactly $X\%$ of the firm's capital liabilities, regardless of how many countries adopt CE—a conservation property that prevents over-extraction.

VII. CE as Tariff-Dominating Trade Mechanism

A. The Empirical Case Against Tariffs

The empirical record on tariff incidence is unambiguous. Amiti, Redding, and Weinstein (2019) found near-complete pass-through of 2018 U.S. tariffs to domestic import prices, with virtually no reduction in foreign export prices. Cavallo, Llamas, and Vázquez (2025) confirmed the pattern with daily retail price data following the 2025 tariff measures: imported goods prices rose 6.2 percent and domestic goods prices rose 3.6 percent, with cumulative CPI impact of 0.7 percentage points. Critically, the cheapest product varieties—those disproportionately purchased by lower-income households—experienced price increases roughly double those of premium products.

Fajgelbaum et al. (2020) estimate $51 billion in consumer and firm losses from the 2018 tariffs, with net economic losses of $7.2 billion after accounting for protected-sector gains, and approximately 220,000 jobs lost in import-dependent industries. The Richmond Federal Reserve's 2025 review summarized the consensus: pass-through rates are "generally near 100 percent."

B. CE's Price-Neutral Alternative

CE's equity-based market-access fee changes the incidence structure fundamentally. When a firm contributes capital liabilities rather than paying a cash tax at the border, the cost manifests as dilution of the firm's global shareholder base—not as an increase in the marginal cost of production.

Consider two policy regimes applied to identical imports:

Tariff (25%). The importing firm faces a $5,000 per-unit duty on a $20,000 vehicle. Consistent with empirical pass-through rates, the retail price rises to approximately $25,000. Consumer surplus declines. Domestic competitors face reduced competitive pressure and raise their own prices. Deadweight loss accrues.

CE ($X\%$ = 10%, $Y\%$ = 25%). The firm contributes 2.5 percent of its capital liabilities to the domestic CEF. The share price adjusts marginally downward through dilution. The vehicle's production cost and retail price remain at $20,000—the marginal cost of production is unaffected, and the incentive to sell at competitive prices is preserved (indeed strengthened, as the firm seeks to maximize remaining equity value). Consumer surplus is maintained. The CEF collects dividends that flow to citizens.

The welfare comparison is unambiguous: CE preserves consumer surplus, avoids deadweight loss, maintains competitive pricing pressure on domestic producers, and generates citizen income through fund distributions rather than politically allocated tariff revenue.

C. Administrative Superiority

Tariff administration requires customs inspectors, harmonized tariff schedules running to thousands of pages, shipment-by-shipment classification, and bonded warehousing—generating substantial compliance costs. CE operates firm-by-firm using audited financial statements already prepared for tax and securities regulation. The administrative apparatus is a financial-accounting exercise layered atop existing reporting infrastructure.

VIII. International Coordination: A Game-Theoretic Analysis

A. The Coordination Game Structure

CE's $Y\%$ mechanism creates a well-defined coordination game among sovereign nations. Consider two countries, *A* and *B*, deciding whether to implement CE at rate $X\%$.

When Country *A* adopts CE unilaterally, firms selling in *A* contribute $X\%$ × *Y_A*% of their capital to *A*'s CEF. Firms from *B* that sell to *A*'s consumers are included; firms from *A* that sell to *B*'s consumers contribute to *A*'s fund based only on their *A*-sales fraction.

Country *B* now faces an asymmetry: its firms are contributing to *A*'s citizens' benefit through their *A*-market sales, while *A*'s firms—selling in *B*—make no reciprocal contributions. *B*'s rational response is to implement its own CE system, capturing contributions from *A*'s firms proportional to their *B*-market sales.

This is not a prisoner's dilemma—it is a *coordination game* where mutual adoption is Pareto-improving relative to unilateral adoption. The key difference from tariff dynamics: tariff "retaliation" is destructive (shrinking the trade pie), while CE "retaliation" is constructive (expanding the ownership pie for both populations).

B. Formal Structure

Let π_{iA} denote the capital contribution from country i's firms to country A's CEF, and define symmetric notation. In equilibrium with mutual adoption:

$$\pi_{BA} = X\% \times \sum_{j \in B} \text{Cap}_j \times Y_{jA}$$
$$\pi_{AB} = X\% \times \sum_{k \in A} \text{Cap}_k \times Y_{kB}$$

where Cap_j is firm j's total capitalization and Y_{jA} is its A-revenue share. Country *A*'s citizens receive dividends from both domestic and foreign firms' contributions; Country *B*'s citizens receive the symmetric benefit. Total contributions per firm sum to exactly $X\%$ across all adopting jurisdictions.

The payoff matrix for a two-country, two-strategy game (Adopt / Don't Adopt) shows that if Country *A* adopts, Country *B*'s payoff from adopting exceeds its payoff from not adopting, given any positive volume of bilateral trade. Adoption is a dominant strategy for all countries with meaningful commercial relationships with the initial adopter—provided the initial adopter is a sufficiently large consumer market.

C. The Large-Market Initiator Advantage

The United States, the European Union, China, and Japan collectively account for approximately 65 percent of global GDP and an even larger share of global consumer spending. Unilateral adoption by any of these economies creates sufficient asymmetric pressure to trigger cascading adoption, because firms' desire to access these consumer markets makes compliance commercially obligatory.

This is precisely analogous to the "Brussels effect" in regulatory policy (Bradford 2020), where the EU's market size induces global compliance with its standards. CE extends this dynamic from regulation to capital allocation.

D. Convergence on a Common X%

Once multiple countries adopt CE, competitive dynamics exert pressure toward a common $X\%$ rate. A country setting $X\%$ above the international norm would face declining $Y\%$ shares as firms marginally redirect sales toward lower-obligation jurisdictions. A country setting $X\%$ below the norm captures less ownership benefit. This creates gravitational pull toward a globally coordinated rate—achievable through market dynamics rather than treaty negotiation.

IX. Numerical Projections

A. Capital Base

The U.S. financial markets provide the following capital base for CE contributions (2024 data):

Asset Class	Value
Public equity market capitalization	$52.0 trillion
Corporate bond market	$12.0 trillion
Executive compensation contracts (estimated)	$0.2 trillion
Total eligible capital base	**$64.2 trillion**

B. Scenario Analysis

Projections assume $X\%$ = 10% and vary the effective domestic-sales proportion and return rate. Population is taken as 330 million citizens.

Scenario	Avg.	Effective Rate	CEF Assets	Per Capita	Annual Dist.	Monthly
Conservative	60%	6.0%	$3.85T	$11,667	$700	$58

Scenario	Avg. $Y\%$	Effective Rate	CEF Assets	Per Capita	Annual Dist.	Monthly
Moderate	80%	8.0%	$5.14T	$15,576	$1,090	$91
Optimistic	100%	10.0%	$6.42T	$19,455	$1,556	$130

Return assumptions: 6% (conservative), 7% (moderate), 8% (optimistic), reflecting long-run historical equity-market averages.

C. Validation Against Alaska

Alaska's Permanent Fund Dividend—the closest operational analog to CE—paid $1,702 per resident in 2024 ($142 monthly), funded from a natural-resource royalty base of approximately $80 billion. The moderate CE scenario's $91 monthly estimate, drawn from a far larger and more diversified capital base, falls within the same order of magnitude. Alaska's 40-year track record—81 percent public approval, 20–40 percent poverty reduction, minimal employment effects (Jones and Marinescu 2022)—provides real-world validation of the universal-ownership model.

D. A Note on the UBI Cost Benchmark

These figures also illuminate UBI's scale problem. The moderate scenario required 8 percent of the entire U.S. capital base to generate $91 monthly. Achieving the $500 monthly level common in UBI pilots would require approximately 44 percent of total market capitalization—a politically and economically impossible appropriation, underscoring CE's grounding in sustainable financial economics.

X. Implementation, Legal Foundations, and Risk Mitigation

A. Governance Architecture

The CEF should be governed as an independent institution with staggered board terms exceeding electoral cycles, analogous to the Federal Reserve. Professional portfolio management operates the acquire-and-hold strategy; the fund's static, diversified composition approximates the theoretical market portfolio of the Capital Asset Pricing Model. Distributions are automatic, based on actual fund income, eliminating discretionary political manipulation.

B. Constitutional Basis

CE's mandatory contributions are most naturally characterized as business-licensing fees—the price of market access—rather than takings requiring compensation under the Fifth Amendment. The federal government's authority to condition business operations within its jurisdiction is well established: pharmaceutical licensing, liquor taxation, environmental compliance, and broadcast spectrum allocation all impose costs on firms as conditions of market participation. The Interstate Commerce Clause provides additional authority over firms operating across state lines. International commerce falls squarely within federal trade-regulation power.

C. Graduated Implementation

A ten-year phase-in at 0.25 percent per quarter (1 percent annually) allows market adaptation. Beginning with the approximately 1,000 firms above $10 billion capitalization—representing roughly 80 percent of total market value—provides immediate meaningful scale while limiting the number of compliance relationships.

D. Anti-Avoidance

The $Y\%$-based design is inherently resistant to traditional avoidance strategies. Domicile relocation is irrelevant: obligations follow revenue, not incorporation. Profit-shifting is irrelevant: contributions are based on revenue, not earnings. Restructuring into smaller entities is irrelevant: the linearity of the absorption-probability computation ensures that the sum of contributions across any partition of a firm equals the contribution of the original firm, provided total capitalization and final-consumer revenue flows are unchanged. Non-compliant firms face market-access restrictions: import blocking, domain-name blocking, and payment-system exclusion provide escalating enforcement tools.

E. Risk Factors

Three principal risks merit attention. First, rapid implementation could produce capital-market disruption; the graduated phase-in addresses this. Second, political capture of the CEF governance structure could undermine independence; staggered terms, transparency requirements, and constitutional protections mitigate this risk. Third, international coordination may prove slower than optimal; however, unilateral adoption by a large consumer economy remains welfare-improving for its citizens even without reciprocal adoption, since contributions from foreign firms selling domestically generate immediate fund income.

XI. Conclusion

The secular decline in labor's share of income, accelerated by AI's unique capacity to substitute for human cognition, demands a policy response commensurate with the structural transformation underway. Citizens' Equity offers such a response by addressing the *ownership* dimension of inequality rather than attempting to compensate for it through income transfers.

The mechanism's key innovation—anchoring corporate obligations to the geography of sales rather than domicile—simultaneously neutralizes capital-flight incentives, creates a tariff-dominating trade mechanism, and produces self-reinforcing incentives for international adoption. Alaska's four-decade track record demonstrates that universal ownership-sharing is operationally feasible, politically sustainable, and economically benign.

The window for proactive reform is bounded. AI capabilities are improving on exponential trajectories; wealth concentration compounds; democratic institutions strain under inequality-driven polarization. CE offers a path from extractive capitalism to inclusive capitalism—preserving the market economy's dynamism while ensuring that technological abundance serves democratic citizenship.

The proposal invites refinement through democratic deliberation and empirical testing. What it does not invite is delay.

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Appendix A: Computing $Y\%$ Allocations Through Supply Chains via Absorbing Markov Chain Analysis

A.1 The Problem

The $Y\%$ parameter requires attributing each firm's global revenue to specific national jurisdictions. For business-to-consumer (B2C) firms, this is straightforward: revenue is directly observable by customer location. For business-to-business (B2B) firms—and hybrid firms conducting both B2B and B2C sales—revenue attribution requires tracing sales through supply-chain intermediaries until reaching final consumers in identifiable jurisdictions.

This section develops a general mathematical framework for this attribution using absorbing Markov chain analysis. The approach handles arbitrary supply-chain complexity, including circular dependencies (e.g., Firm A sells to Firm B, which sells components back to Firm A), and always produces a unique, well-defined allocation that sums to unity for each firm.

A.2 Model Setup

Consider an economy with n firms and m countries. Define a directed graph where:

- Each firm $i \in \{1, \ldots, n\}$ is a node (a *transient state* in Markov terminology).
- Each country $k \in \{1, \ldots, m\}$ is a node (an *absorbing state*).
- A directed edge from firm i to firm j (or country k) carries weight equal to the fraction of firm i's total revenue received from sales to firm j (or directly to consumers in country k).

Formally, let r_{ij} denote the fraction of firm i's revenue derived from sales to firm j, and let s_{ik} denote the fraction of firm i's revenue derived from direct sales to consumers in country k. By construction:

$$\sum_{j=1}^{n} r_{ij} + \sum_{k=1}^{m} s_{ik} = 1 \quad \forall\, i$$

That is, every dollar of firm i's revenue is accounted for—either through sales to other firms or through direct sales to country-level consumers.

A.3 The Transition Matrix

Construct the $(n+m) \times (n+m)$ transition matrix **C** in canonical form for an absorbing Markov chain:

$$\mathbf{C} = \begin{pmatrix} \mathbf{Q} & \mathbf{R} \\ \mathbf{0} & \mathbf{I}_m \end{pmatrix}$$

where:

- $\mathbf{Q}$ is the $n \times n$ matrix of inter-firm revenue fractions: $Q_{ij} = r_{ij}$.
- $\mathbf{R}$ is the $n \times m$ matrix of direct-to-consumer revenue fractions: $R_{ik} = s_{ik}$.
- $\mathbf{I}_m$ is the $m \times m$ identity matrix (countries are absorbing states: once revenue reaches a final consumer, it stays attributed to that country).
- $\mathbf{0}$ is the $m \times n$ zero matrix (countries do not "sell" back to firms in this revenue-tracing framework).

The matrix $\mathbf{Q}$ captures inter-firm transactions. If no firm sells exclusively to other firms in a closed loop without any ultimate consumer sales—a reasonable economic assumption, since all supply chains ultimately serve end consumers—then $\mathbf{Q}$ is a *substochastic* matrix (row sums ≤ 1, with strict inequality for at least one firm per connected component). This guarantees that the Markov chain is absorbing.

A.4 The Fundamental Matrix and Absorption Probabilities

The central result of absorbing Markov chain theory provides the tool we need.

Theorem (Fundamental Matrix). If $\mathbf{Q}$ is the transient-state submatrix of an absorbing Markov chain, then $(\mathbf{I}_n - \mathbf{Q})$ is nonsingular, and the *fundamental matrix*

$$\mathbf{N} = (\mathbf{I}_n - \mathbf{Q})^{-1} = \sum_{t=0}^{\infty} \mathbf{Q}^t$$

exists and has all nonnegative entries. The entry N_{ij} gives the expected number of times the chain visits transient state j starting from transient state i before absorption.

Corollary (Absorption Probabilities). The $n \times m$ matrix

$$\mathbf{B} = \mathbf{NR} = (\mathbf{I}_n - \mathbf{Q})^{-1}\mathbf{R}$$

gives the absorption probabilities: B_{ik} is the probability that a chain starting in transient state i is eventually absorbed into absorbing state k.

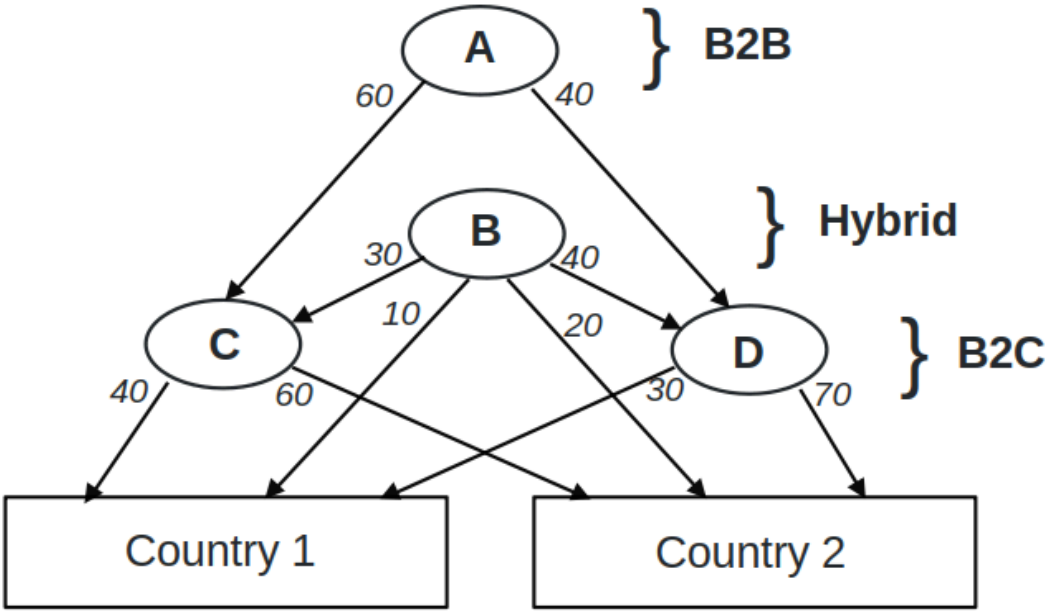
Interpretation for CE. B_{ik} is precisely the $Y\%$ allocation: the fraction of firm i's revenue that is ultimately attributable to consumers in country k, after tracing through all supply-chain intermediaries. That is:

$$Y_{ik}\% = B_{ik} = \left[(\mathbf{I}_n - \mathbf{Q})^{-1}\mathbf{R}\right]_{ik}$$

Since $\mathbf{B}$ is a stochastic matrix (rows sum to 1), each firm's country allocations sum to exactly 100 percent—ensuring the conservation property that total contributions across all jurisdictions equal exactly $X\%$.

A.5 Worked Example

Consider the following four-firm, two-country example.



Supply-Chain Diagram

Firms: A (B2B), B (hybrid), C (B2C), D (B2C).
Countries: 1, 2.

Revenue fractions (from the supply-chain diagram):

From \ To	A	B	C	D	Country 1	Country 2
A	0	0	0.60	0.40	0	0
B	0	0	0.30	0.40	0.10	0.20
C	0	0	0	0	0.40	0.60
D	0	0	0	0	0.30	0.70

Thus:

$$\mathbf{Q} = \begin{pmatrix} 0 & 0 & 0.60 & 0.40 \\ 0 & 0 & 0.30 & 0.40 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \end{pmatrix}, \quad \mathbf{R} = \begin{pmatrix} 0 & 0 \\ 0.10 & 0.20 \\ 0.40 & 0.60 \\ 0.30 & 0.70 \end{pmatrix}$$

Since the B2C firms (C and D) have no outgoing inter-firm edges, $\mathbf{Q}$ has a simple structure. Computing:

$$\mathbf{I}_4 - \mathbf{Q} = \begin{pmatrix} 1 & 0 & -0.60 & -0.40 \\ 0 & 1 & -0.30 & -0.40 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix}$$

Because $\mathbf{Q}$ has zeros on the diagonal and the B2C rows are already zero, the inverse is readily computed (or, equivalently, $\mathbf{Q}^2 = \mathbf{0}$, so $\mathbf{N} = \mathbf{I} + \mathbf{Q}$):

$$\mathbf{N} = \begin{pmatrix} 1 & 0 & 0.60 & 0.40 \\ 0 & 1 & 0.30 & 0.40 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix}$$

The absorption probability matrix is:

$$\mathbf{B} = \mathbf{NR} = \begin{pmatrix} 1 & 0 & 0.60 & 0.40 \\ 0 & 1 & 0.30 & 0.40 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix} \begin{pmatrix} 0 & 0 \\ 0.10 & 0.20 \\ 0.40 & 0.60 \\ 0.30 & 0.70 \end{pmatrix}$$

Computing row by row:

Firm A (pure B2B):
$B_{A,1} = 0(0) + 0(0.10) + 0.60(0.40) + 0.40(0.30) = 0.36$
$B_{A,2} = 0(0) + 0(0.20) + 0.60(0.60) + 0.40(0.70) = 0.64$

Firm B (hybrid):
$B_{B,1} = 0(0) + 1(0.10) + 0.30(0.40) + 0.40(0.30) = 0.34$
$B_{B,2} = 0(0) + 1(0.20) + 0.30(0.60) + 0.40(0.70) = 0.66$

Firm C (pure B2C):
$B_{C,1} = 0.40, \quad B_{C,2} = 0.60$

Firm D (pure B2C):
$B_{D,1} = 0.30, \quad B_{D,2} = 0.70$

The resulting $Y\%$ allocation matrix:

Firm	$Y\%$(Country 1)	$Y\%$(Country 2)	Sum
A	36%	64%	100%
B	34%	66%	100%
C	40%	60%	100%
D	30%	70%	100%

Each row sums to 100 percent, confirming the conservation property. The B2B firm A's revenue is correctly allocated to countries in proportion to where its downstream customers ultimately sell to consumers—even though A itself has no direct consumer sales.

A.6 Handling Circular Supply Chains

In practice, some supply chains exhibit circularity: Firm A sells to Firm B, and Firm B sells components back to Firm A. The matrix $\mathbf{Q}$ then has nonzero entries in both Q_{AB} and Q_{BA}, and $\mathbf{Q}^t$ does not vanish for finite t.

The absorbing Markov chain framework handles this automatically. As long as every firm has some positive probability of reaching a final consumer (i.e., the chain is absorbing), $(\mathbf{I} - \mathbf{Q})$ remains nonsingular and $\mathbf{B} = (\mathbf{I} - \mathbf{Q})^{-1}\mathbf{R}$ is well-defined with row sums equal to unity. The Neumann series $\mathbf{N} = \sum_{t=0}^{\infty} \mathbf{Q}^t$ converges because the spectral radius of $\mathbf{Q}$ is strictly less than 1.

Economically, this convergence reflects the fact that circular inter-firm (B2B) transactions do not create value in isolation—they are intermediate flows that ultimately serve end consumers. The Markov framework correctly attributes all revenue to its final destination regardless of how many intermediate transactions intervene.

A.7 Computational Considerations

For a global CE system encompassing n firms and m countries, the required computation involves:

1. **Assembling $\mathbf{Q}$ and $\mathbf{R}$** from audited corporate revenue reports—data already collected under OECD BEPS country-by-country reporting for firms above €750 million revenue (OECD 2013–present).
2. **Computing $\mathbf{B} = (\mathbf{I} - \mathbf{Q})^{-1}\mathbf{R}$.** Direct matrix inversion is $O(n^3)$, but $\mathbf{Q}$ is typically *extremely sparse*—most firms transact with a small number of supply-chain partners relative to the total number of firms. Sparse-matrix techniques (iterative solvers such as GMRES or conjugate gradient on the normal equations) reduce practical computation to near-linear time.
3. **Separability.** Real-world supply chains decompose into weakly connected components (industries and supply-chain clusters). The block-diagonal structure of $\mathbf{Q}$ permits independent computation for each cluster, dramatically reducing problem dimensionality.
4. **Update frequency.** Quarterly rebalancing requires re-solving the system with updated revenue data. Since inter-firm revenue shares change incrementally between quarters, warm-start iterative methods converge rapidly from the prior solution.

The computational requirements are well within the capacity of existing financial-infrastructure technology. The challenge is *data assembly*—ensuring comprehensive, audited revenue-by-destination reporting—rather than mathematical computation.

A.8 Connection to Input–Output Economics

The framework is isomorphic to Leontief's (1936) input–output analysis, with a revenue-flow interpretation rather than a physical-flow interpretation. The Leontief inverse $(\mathbf{I} - \mathbf{A})^{-1}$, where $\mathbf{A}$ is the matrix of technical coefficients, performs the same algebraic operation as our fundamental matrix $(\mathbf{I} - \mathbf{Q})^{-1}$.

This connection is both mathematically elegant and practically useful: the extensive institutional infrastructure supporting national input–output tables—maintained by statistical agencies worldwide—provides a template for the data-collection and computation systems that CE requires. The Bureau of Economic Analysis already publishes detailed input–output accounts for the U.S. economy; extending these to firm-level, country-attributed revenue flows is an incremental rather than revolutionary data-infrastructure investment.

Correspondence: Mark B. Garman, Haas School of Business, University of California, Berkeley. ORCID: 0009-0006-2542-8750.