The Asset Market Channel of Market Power

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Abstract

Over the past forty years, U.S. market power has risen, long-run real rates have fallen, and wealth has concentrated at the top. We propose a model in which rising market power endogenously lowers long-run rates, raises top wealth shares, and yet has only a muted effect on the long-run level of output. The asset market channel linking these aggregate trends rests on two departures from benchmark general equilibrium models of market power: 1) households hold differentiated ownership claims to market-power profits and 2) households face idiosyncratic income risk, which makes long-run asset demand imperfectly elastic. To quantify how the endogenous response of rates shapes the real effects of market power in the long run, we derive a sufficient-statistic representation of asset market clearing in terms of factor shares, relative saving propensities, asset-demand elasticity, and the tradable share of profits. The sufficient-statistic exercise and the full nonlinear transition point to the same conclusion: the asset market channel lowers the long-run return by up to 238 basis points and raises the top-1% wealth share by up to 55.5%. At the same time, long-run output falls by only 2.6%, an 86% smaller decline than in the representative-household benchmark. The asset market channel therefore dampens output losses from market power while magnifying its effects on wealth concentration.

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1 Introduction

Over the past forty years, three major macroeconomic trends have reshaped the U.S. economy. First, market power has risen, as measured by price markups (De Loecker, Eeckhout and Unger, 2020) or wage markdowns (Yeh, Macaluso and Hershbein, 2022; Ren and Zhang, 2025). Related changes in national income and "factorless" income shares (Karabarbounis and Neiman, 2014; Autor et al., 2020; Barkai, 2020; Greenwald, Lettau and Ludvigson, 2025*a*; Atkeson, Heathcote and Perri, 2025) and measures of market concentration (Covarrubias, Gutiérrez and Philippon, 2020; Kwon, Ma and Zimmermann, 2024) corroborate this rise. Second, long-term real interest rates have fallen (Holston, Laubach and Williams, 2017; Del Negro et al., 2019). Third, wealth has concentrated at the top and increasingly in the form of private business wealth (Saez and Zucman, 2016; Smith, Zidar and Zwick, 2023).

We rationalize these trends in a general-equilibrium model with imperfectly competitive firms and heterogeneous households. The firm side is standard, while the household side departs from the representative-agent benchmark in two key ways: 1) households hold differentiated claims to the profits generated by market power, and 2) households face idiosyncratic income risk, which gives rise to an imperfectly elastic long-run asset-demand curve. Calibrated to reproduce the secular decline in real rates and rise in wealth concentration, the model implies that the observed increase in market power reduces long-run output by only 2.6%, compared with 18.7% in a comparably calibrated representative-household model—an 86% smaller decline.

Why does the secular rise in market power produce such a small decline in long-run output? In the model, rising market power operates through two opposing channels. The first channel is the familiar production-side distortion: market power reduces firms' input demand at given factor prices. The second is a novel "asset market channel": once long-run asset demand is imperfectly elastic, *who* receives the profits generated by market power and *how* they receive them matter for equilibrium outcomes. Different forms of profit ownership shift different sides of the asset market. Profits earned by privately held businesses change business owners' desired saving, while public equity claims change the total quantity of traded assets that must be held in equilibrium. The balance of these forces determines the long-run, market-clearing interest rate, with downstream consequences for the cost of capital, capital accumulation, aggregate output, and wealth inequality.

The asset market channel can be seen most clearly from a simple asset market clearing condition

$$\underbrace{D(r, w, \Pi)}_{\text{Asset Demand}} = \underbrace{K(r) + p(r, \Pi)}_{\text{Asset Supply}} \tag{1}$$

Asset demand D represents aggregate household savings and depends on the return r and household income from wages w and profits Π. Asset supply consists of physical capital K and the market value of equity claims p, which capitalize the dividends paid by public firms out of profits Π discounted at rate r. The asset market channel follows from the observation that profits Π enter *both* sides of Equation (1).

How market power affects asset markets

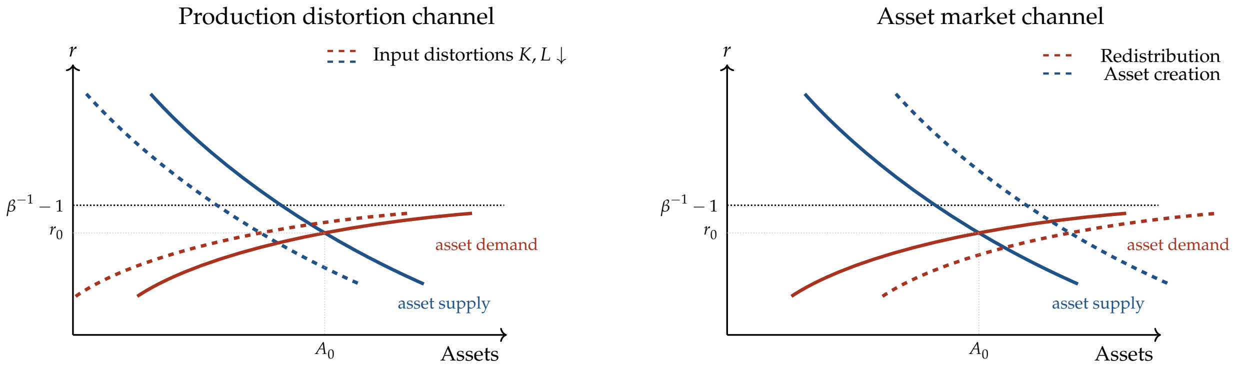

Figure 1: The solid curves in each panel illustrate a common initial asset demand and asset supply equilibrium. The black dotted horizontal line is the representative-household long-run return, $\beta^{-1} - 1$, which asset demand approaches from below. The dashed curves isolate the production distortion channel and the two components of the asset market channel.

In our model, profits accrue to private business owners either as current business income or as IPO proceeds when those owners take their businesses public. Because profits are generated by market power, an increase in market power shifts income away from wages w and toward profits Π. We refer to the demand-side component of the asset market channel as *redistribution*. Since wealthy business owners tend to save more than wage earners, redistribution raises aggregate asset demand and pushes the rate r downward.

The distinction between private and public firms is crucial in our setting because it determines the share of aggregate profits that are paid out as dividends to public shareholders and consequently the market value of equity that must be purchased to clear asset markets. For a given discount rate r, an increase in market power and the resulting increase in profits implies an increase in the market value of equity that must be held by public shareholders, a force we will refer to as *asset creation*. When new assets are created that must be held in equilibrium, the rate r is driven upward to clear asset markets.

Figure 1 shows that the asset market channel pushes asset demand and supply outward, while the standard production distortion channel pushes both curves inward. This inward shift can also be read directly from the asset market clearing condition in Equation (1). Holding the rate r fixed, greater market power lowers firms' desired capital and labor inputs. With upward-sloping factor supply, lower labor demand reduces equilibrium wages w and therefore workers' savings, shifting asset demand inward; lower capital demand at a given r reduces the capital stock K, shifting asset supply inward.

Because the production distortion and asset market channels shift asset demand and supply in opposing directions, market power can in principle raise or lower the equilibrium level of assets and their rate of return. Which channel prevails matters for two reasons. The direction and magnitude of the rate r change determines the extent to which market power distorts capital accumulation and the long-run level of output. In this sense, asset markets can either reinforce or moderate the effects of market power on the economy's long-run productive capacity. The equilibrium quantity of assets has a distinct role in our setting relative to the representative-household benchmark. Assets are valuable because they let households self-insure against idiosyncratic risk, but their ownership is concentrated. The asset response therefore matters not only for aggregate wealth, but also for welfare and wealth inequality.

Characterizing the long-run return r using sufficient statistics One of the main theoretical results of the paper is a sufficient-statistic representation of asset market clearing. Because aggregate asset demand in our model is linearly homogeneous in permanent income, the simple asset market clearing condition in Equation (1) can be rewritten as a condition involving a small set of measurable quantities: national income shares (s_W, s_K, s_Π), the elasticity of asset demand which determines $\bar{D}(r)$, the relative saving propensity of business owners to workers $\lambda(r)$, the elasticity of the cost of capital to the market rate $\chi(r)$, and the public share of profits and the equity valuation multiple, which comprise $\zeta(r)$. The transformed asset market clearing condition is then

$$\underbrace{\bar{D}(r)\big(s_W + \lambda(r) s_\Pi\big)}_{\text{Asset demand from factor shares}} = \underbrace{\frac{\chi(r) s_K + \zeta(r) s_\Pi}{r}}_{\text{Asset supply from factor shares}} \tag{2}$$

This representation lets us characterize whether market power raises or lowers the equilibrium rate and aggregate assets, given observed paths for these sufficient statistics. At a fixed rate r, each share term in Equation (2) is associated with one of the shifts in the curves plotted in Figure 1. The production distortion shifts asset demand inward by depressing the labor share s_W and asset supply inward through the capital share s_K. The asset market channel operates through the changes in the profit share s_Π that appears on both sides of the asset market.

Over the period we study in U.S. data, both the labor and capital shares fall, while the profit share rises substantially. These movements imply that the asset market channel is larger than the production-distortion effects on asset markets: the demand created by higher profit income more than offsets the lower asset demand from labor income and the lower supply of capital claims. Within the asset market channel, the effects of redistribution dominate asset creation: profit income raises asset demand by more than capitalized profit claims raise asset supply. The observed factor-share movements along with the other sufficient statistics imply a decline of the long-run return r by 192 basis points from 1984 to 2014, while aggregate wealth rises.

Although the main analysis focuses on the case of price markups, the same logic extends to wage markdowns. Section 2 shows that both forms of market power can be summarized by their effects on factor shares, so the asset market channel applies whenever market power shifts income away from factor payments and toward profits.

Quantification. We next quantify the mechanism in the full model, replacing the static sufficient-statistic exercise with a dynamic, perfect-foresight transition driven by independently estimated aggregate cost-weighted markups. Unlike the sufficient-statistic exercise, which feeds in observed factor-share movements directly, the full model takes the markup path as the primitive shock and reproduces the same pattern: the long-run rate falls and aggregate assets rise.

The dynamic model also shows how the asset market channel changes the real effects of market power. Because the long-run return falls by 238 basis points, output only falls by 2.6%, compared with 18.7% in a comparably calibrated representative-household model. In other words, the asset market channel mitigates 86% of the long-run output distortion from market power. However, this mitigation comes with a distributional tradeoff, as the same asset-market forces that support capital accumulation also raise wealth concentration. From the first Distributional Financial Accounts observation in 1989, the model-implied top-1% wealth share rises by 55.5% by the end of the transition path.

Related work. This paper is connected to four literatures. The first relates market power to macro-finance trends. Eggertsson, Robbins and Wold (2021) show that rising markups together with a declining rate can account for rising wealth-to-income ratios and Tobin's Q; Farhi and Gourio (2018) account for related trends with market power, intangibles, and risk premia under a representative saver; and Ball and Mankiw (2023) characterizes the wedge markups drive between the interest rate and the marginal product of capital. Our contribution is to make the long-run return endogenous in an economy with imperfectly elastic asset demand and heterogeneous ownership of market power induced profits. We discover that profits enter into both sides of the asset market. Capitalized profit claims raise asset supply, while profits accruing to high-saving owners raise asset demand. The effect of market power on the long-run return is therefore not pinned down by market power alone; it depends on how profits are allocated and capitalized. At measured U.S. allocation of profits, the redistribution force dominates asset creation, and the one-asset long-run return falls.

The second is the secular decline in the natural rate. A recent literature studies movements in the natural rate by studying asset demand against asset supply, including Auclert et al. (2021), Auclert et al. (2025), and Rachel (2025). In the existing literature, profits are often treated as capitalized claims on the supply side and, all else equal, push the natural rate up. This is the asset creation case of our framework. Our model adds the redistribution force on the demand side: when market power induced profits accrue to high-saving households, they raise desired asset holdings and push the long-run return down. This provides a market-power origin for the saving glut of the rich (Mian, Straub and Sufi, 2021*a*,*b*), while asset creation is the offsetting force. In our quantitative exercise, we find that market power lowers the long-run return by an amount comparable to the demographic and inequality forces in standard decompositions (Rachel and Summers, 2019; Platzer and Peruffo, 2022; Kopecky and Taylor, 2022).

The third is the cost of market power. Edmond, Midrigan and Xu (2023) for price markups and Berger, Herkenhoff and Mongey (2022) for wage markdowns measure how much output the wedges destroy, both through the level of the aggregate wedge and through its dispersion across firms, building on the misallocation tradition of Hsieh and Klenow (2009); Restuccia and Rogerson (2013) and its general-equilibrium treatment of market power in Baqaee and Farhi (2020); on the labor side, the underlying markdowns are estimated by Yeh, Macaluso and Hershbein (2022); Kroft et al. (2023); Deb et al. (2024); Ren and Zhang (2025). In these settings, the long-run return is typically fixed by the rate of time preference of a representative household, so the profits created by market power is essentially rebated lump sum and have no effect on the interest rates. Our contribution begins where this assumption is relaxed. With imperfectly elastic asset demand, market power induced profit changes both asset demand and asset supply. The long-run return thus changes, and the change in interest rates feeds back onto capital accumulation. The output cost of market power therefore depends on where the profit go. We find that the asset market channel substantially reduces the output loss, but the mitigation comes with greater wealth concentration. Closest in spirit, Boar and Midrigan (2025) study optimal product market policy when ownership is concentrated and markups rise with market share, and find that the efficient policy raises concentration in order to raise wages. We add the asset market to that efficiency-distribution tradeoff: through the long-run return, part of the output cost of market power resurfaces as inequality.

The fourth is business income and the distribution of wealth. Top incomes are increasingly the business income of the working rich who own closely held firms (Smith et al., 2019); top wealth is concentrated in private business and equity and shaped by heterogeneous returns (Smith, Zidar and Zwick, 2023); and entrepreneurs save heavily against undiversified, uninsurable business risk (Quadrini, 2000; Cagetti and De Nardi, 2006). These facts provides empirical support for the asset demand multiplier λ, the redistribution statistic in our characterization. Boar, Gorea and Midrigan (2025) and Di Tella, Malgieri and Tonetti (2025) provide structural counterparts. In the former, undiversified owners hold large precautionary positions and operate below efficient scale; in the latter, markups compensate owners for uninsurable risk and induce over-accumulation. Both deliver a higher saving rate out of (permanent) income for entrepenurs. The other statistic, the tradable share ω, is set by the distinction between private and public ownership: the non-traded value of closely held businesses (Bhandari and McGrattan, 2021) is the portion of profits that remains off the public equity market. On the dynamics of wealth, Gomez and Gouin-Bonenfant (2024) show that a low return concentrates top wealth through entrepreneurial issuance and revaluation. We provide a market power origin for that low return and a complementary mechanism: profit income redistributed to high-saving owners concentrates wealth even as the return falls. Impullitti and Rendahl (2025) study the fully capitalized $\omega = 1$ limit; our framework places an economy between that limit and pure redistribution. The result ties distributional facts to the long-run return: the objects the inequality literature studies as outcomes are the statistics that determine the effect of market power on the natural rate. The premise underlying the exercise, that household asset demand is imperfectly elastic are also connected to (Koijen and Yogo, 2019; Gabaix and Koijen, 2021).

Outline. Section 2 sets up the wedge benchmark and shows why, under elastic capital supply, markdowns are neutral for capital while markups are not. Section 3 develops the incorporation economy and derives the characterization, and Section 4 develops the sign theory around redistribution, asset creation, and the role of λ. Section 5 contains the calibration, the transition experiment, and the measurement discussion. Section 7 lays out the extensions under way—transition welfare, markdown dynamics, and a two-asset version that distinguishes the safe rate from the return on rent claims—and Section 8 concludes; proofs are in the appendix.

2 Market Power: Aggregation

In this section, we organize the production side of the economy around a simple accounting of market power. Building on Edmond, Midrigan and Xu (2023), and extending the accounting to allow for labor market power, we show that a broad class of market structures can be represented by an aggregate production function and two aggregate optimality conditions, although the labor markdown has to be weighted by the shadow cost. This representation separates the macroeconomic footprint of market power into two margins. The first is an aggregate factor distortion: markups and markdowns wedge factor payments away from marginal products, determine factor shares, and create rents. The second is misallocation: dispersion in wedges changes the allocation of resources across producers and lowers realized TFP.

The asset-market channel follows mainly from the aggregate factor distortion. The long-run return depends on the shares of output paid to capital, labor, and profits, together with the incidence and tradability of those profits, as we will show in Section 3. Section 2.1 states the aggregation result, Section 2.1 explains why misallocation has no or little effect on the asset market.

2.1 Aggregation: the factor distortion and misallocation

Following a vast literature on the effects of production wedges in general equilibrium (Hsieh and Klenow, 2009; Baqaee and Farhi, 2020), we take an ex-post stand and do not model the conduct or market structure that generates market power. We summarize market power by two wedges between marginal products and factor payments and take the measured wedges as inputs. Firms indexed by i produce differentiated goods and hire differentiated labor (Edmond, Midrigan and Xu, 2023; Berger, Herkenhoff and Mongey, 2022).

For the baseline aggregation, each firm uses a common constant-returns Cobb–Douglas technology, $y_i = z_i k_i^{\alpha} \ell_i^{1-\alpha}$, and draws idiosyncratic productivity z_i. This assumption delivers an exact two-wedge aggregate representation with heterogeneous markups and markdowns. The constant-returns assumption can be readily relaxed, and when markdowns are common, the Cobb–Douglas restriction can be relaxed: any common technology yields the same input mix.

The product markup $\mu_i \geq 1$ drives a wedge between price and marginal cost. The labor markdown $\nu_i \geq 1$ drives an additional wedge between the marginal revenue product of labor and the wage. At the firm's optimum,

$$r^k = \frac{p_i}{\mu_i}\frac{\partial y_i}{\partial k_i}, \qquad w_i = \frac{p_i}{\mu_i \nu_i}\frac{\partial y_i}{\partial \ell_i}. \tag{3}$$

Let $W \equiv \int w_i \ell_i \, di$ denote aggregate labor compensation, $s_i \equiv p_i y_i/(PY)$ firm i's revenue share, and $\varepsilon_i^K \equiv (\partial y_i/\partial k_i)k_i/y_i$ and $\varepsilon_i^L \equiv (\partial y_i/\partial \ell_i)\ell_i/y_i$ its output elasticities. Integrating (3) over firms gives the aggregate factor-share identities,

$$s_K \equiv \frac{r^k K}{PY} = \int s_i \frac{\varepsilon_i^K}{\mu_i} \, di, \qquad s_W \equiv \frac{W}{PY} = \int s_i \frac{\varepsilon_i^L}{\mu_i \nu_i} \, di, \qquad s_\Pi \equiv 1 - s_K - s_W. \tag{4}$$

Markups and markdowns determine how output is divided among capital payments, labor compensation, and profits.

Under the common Cobb–Douglas technology the firm elasticities are constant, $\varepsilon_i^K = \alpha$ and $\varepsilon_i^L = 1 - \alpha$, and the heterogeneous economy aggregates to a representative economy with one productivity index and two factor wedges,

$$Y = A\, F(K, L), \qquad r^k = \frac{1}{\mu} A\, F_K(K, L), \qquad w = \frac{1}{\mu\nu} A\, F_L(K, L), \tag{5}$$

with F the baseline Cobb–Douglas aggregator. Here w is the aggregate wage and $W = wL$. Effective TFP is the technological frontier scaled by misallocation, $A = \Omega\, \mathcal{Z}^*$ with $\Omega \leq 1$. The aggregate markup is the cost-weighted arithmetic mean of firm markups, equivalently their sales-weighted harmonic mean, and the aggregate markdown is the harmonic mean of firm markdowns weighted by shadow labor cost,

$$\frac{1}{\mu} = \int s_i \frac{1}{\mu_i} \, di, \qquad \frac{1}{\nu} = \int c_i \frac{1}{\nu_i} \, di, \qquad c_i \equiv \frac{\nu_i w_i \ell_i}{\int \nu_j w_j \ell_j \, dj}, \tag{6}$$

The weight c_i is firm i's share of the economy's shadow wage bill, the wage bill that would be paid if the markdown wedge were removed holding employment fixed. This weighting is the labor market analogue of the cost weights for the aggregate markup. It separates the product market wedge from the labor market wedge. The factor shares then satisfy

$$s_K = \frac{\alpha}{\mu}, \qquad s_W = \frac{1-\alpha}{\mu\nu}, \qquad s_\Pi = 1 - s_K - s_W.$$

Thus heterogeneous markups and markdowns enter the aggregate factor share identities only through two objects, μ and ν. Misallocation affects realized TFP, A, and leaves the shares fixed.

This aggregation makes clear that market power affects the macroeconomy in two ways: through capital and labor demand distortions, and through misallocation. The aggregate wedges (μ, ν) determine the shares (s_K, s_W, s_Π): how output is divided among capital payments, labor compensation, and rents. Wedge dispersion determines realized TFP: it changes how output and inputs are allocated across firms and lowers A in the sense of Hsieh and Klenow (2009) and Restuccia and Rogerson (2013). Markup dispersion reallocates output across producers; markdown dispersion also distorts their input mix because the markdown-adjusted wage enters each firm's relative demand for capital and labor. Under Cobb–Douglas technology, the two forces are fully decoupled. Misallocation enters output Hicks-neutrally through A and leaves the factor shares fixed.

Isolating the asset-market channel. Throughout the paper, we focus on the asset market channel through the aggregate factor distortion and set misallocation aside. Two reasons justify this separation. First, in commonly used homothetic environments, the asset market and misallocation separate: changes in the long-run return move aggregate capital and output while leaving relative demands, markups, markdowns, and wedge dispersion unchanged. This property holds in homothetic monopolistic-competition environments[1] and in oligopolistic environments such as Atkeson and Burstein (2008). In the baseline, the return moves aggregate capital while factor shares and incidence objects determine asset-market clearing. Conditional on these objects, misallocation affects the level of output and leaves the asset market unchanged. Appendix A.2 moves away from Cobb–Douglas. With a general capital-labor elasticity, misallocation can affect the asset market through factor shares, but the implied return response is one to two orders of magnitude smaller than the response to the aggregate factor distortion.

Second, misallocation is the quantitatively smaller margin. The output cost of market power *dispersion*, as distinct from the cost of the aggregate wedge, is modest. Edmond, Midrigan and Xu (2023) show that a size-dependent subsidy that eliminates misallocation has an output effect one or two orders of magnitude smaller than a uniform subsidy that eliminates the aggregate wedge. Estimated misallocation losses are around 1–6% (Berger, Herkenhoff and Mongey, 2022; Edmond, Midrigan and Xu, 2023). Given our ex post approach to wedges, one could incorporate both margins and study their joint effect on the asset market away from the Cobb–Douglas benchmark.

The separation can fail when the long-run return changes the cross-sectional allocation of production. One example is heterogeneous financing costs. If firms finance capital with both debt and equity, the return enters user costs differently across firms; leverage dispersion then produces dispersion in the weighted average cost of capital (WACC). The return and the cross-sectional allocation then no longer separate: a heterogeneous WACC couples misallocation to the asset

[1] See Matsuyama and Ushchev (2017). In these environments, absent entry, financing frictions, or other scale-dependent forces, changes in the long-run return leave relative demands, markups, and the allocation of activity across producers unchanged.

market. A second example is entry. If rents or financing conditions change entry and exit, they can change the number and composition of firms and therefore misallocation. We take the firm population as given in the baseline. Separate ongoing work studies a two-asset economy with bonds and equity, heterogeneous WACC, and endogenous entry in richer environments.

3 The Incorporation Economy

We now turn from production to asset markets. Section 2 reduced market power to its effect on the division of output among capital payments, labor compensation, and profits. In a representative-agent benchmark, or in an economy with perfectly elastic asset demand, this division leaves the long-run return unchanged. Here it moves the return: the long-run return is an equilibrium object because household asset demand is imperfectly elastic. We use the canonical source of inelasticity, uninsured idiosyncratic risk with borrowing constraints (Bewley, 1977; Huggett, 1993; Aiyagari, 1994), but the characterization below only requires an upward-sloping asset-demand schedule and therefore extends to other environments, such as finite lives (Blanchard, 1985).

The central incidence question is where rents go. A dollar of rent can matter for the asset market in two distinct ways. It can accrue as income to a household that saves out of it, shifting asset demand. Or future rent payments can be capitalized into tradable claims, increasing the asset supply households must hold. Standard benchmarks usually keep one side of this accounting: rents are either rebated as income and create no claim, or fully embodied in firm value and enter mainly through asset supply.

We separate these margins with an incorporation economy. Entrepreneurs own private businesses that generate rent income. At an exogenous incorporation rate, a private business becomes a tradable claim on its future rents. The entrepreneur receives the sale proceeds, while the claim enters aggregate asset supply. Incorporation therefore records both destinations of rent value: the resources received by the entrepreneur and the future rent stream capitalized as a tradable asset.

This structure yields the sufficient statistic that drives the rest of the paper. With homothetic household problems, worker and entrepreneur asset demands scale with their income flows, while tradable rent claims are priced by a capitalization factor. Market clearing then reduces the long-run return to a small set of objects: factor shares, the asset-demand multiplier of rent recipients, the tradable share of rents, and claim-pricing terms such as depreciation and exit risk. These objects are measurable, connect the model to the data, and nest the usual benchmark cases.

3.1 Workers and Entrepreneurs

The production side supplies three aggregate flows: labor compensation W, capital payments $r^k K$, and rents $\Pi = Y - W - r^k K$. The household side takes the aggregate income scales (W, Π) and the return r as given. Capital depreciates at rate δ_K, so $r^k = r + \delta_K$ and $\chi(r) \equiv r/(r + \delta_K)$ converts gross capital payments into the net return paid to savers.

There are two groups of households. Workers consume, save, and supply labor. They have GHH preferences over the composite $c - v(\ell)$, with isoelastic labor disutility

$$v(\ell) = \frac{\psi_\ell}{1 + 1/\varphi} \ell^{1+1/\varphi}.$$

With wage per efficiency unit w, idiosyncratic efficiency e, and $R = 1 + r$, a worker solves

$$\begin{aligned} V^W(a, e) =& \max_{c,\, a',\, \ell} \Big\{ u(c - v(\ell)) + \beta_W \, \mathbb{E}\big[V^W(a', e') \mid e \big] \Big\}, \\ c + a' =& Ra + we\ell, \qquad a' \geq 0. \end{aligned}$$

The GHH structure makes the intratemporal labor choice independent of wealth: $v'(\ell^*(w, e)) = we$. Define the maximized labor surplus

$$y^W(w, e) := \max_{\ell} \{ we\ell - v(\ell) \}.$$

With the isoelastic v, both $y^W(w, e)$ and aggregate labor compensation W scale with $w^{1+\varphi}$, so $y^W(w, e) = W\tilde{e}$ for a normalized Markov state $\tilde{e}$ independent of the aggregate scale. Thus endogenous GHH labor supply preserves the income-scaling property used below.

Entrepreneurs own businesses. A private business pays rent flow Πz, where z is the entrepreneur's share of aggregate rents. An entrepreneur with share z receives Πz, and the distribution of z reallocates rents across entrepreneurs while preserving the aggregate rent flow:

$$\pi = \Pi z, \qquad \int z \, di = 1.$$

The state z is stochastic over time with mean normalized to one. Appendix A.3 microfounds it as a relative rent-share shock. The private business incorporates at rate κ, and incorporated businesses exit at rate δ_C. At incorporation, the entrepreneur sells the claim to future rents at price $q(z; \Pi, r)$ and enters a liquid state. While the business remains private, the entrepreneur's problem is

$$\begin{aligned} V^P(a, z) =& \max_{c,\, a'} \Big\{ u(c) + \beta_E \, \mathbb{E}\big[(1 - \kappa) V^P(a', z') + \kappa V^L\big(q(z; \Pi, r), a'\big) \mid z \big] \Big\}, \\ c + a' =& Ra + \Pi z, \qquad a' \geq 0 \end{aligned}$$

The private business value is not part of the entrepreneur's liquid assets a before incorporation. It is closely held business equity in the sense of Bhandari and McGrattan (2021). Once the firm incorporates, the liquid entrepreneur holds the sale proceeds as one-period cash on hand t and waits for a new private business, which arrives at rate δ_C. Since public firms also exit at rate δ_C, the active mass of businesses is constant.

$$
\begin{aligned}
V^L(t,a) &= \max_{c,\, a' \geq 0} \Big\{ u(c) + \beta_E \big[\delta_C \, \mathbb{E} V^P(a', z') + (1-\delta_C) V^L(0, a') \big] \Big\}, \\
c + a' &= Ra + t, \qquad a' \geq 0
\end{aligned}
$$

This household structure tracks the destination of rents. A private rent flow enters entrepreneur income. An incorporated rent flow is capitalized into a tradable claim. When a private business incorporates, the entrepreneur receives the sale proceeds and the claim becomes part of the asset supply households must hold. The same rent therefore has two destinations: the household that receives its value and the market in which the claim is traded. The baseline treats entrepreneur status, the rent-share process, and incorporation as exogenous in order to isolate incidence and tradability; richer models of entry, financing, or endogenous incorporation would move the incidence objects that enter the sufficient statistic below.

3.2 Claim valuation and tradable rents

An incorporated business creates a tradable claim to its future rents. The ex-dividend price of a claim on a firm with rent-share state z satisfies

$$
(1+r)\, q(z; \Pi, r) = \mathbb{E}\big[\Pi z' + (1-\delta_C)\, q(z'; \Pi, r) \mid z \big]. \tag{7}
$$

The recursion prices the next rent flow and applies the exit hazard to continuation value. Averaging over the stationary distribution of z, which has mean one, gives the market value per dollar of aggregate tradable rents:

$$
Q(r) \equiv \frac{\mathbb{E}_\pi \, q(z; \Pi, r)}{\Pi} = \frac{1}{r + \delta_C}. \tag{8}
$$

In the baseline, δ_C is the destruction hazard for incorporated claims, so $r + \delta_C$ is the capitalization rate for tradable rents. If tradable rent claims carry a constant risk premium or expected cash-flow growth, the same sufficient statistic uses the corresponding $Q(r)$; the baseline sets those terms to zero. This is the role of claim-pricing adjustments in Farhi and Gourio (2018).

The tradable-rent share ω is the share of aggregate rents embodied in tradable claims. Under profit-share-neutral incorporation, legal status is independent of z and ω equals the stationary incorporated-business mass derived in Appendix A.4:

$$
\omega = \frac{\kappa}{\kappa + \delta_C}. \tag{9}
$$

Outside that case, ω remains a rent share. The asset supply created by incorporated rents is the market value $Q(r)\omega\Pi$.

3.3 Linearity of asset demand and analytical characterization of the asset market

We now state the household aggregation result. Under homothetic household problems, asset demand is linear in each group's income scale: aggregate labor compensation for workers and aggregate rents for entrepreneurs. This scaling is what lets the asset market collapse to one equation for the long-run return. We collect the assumptions here for clarity.

Assumption 1. *(i) Worker utility is CRRA in the GHH composite $c - v(\ell)$ with isoelastic labor disutility, and entrepreneur utility is homothetic. (ii) After the worker intratemporal labor choice, worker resources scale with aggregate labor compensation W. (iii) Entrepreneur rent flows and sale proceeds scale with Π (Πz and $q(z; \Pi, r)$, with z a stochastic process independent of Π). (iv) Borrowing limits are zero or scale with the group's income. (v) The normalized worker and entrepreneur Markov processes admit unique invariant distributions with finite first moments.*

Proposition 1 (Linearity of household asset demand)**.** *Under Assumption 1, stationary group asset demands are linear in group permanent income:*

$$D_W(r, W) = \bar{D}(r)\, W, \qquad D_E(r, \Pi) = \bar{D}^E(r)\, \Pi \equiv \lambda(r)\, \bar{D}(r)\, \Pi,$$

where $\bar{D}(r)$ and $\bar{D}^E(r)$ are aggregate asset demand per dollar of worker labor compensation and entrepreneur rent income, and $\lambda(r) = \bar{D}^E(r)/\bar{D}(r)$ is the entrepreneur asset-demand multiplier.

The proposition is the household-side aggregation step. It shows that incorporation, sale proceeds, entry, and exit do not break linearity in aggregate rents. The multiplier $\lambda(r)$ captures the high-saving behavior of rent recipients: entrepreneurs demand more assets per dollar of rent income than workers do per dollar of labor income. In the model, this reflects differential patience, precautionary saving against business-income risk, and the lumpy proceeds generated by incorporation. The argument follows the homothetic linearity results used in the wealth-distribution literature (Straub, 2019; Angeletos, 2007; Constantinides and Duffie, 1996; Gomez, 2023). Appendix B states the broader homogeneity principle and shows how the same structure arises in Aiyagari, perpetual-youth OLG, and asset-in-utility economies.

Summing the asset demand of workers and entrepreneurs gives aggregate household asset demand $D(r, W, \Pi) = \bar{D}(r)[W + \lambda(r)\Pi]$. Asset supply consists of physical capital and the market value of tradable rent claims:

$$S(r) = K + \underbrace{Q(r)\, \omega\, \Pi}_{\text{incorporated claims}} . \tag{10}$$

Rents enter both sides of this market, but through different objects. Private rent flows and sale proceeds enter entrepreneur resources and therefore asset demand. Future rent flows enter asset supply only when they are embodied in tradable claims. The stationary return balances these two destinations.[2]

[2]The asset supply object is the market value of claims to rents, $Q(r)\omega\Pi$. Share counts are an imperfect proxy for

Theorem 1 (Asset Market Clearing)**.** *In a stationary equilibrium, asset market clearing is*

$$\underbrace{\bar{D}(r)\left[W+\lambda(r)\,\Pi\right]}_{\text{asset demand}}=\underbrace{K+Q(r)\,\omega\,\Pi}_{\text{asset supply}},\qquad Q(r)=\tfrac{1}{r+\delta_C}.$$

Dividing by output and using $r^k = r+\delta_K$, and writing the net-return adjustment $\chi(r)\equiv r/(r+\delta_K)$ and the capitalization weight $\zeta(r)\equiv rQ(r)\,\omega$, the rate solves

$$r\,\bar{D}(r)=\frac{\chi(r)\,s_K+\zeta(r)\,s_\Pi}{s_W+\lambda(r)\,s_\Pi},\tag{11}$$

where (s_K, s_W, s_Π) are the capital, labor, and profit shares.

The equation has a natural asset market intuition. The denominator measures asset demand generated by labor income and rent income. The term W is workers' permanent labor income. Since asset demand is proportional to labor income, a decrease in the labor share s_W proportionally decreases asset demand. Similarly, entrepreneurs earn rents in the economy, so an increase in the profit share s_Π increases asset demand. Because entrepreneurs may have a different saving rate than workers, the effect of a higher profit share on asset demand is adjusted by the saving-rate differential $\lambda(r)$.

The numerator measures asset supply. The capital share captures asset supply from physical capital, while tradable profits add asset supply through tradable equity. If $\omega = 0$, no equity is publicly traded, and only the capital share enters asset supply. The profit share enters both sides because profits have two destinations: current profits are income to entrepreneurs, while future profits become asset supply only when they are capitalized into tradable claims. The sign of the return response depends on which side moves more. When rent recipients have high asset demand per dollar of income, as in Mian, Straub and Sufi (2021*b*), the demand created by rents can dominate the supply created by tradable profit claims.

Conditional on the asset demand curve $\bar{D}(r)$, the aggregate shares (s_W, s_K, s_Π), and the incidence objects (λ, ω, Q), equation 11 is sufficient to study the effect of market power on the long-run return. The next section unpacks how markups and markdowns affect the asset market. The asset-market effect is summarized by aggregate shares and incidence objects. Two economies with the same aggregate shares and incidence objects satisfy the same return equation, even if their wedges are dispersed differently across firms. They can still have different output levels, because wedge dispersion changes realized TFP and therefore the level of output associated with those shares. The asset-market effect can therefore be added to the dispersion costs quantified by Edmond, Midrigan and Xu (2023) and Baqaee and Farhi (2020), conditional on the shares and incidence

this object. This is why the long-running decline in U.S. net *equity issuance* is consistent with a growing asset-creation channel: buybacks change the number of shares, while the aggregate claim on rents can still grow. The relevant object grows as larger rents are capitalized into existing and newly tradable claims. That is consistent with evidence that the reallocation of rewards toward shareholders drove the bulk of post-1989 equity appreciation (Greenwald, Lettau and Ludvigson, 2025*b*), and with the rising wealth-to-income ratios of Eggertsson, Robbins and Wold (2021).

Table 1: Observed factor shares and r^* through the sufficient statistic

	1984	2014	Change
Labor share s_W (%)	68.0	62.7	-5.3 pp
Capital share s_K (%)	33.8	28.7	-5.0 pp
Profit share s_Π (%)	-1.8	8.6	$+10.4$ pp
Implied r^* (%)	5.00	2.57	-243.5 bp

Notes: Shares normalized by net value added, following Barkai (2020). The framework holds demographics, fiscal policy, and all other drivers of r^* fixed, and studies only the contribution of factor shares to long-run rates.

objects generated by the production side.

Alternative incidence assumptions. Theorem 1 also clarifies how alternative rent incidence assumptions enter the asset market. If rents are absorbed by entry, innovation, or fixed operating costs, the remaining rent share s_Π falls; to the extent these costs are payments to labor or capital, they enter the corresponding factor shares. If claims to rents are fully traded, rents enter asset supply through the limiting case $\omega = 1$. If workers capture part of rents, that component is wage income and enters s_W. These alternatives change the long-run return through the same sufficient statistics that appear in (11). A richer environment with endogenous entrepreneurship, entry, or incorporation would change the number and composition of business owners, the rent share, or the tradable share of rents. Our baseline framework holds these margins fixed to obtain a sharp characterization of the asset market forces.

3.4 A first glance at the asset market channel

If market power were the only force moving factor shares, its asset-market effect could be read from the changes in capital, labor, and profit shares, together with depreciation, entrepreneur asset demand, claim capitalization, and the asset-demand elasticity.

As a first glance at the asset-market equilibrium over the last forty years, we read observed factor shares through the statistic. Following Barkai (2020), the labor share fell about 5 percentage points of net value added between 1984 and 2014, the capital share about 5 points, and the profit share rose over 10 points. Feeding the observed share triplets into (11) with calibrated values of the statistics introduced below yields an implied decline in the long-run return of 243.5 basis points (Table 1). This exercise holds demographics, fiscal policy, and all other drivers of r^* fixed, and studies only the contribution of factor-share movements. We therefore do not read it as identifying market power's contribution to the observed rate decline. Its content is narrower: the share movements that the market-power literature attributes to rising wedges are, through the statistic, large enough to move long-run rates by an order comparable to standard estimates of the decline.

4 Redistribution versus Asset Creation

The previous section shows that market power affects the asset market through factor shares. Section 2 shows how market power changes those shares. We now combine the two results. The question is how a change in market power shifts asset demand, asset supply, and the equilibrium interest rate.

We begin with a benchmark that makes the forces transparent. The benchmark isolates two cases. When firms remain private, higher market power reallocates output from factor payments to profits without creating a traded claim. We call this case *redistribution*. It raises asset demand relative to asset supply and lowers the interest rate. When firm profits are fully traded, higher market power also raises the value of claims that households must hold. We call this case *asset creation*. It raises asset supply and can raise the interest rate. The equilibrium effect of market power depends on the relative strength of redistribution and asset creation.

Assumption 2 (A transparent benchmark)**.** *(i) Workers and entrepreneurs have the same asset demand per dollar of income: $\lambda(r) = 1$. (ii) There is no depreciation: $\chi(r) = 1$. (iii) Claims are priced at $Q(r) = 1/r$. (iv) Technology is Cobb–Douglas with capital elasticity α.*

Under Assumption 2, asset-market clearing per unit of output is

$$\underbrace{\bar{D}(r)\,(s_W + s_\Pi)}_{\text{asset demand per unit of output}} = \underbrace{\frac{s_K + \omega\, s_\Pi}{r}}_{\text{asset supply per unit of output}}.$$

Asset demand depends on the income received by workers and entrepreneurs. Workers receive the labor share s_W, and entrepreneurs receive the profit share s_Π. Asset supply consists of physical capital, s_K/r, plus the capitalized value of the traded share ω of profits, $\omega s_\Pi/r$.

Cobb–Douglas technology makes the share response to market power explicit. To keep the exposition focused, we consider product markups only. The factor shares are

$$s_K = \frac{\alpha}{\mu}, \qquad s_W = \frac{1-\alpha}{\mu}, \tag{12}$$

with profits absorbing the remaining share. A higher markup reduces both factor shares and raises the profit share. The asset-market effect then depends on whether the additional profits remain private or become traded claims.

Redistribution ($\omega = 0$). When profits are not traded, asset-market clearing becomes

$$\bar{D}(r)(s_W + s_\Pi) = \frac{s_K}{r} \quad \Rightarrow \quad r\bar{D}(r) = \frac{s_K}{1-s_K} = \frac{\alpha}{\mu-\alpha}. \tag{13}$$

In this case, capital is the only asset supplied. Profits affect the asset market only through entrepreneurs' income. Since workers and entrepreneurs have the same asset demand per dollar of

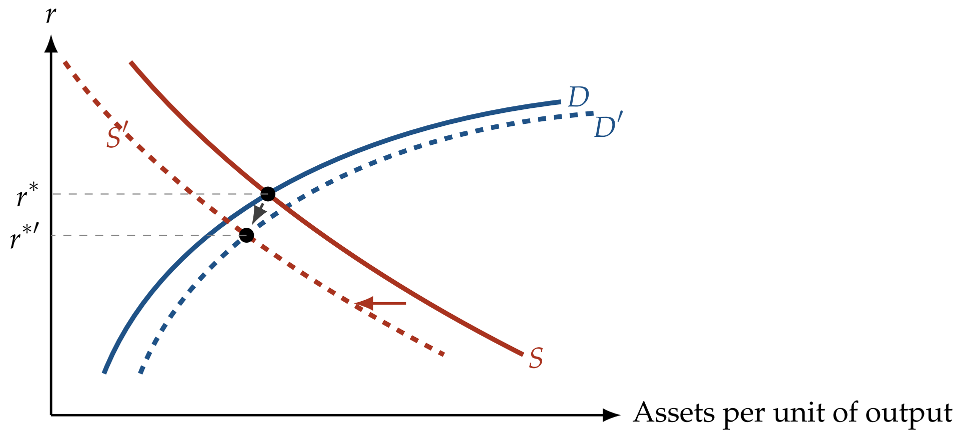

Figure 2: Redistribution: A higher markup lowers the capital share s_K and raises the non-capital income share $s_W + s_\Pi$. Asset demand shifts outward and asset supply shifts inward, and the equilibrium interest rate falls from r^* to $r^{*\prime}$.

income, asset demand depends on the combined non-capital share, $s_W + s_\Pi = 1 - s_K$. Asset supply depends on the capital share, s_K. A higher markup lowers s_K. It therefore raises asset demand per unit of capital income and reduces asset supply. Both changes lower the equilibrium interest rate. In the figure, demand shifts out, supply shifts in, and the equilibrium return falls from r^* to $r^{*\prime}$.

We visualize these forces in Figure 2. The horizontal axis is assets per unit of output, and the vertical axis is the interest rate. When μ rises, the capital share s_K falls and the combined worker-entrepreneur income share, $s_W + s_\Pi = 1 - s_K$, rises. At a fixed interest rate, households demand more assets, so D shifts right. The same decline in s_K reduces the supply of capital claims, so S shifts left. At the initial interest rate r^*, asset demand exceeds asset supply. The interest rate falls until lower household asset demand and higher capitalized asset supply restore market clearing.

Asset creation ($\omega = 1$). When profits are fully traded and claims are priced at $Q(r) = 1/r$, asset-market clearing becomes

$$\bar{D}(r)(s_W + s_\Pi) = \frac{s_K + s_\Pi}{r} \quad \Rightarrow \quad r\bar{D}(r) = \frac{s_K + s_\Pi}{s_W + s_\Pi} = \frac{1 - s_W}{1 - s_K} = \frac{\mu - 1 + \alpha}{\mu - \alpha}. \tag{14}$$

In this case, profits enter asset supply as tradable claims. Profits also affect asset demand through entrepreneurs' income, as in redistribution. Since workers and entrepreneurs have the same asset demand per dollar of income, asset demand depends on the combined non-capital share, $s_W + s_\Pi = 1 - s_K$. A higher markup lowers s_K, so asset demand rises. Asset supply now depends on capital claims plus profit claims, $s_K + s_\Pi = 1 - s_W$. A higher markup lowers s_W, so traded profit claims expand asset supply. With $\alpha < 1/2$, the supply expansion exceeds the demand expansion, so the equilibrium interest rate rises. In the figure, demand shifts out, supply shifts out by more, and the equilibrium return rises from r^* to $r^{*\prime}$.

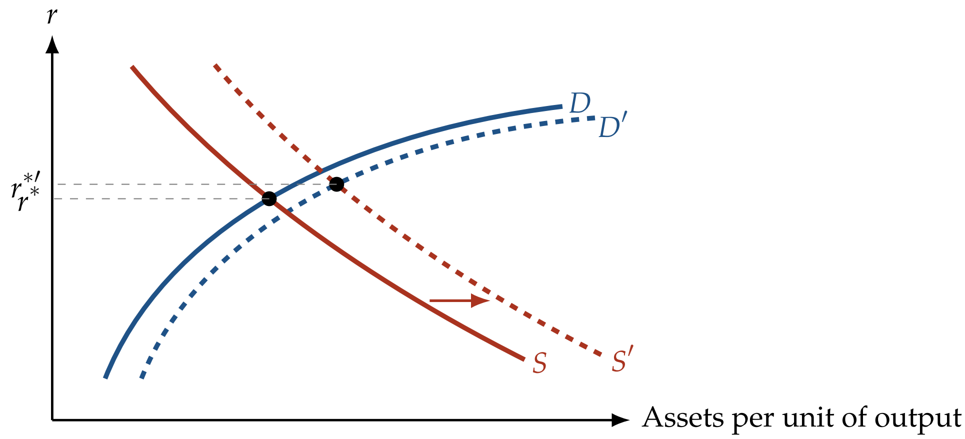

Figure 3: Asset creation: A higher markup raises the value of tradable profit claims. Asset demand shifts outward and asset supply shifts outward by more, and the equilibrium interest rate rises from r^* to $r^{*\prime}$.

We visualize these forces in Figure 3. The horizontal axis is assets per unit of output, and the vertical axis is the interest rate. When μ rises, the capital share s_K falls and the labor share s_W falls. The decline in s_K raises $s_W + s_\Pi = 1 - s_K$, so D shifts right. The decline in s_W raises $s_K + s_\Pi = 1 - s_W$, so S also shifts right. At the initial interest rate r^*, asset supply exceeds asset demand. The interest rate rises until higher household asset demand and lower capitalized claim values restore market clearing.

The role of saving heterogeneity. Saving heterogeneity governs the demand side of redistribution. Rich households save more out of income, and entrepreneurs are disproportionately represented among rich households (Mian, Straub and Sufi, 2021*b*). We summarize this difference by $\lambda(r) > 1$: one dollar of profit income creates more asset demand than one dollar of labor income.

In the quantitative exercise, the calibration determines $\lambda(r)$ and its derivative from asset-to-income ratios in the Survey of Consumer Finances. To isolate the force, hold $\lambda > 1$ fixed. Asset-market clearing becomes

$$\underbrace{\bar{D}(r)\,(s_W + \lambda s_\Pi)}_{\text{asset demand per unit of output}} = \underbrace{\frac{s_K + \omega\, s_\Pi}{r}}_{\text{asset supply per unit of output}} .$$

A higher profit share raises asset demand with weight λ, while a higher labor share raises asset demand with weight one. Saving heterogeneity therefore strengthens redistribution relative to asset creation. As profit income moves toward entrepreneurs, asset demand expands more sharply, and the equilibrium return falls for a wider range of tradable profit shares.

Figure 4 plots this comparison for the observed markup rise. Moving right raises asset creation. Measured saving heterogeneity strengthens redistribution enough to keep the return response negative over the plotted range. Section 5 measures these objects and solves the nonlinear model.

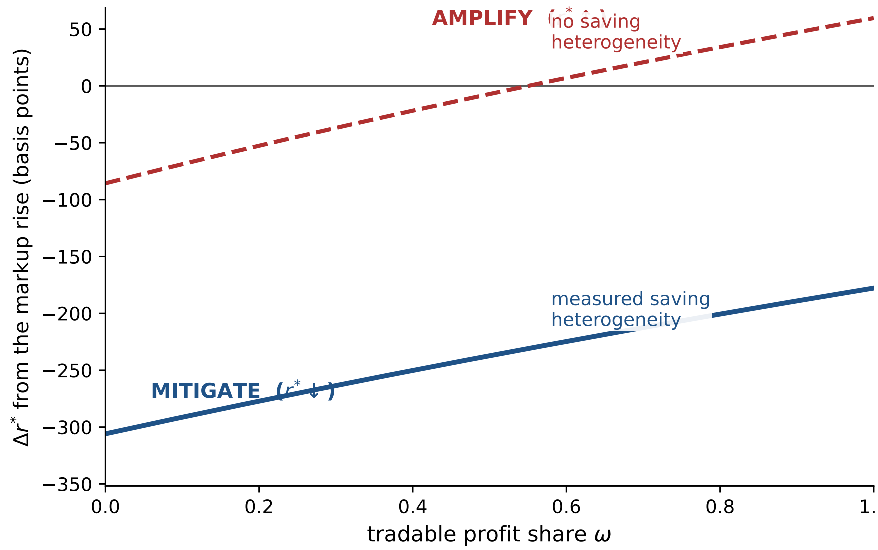

Figure 4: Saving heterogeneity and the sign of the return response. The figure plots the change in r^* from the markup rise against the tradable profit share ω. Without saving heterogeneity, increasing ω moves profits from private income into tradable claims and can raise r^*. With measured saving heterogeneity, profit income creates enough asset demand to keep the return response negative over the plotted range. The figure evaluates the closed-form statistic (11) at the undistorted baseline.

Table 2: Qualitative effect of market power with $\lambda = 1$

	Markup ($\mu \uparrow$)		**Markdown** ($\nu \uparrow$)	
Asset creation ($\omega = 1$)	$r^* \uparrow$	amplifies	$r^* \uparrow$	amplifies
Redistribution ($\omega = 0$)	$r^* \downarrow$	mitigates	neutral	

Labor market power. We now discuss the case of labor market power. Holding the markup fixed, a higher markdown leaves the capital share unchanged, lowers the labor share, and raises the profit share one-for-one. In the redistribution case, $\omega = 0$, profits are not traded, so asset supply is unchanged. If $\lambda = 1$, workers and entrepreneurs have the same asset demand per dollar of income. The markdown then reallocates non-capital income from workers to entrepreneurs without changing aggregate asset demand. The equilibrium return is neutral. If $\lambda > 1$, the same reallocation raises asset demand because profit income accrues to entrepreneurs with higher asset demand per dollar of income. The return falls.

In the asset creation case, the higher profit share also creates tradable claims. With equal asset demand per dollar of income, aggregate asset demand is unchanged while asset supply rises, so the equilibrium return rises. Saving heterogeneity pushes this case back toward mitigation. Table 2 reports our qualitative finding.

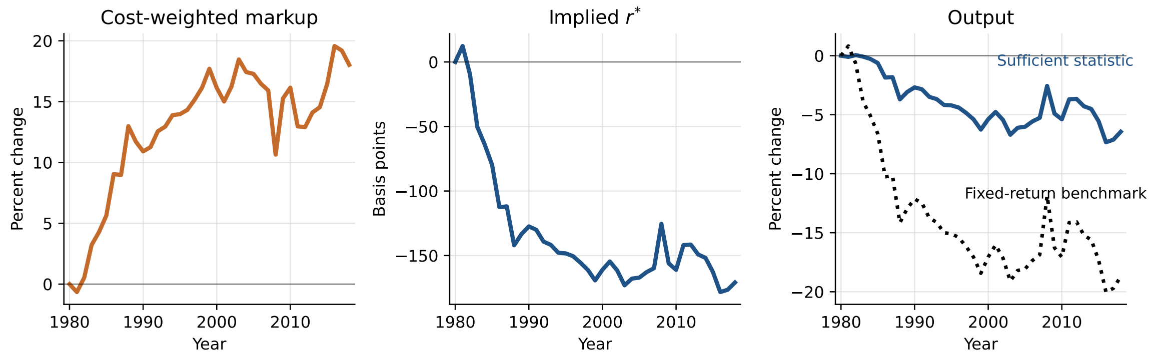

Figure 5: The sales-harmonic markup path through the sufficient statistic. Panel A plots the implied-cost-weighted product-markup path, normalized to 1980. Panel B plots the implied path of r^* from (11). Panel C compares the output response implied by the sufficient statistic with the fixed-return representative-agent benchmark.

4.1 A second glance at the data: the markup path through the sufficient statistic

The first pass through the data used broad factor-share movements to sign the asset-market effect. This pass takes the sales-harmonic product-markup path as the rent-shock path and prices it through (11). The object is the long-run return that clears the asset market after the markup changes the capital share, the labor share, and the profit share. The calculation holds fixed the transition distribution and the evolution of household states; the next section embeds the same markup path in the nonlinear economy.

The statistic uses the baseline incidence parameters developed below: $\lambda = 5.42$, $\omega = 0.49$, an annual capital depreciation rate of 0.05, and $\delta_C = 0.06$. The calculation closes household asset demand with a constant semi elasticity around the calibrated steady state, so each point in the markup path asks how far r^* must move for the baseline asset demand slope to clear the asset market.

A higher product markup lowers the capital share $s_{K,t}$ and the labor share $s_{W,t}$, and raises the profit share $s_{\Pi,t}$. Profit income enters household asset demand with weight λ because active owner-managers hold more assets per dollar of active income than workers. Tradable profit claims enter asset supply with weight ω and price $Q(r)$. At the baseline calibration, the demand created by profit income dominates the supply created by tradable claims. The equilibrium return falls until household asset demand again equals the supply of capital and tradable rent claims.

Figure 5 reports the sufficient-statistic paths. The sales-harmonic markup rises by 13.2% by 2002, and the statistic lowers r^* by 204 basis points. At that date, output is 1.6% above baseline through the sufficient statistic, compared with a 14.3% loss at a fixed return. The markup peaks in 2016 at 15.4% above its 1980 value, when the statistic lowers r^* by 225 basis points. By 2018, the markup remains 14.0% above its 1980 level, r^* is 212 basis points lower, and output is 1.5% above baseline, compared with a 15.1% loss at a fixed return. The lower return reduces the user cost of capital and absorbs most of the fixed-return output loss.

The next section measures λ and ω, embeds the same sales-harmonic markup path in the nonlinear heterogeneous-agent economy, and compares the global perfect-foresight transition to this sufficient-statistic path.

5 Quantification

We quantify the markup experiment by feeding the observed U.S. sales-harmonic markup path into the nonlinear heterogeneous-agent economy. The calibration uses SCF asset and active-income moments to set λ, a corporate-profit split to set ω, and the Compustat markup series to move μ_t. The experiment holds demographics, fiscal policy, and other determinants of the long-run rate fixed, then compares the transition with a representative-agent GHH economy that has the same technology and markup path but a fixed return.

The answer depends on the destination of rents. Higher markups shift income away from labor and reproducible capital and toward profits. When these profits accrue to active owner-managers, they raise household asset demand, with the strength of this force governed by the entrepreneur asset-demand multiplier λ. When profits are capitalized into tradable claims, they expand asset supply, with the strength of this force governed by the tradable-rent share ω. We therefore discipline both objects empirically.

The structure of the exercise is empirical first and quantitative second. The SCF measures assets per dollar of active income for active business owners and workers. IRS SOI and Compustat measure the split between private profit income and tradable profit claims. The Compustat markup series supplies the rent-shock path. With these objects in place, the nonlinear transition asks how the asset market clears and how the user cost feeds back into output and wealth concentration. The sufficient statistic in Section 4.1 gives the same economic force in closed form; the transition adds household distributions, wealth accumulation, and nonlinear general-equilibrium dynamics.

5.1 Asset demand

Household asset demand enters the quantification through asset demand curve $D(r)$, and also the saving rate differential $\lambda(r)$. For our baseline stationary economy, λ compares the assets entrepreneurs demand per dollar of entrepreneur income with the assets workers demand per dollar of worker income:

$$\lambda = \frac{\text{entrepreneur assets per dollar of entrepreneur income}}{\text{worker assets per dollar of worker income}}.$$

A value above one means that a shift of income from workers to entrepreneurs raises household asset demand and lowers the return required to clear the asset market, holding asset supply fixed.

Table 3: SCF active-income asset-demand multiplier

Period	Active-income λ
1989	3.71
All waves	**5.42**
2016–22	7.63
2022	7.73

Notes: Entrepreneurs are active business owners in the exact weighted top five percent of net worth within the age-18–64 SCF universe. The worker group is the complement in the same universe. Active income is wage and salary income plus business and farm income. Ratios use survey weights and average across implicates.

The SCF provides the empirical counterpart since it reports assets and active income. We define active income as wage and salary income plus business income. That is, active income excludes financial income, in line with our framework. We identify entrepreneurs as active business owners in the top five percent of the age-18–64 wealth distribution. A household is an active owner if the head, spouse, or partner is self-employed, actively manages a business, and reports either a non-C-corporate business or a C-corporation. The worker group is the complement within the same age-18–64 universe. This definition follows the model's economic interpretation: entrepreneurs manage businesses and hold enough wealth for business income to be a plausible empirical counterpart of profit income, instead of an alternative form of labor income (Smith et al., 2019).

For each SCF wave, we compute assets per dollar of active income for top-five active owners and for the worker complement, then take the ratio. Table 3 reports the resulting active-income multiplier. The all-wave ratio is 5.42, so the baseline sets $\lambda = 5.42$. The 1989 value is 3.71. The ratio rises to 7.63 in 2016–22 and 7.73 in 2022. The all-wave moment targets the persistent difference in asset demand per dollar of active income between active owner-managers and workers. With $\lambda = 5.42$, a dollar of profit income assigned to entrepreneurs carries much more asset demand than a dollar of labor income assigned to workers.

This ratio is close to the finding in Mian, Straub and Sufi (2021*b*). They measure saving out of income at the top of the distribution, reporting that the top one percent by wealth saved 53.6% of income after 1982 (up from 42.9% before), against 7.1% for the bottom ninety-nine percent (down from 13.8%), a ratio of roughly 7.5 that, like ours, widens over time from about 3 in the earlier period. We measure accumulated assets per dollar of production-side income for active owner-managers and workers. Both moments imply that income paid to high-wealth business owners enters aggregate asset demand with a larger weight than labor income.

We calibrate the worker and entrepreneur problems so that their asset demand matches this evidence. The worker problem determines $\bar{D}(r)$, the level and slope of desired assets per dollar of labor income. Workers have mass $N_W = 0.979$ and GHH preferences with an intertemporal elasticity of 0.5 and a Frisch elasticity of 0.5. They face idiosyncratic earnings risk with persistence 0.91 and innovation dispersion 0.92, as in Storesletten, Telmer and Yaron (2004), and cannot borrow.

We choose their discount factor jointly with productivity and the initial wedges so that the stationary economy delivers a real return of 5%, output and labor normalized to one, and a profit share of 4%. At these values $\bar{D}(r)$ has a finite local slope around the baseline return.

The entrepreneur problem determines λ. Entrepreneurs have mass $1 - N_W = 0.021$, the all-wave SCF active-owner mass under the definition above, share the workers' intertemporal elasticity, and face stochastic rent shares. Their rent-share process has persistence $\rho_z = 0.762$ and dispersion $\sigma_z = 3.76$, matching the pass-through-owner income process in DeBacker, Panousi and Ramnath (2023). Taking the worker schedule as given, we set the entrepreneur discount factor so that the model reproduces $\lambda(r_0) = 5.42$. A private entrepreneur earns a profit flow Πz. Incorporation, which arrives at rate κ, converts that future flow into a tradable claim priced by (7); the entrepreneur collects the sale proceeds and then waits, with exit hazard δ_C, for a replacement business. Current profits therefore enter household demand while incorporated future profits enter asset supply, and it is this incidence distinction that the transition prices.

5.2 Measuring tradable rent supply

The second incidence object is the share of rents capitalized into tradable claims. The model object is the market value of traded rent claims, $Q(r)\omega\Pi$. Firm counts and legal form are only imperfect proxies, because a private firm can carry a large rent flow and a public firm can carry little profit income. The complement, $1 - \omega$, remains inside active private ownership and therefore enters the demand side of the asset market through λ.

We discipline this object with an IRS SOI/Compustat profit-split calculation. The directly measured object is the private share of nonfinancial corporate (NFC) profits:

$$\text{private profit share} = \frac{\text{total NFC net income} - \text{public NFC profits}}{\text{total NFC net income}}.$$

The total comes from IRS Statistics of Income data on S- and C-corporations. Public-firm profits come from Compustat, with listed-firm taxable domestic income proxied by grossing up current federal tax expense by the statutory tax rate, following the book-tax accounting literature (Manzon and Plesko, 2002; Desai and Dharmapala, 2006). Because book and taxable income differ, we compute several adjustment variants around this baseline rather than treating any single tax-accounting measure as literal economic profit. Two important qualifications: first, the denominator excludes partnerships, which account for a substantial share of business profits and are often highly profitable (Smith et al., 2019); since these firms are largely private, this tends to understate the private profit share. Second, the measure is based on net income, so it includes normal returns to capital as well as pure rents. To the extent public firms are more capital intensive than private firms, the public firm subtraction is too large relative to pure rents, again biasing the private share downward. We therefore interpret the baseline as a lower bound on the private profit share.

Table 4 reports both the measured private share and the implied tradable complement. The

Table 4: Private profit share and implied tradable rent share

Construction	Private share $(1-\omega)$	Implied tradable share ω
Unadjusted taxable domestic private share	0.48	0.52
Book-tax adjusted baseline	**0.51**	**0.49**
Current-federal-tax fallback	0.48	0.52
Less tax-loss carryforward change	0.58	0.42
Plus investment tax credits	0.52	0.48
Plus unrecognized tax benefits	0.57	0.43

Notes: Entries are means over 1994–2022. The private share is total nonfinancial corporate profits minus public-firm profits, divided by total nonfinancial corporate profits. The implied tradable share is its complement. Total nonfinancial corporate profits are IRS SOI net income for C- and S-corporations (no partnerships). Public profits are Compustat-implied taxable domestic profits for listed nonfinancial firms. Appendix C, Table A2, reports the extended measurement table.

private share is near one half, so the tradable share is also near one half. The baseline sets $\omega = 0.49$, equal to the book-tax adjusted tradable share and near the center of the implied tradable-share range, 0.42–0.52. Given $\delta_C = 6\%$, this value implies $\kappa = \omega\delta_C/(1-\omega) = 5.8\%$.

The construction uses profit flows rather than firm counts. Private C-corporations and private-equity-held firms can be non-traded; acquisitions can turn private rents into tradable claims without an IPO. A profit-flow split is closer to the model object than a count of public firms, while still remaining an approximation. It is also consistent with the evidence in Smith et al. (2019): the rise of pass-through business income after 1986 points to a large private-business margin owned by active households. In the model, that margin is what keeps part of the rent stream on the demand side of the asset market instead of capitalizing it immediately as traded supply.

5.3 Markup estimation

The third empirical input is the estimated markup path, $\{\mu_t\}$. It supplies the time-varying product-market wedge whose rents are priced by the incidence objects λ and ω. The factor-share identities in Section 2.1 require an aggregate inverse markup, so the relevant aggregate is the sales-weighted harmonic mean of firm markups:

$$\mu_t = \left(\sum_i s_{it}\mu_{it}^{-1}\right)^{-1} = \frac{\sum_i p_{it}y_{it}}{\sum_i p_{it}y_{it}/\mu_{it}}, \qquad s_{it} \equiv \frac{p_{it}y_{it}}{\sum_j p_{jt}y_{jt}}.$$

The sales-weighted harmonic average of firm-level markups is equivalent to the cost-weighted markup, which is the relevant aggregate wedge in our framework. Throughout the quantification, we therefore use the term “cost-weighted markup” to refer to the sales-weighted harmonic average of firm-level markups.

We estimate firm-level markups for publicly listed Compustat firms using the production-function approach of De Loecker and Warzynski (2012), following the implementation in De Loecker, Eeckhout and Unger (2020) and De Ridder, Grassi and Morzenti (2025). We treat the cost of goods sold as the variable input and net property, plant, and equipment as capital. We estimate a common translog production function separately within each two-digit NAICS industry (excluding finance and real estate), allowing for year fixed effects. This yields a firm-year estimate of the output elasticity with respect to the variable input, $\hat{\theta}^{v}_{it}$. Firm-level markups are then obtained using the ratio estimator,

$$\hat{\mu}_{it} = \hat{\theta}^{v}_{it} \frac{\text{sales}_{it}}{\text{COGS}_{it}},$$

and the annual aggregate markup applies the harmonic formula above. This aggregate markup enters the share identities: when μ_t rises, $s_{K,t}$ and $s_{W,t}$ fall, $s_{\Pi,t}$ rises, and the asset market moves through λ and ω.

However, as emphasized in the recent literature, the production function approach does not identify the level of markups, even though it does identify their aggregate time-series variation (De Ridder, Grassi and Morzenti, 2025). We therefore recover the initial markup level by separately targeting the baseline profit share. The resulting transition is then

$$\mu_t^{\text{model}} = \mu_0 \frac{\hat{\mu}_t^{\text{estimated}}}{\hat{\mu}_{1980}^{\text{estimated}}},$$

where μ_0 is chosen jointly with the other baseline targets in Table 5. The sales-harmonic path rises by 13.2% by 2002, reaches 15.4% above its 1980 value in 2016, and remains 14.0% above its 1980 value in 2018. The sufficient statistic and the nonlinear perfect-foresight transition use this same normalized path. Appendix C.1 reports the sample, cleaning rules, aggregation arithmetic, and the arithmetic sales-weighted comparison.

5.4 Calibration

Table 5 summarizes the remaining parameters and calibration targets. The baseline calibration matches the required return, the initial profit share, and the SCF-implied asset-demand multiplier. Given the observed profit share of 4% in 1980, the implied initial product markup is $\mu_0 = 1.0417$. The quantitative exercise feeds the sales-harmonic markup path from 1980 to 2018 into μ_t, normalized to the model's 1980 markup. As a comparison, we also consider a representative-agent GHH economy in which the return is held fixed.[3]

We match the baseline interest rate and the baseline asset-demand differential λ by choosing group-specific discount factors. The remaining parameters are standard or taken from the literature. This calibration implies worker and entrepreneur discount factors of $\beta_W = 0.864$ and $\beta_E = 0.913$, respectively.

[3]The fixed-rate benchmark uses the same technology with GHH labor supply: $d \log Y = -\frac{(1+\varphi)\alpha}{1-\alpha} d \log \mu - \varphi \, d \log(\mu\nu)$ at fixed r. All representative-agent comparisons use this GHH benchmark.

Table 5: Calibration

Panel A. Externally calibrated parameters			
Capital elasticity	α	1/3	NIPA capital share
Capital depreciation	δ_K	0.05	BEA fixed assets
Claim exit hazard	δ_C	0.06	CRSP delisting rate
Tradable rent share	ω	0.49	IRS SOI / Compustat
Frisch elasticity	φ	0.50	Standard
EIS	$1/\sigma$	0.50	Standard
Entrepreneur population share	$1 - N_W$	0.021	SCF active owners, top 5% wealth, ages 18–64
Earnings risk	ρ_e, σ_e	0.91, 0.92	Auclert et al. (2021)
Rent-share risk	ρ_z, σ_z	0.76, 3.76	DeBacker, Panousi and Ramnath (2023)
Panel B. Internally calibrated parameters and targets			
		Data	Model
Real interest rate	r_0	5.0%	5.0%
Baseline profit share	$s_{\Pi 0}$	4.0%	4.0%
Asset-demand multiplier	λ	5.42	5.42
Panel C. Untargeted checks			
		Model	Data
Capital–output ratio	K/Y	3.20	$\sim$3
Household assets–output ratio	D/Y	3.38	3.7
Top-1% wealth share		0.23	0.23–0.34

Notes: Panel B reports the moments targeted by $(\beta_W, \beta_E, \mu_0)$ and normalizations. The top-1% check is computed from the all household wealth distribution and is distinct from the aggregate entrepreneur wealth share. The top-wealth data range combines wealth from the World Inequality Database.

5.5 Transition results

Figure 6 reports the transition path of aggregate variables in response to the observed rise in market power. The return and output panels are measured relative to the calibrated 1980 steady state, so the first dated point includes the anticipation effect from the announced markup path. The sales-harmonic markup peaks in 2016 at 15.4% above its 1980 level. At that date, the heterogeneous-agent economy exhibits a 233-basis-point decline in the return and output is 2.3% above baseline, compared with a 16.4% output loss in the representative-agent fixed-return benchmark.

By 2018, the markup remains 14.0% above its 1980 level, the return is 216 basis points lower, and output is 2.9% above baseline, compared with a 15.1% output loss in the fixed-return benchmark. The last panel shows the distributional impact of market power. The model top-1% wealth share rises by 94.2% relative to its initial value. Applied to the calibrated baseline top-1% wealth share in Table 5, this is a rise from 23.0% to 44.7%, or 21.7 percentage points. The WID top-1% net-wealth share rises from 23.2% in 1980 to 35.2% in 2018, a 12.0 percentage point increase. By the end of the sample, the asset market more than offsets the fixed-return output loss. It reallocates the cost of rising market power: aggregate output changes little, but wealth concentration rises substantially.

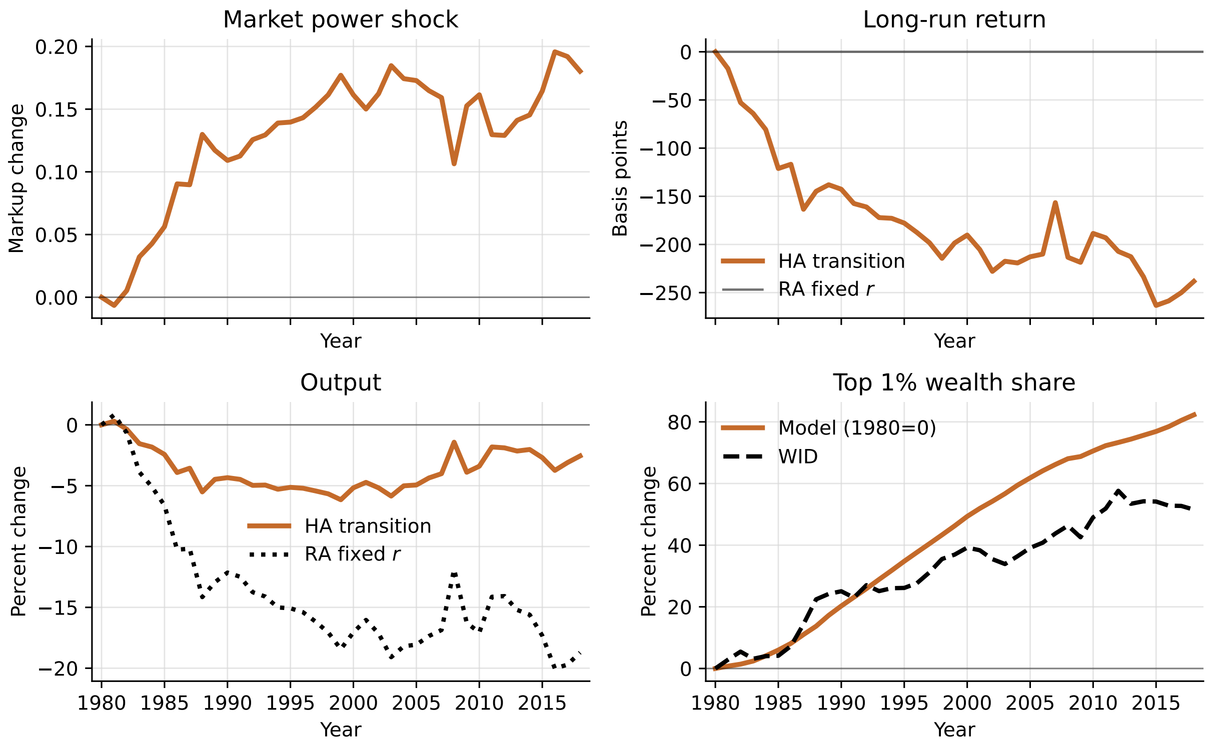

Figure 6: Transition under the estimated sales-harmonic markup path. The first panel plots the markup relative to 1980. The next two panels compare the heterogeneous-agent transition, in which the return clears the asset market, with a representative-agent GHH benchmark that holds the return fixed. Return and output responses are measured relative to the calibrated steady state. The last panel reports the model top-1% wealth share and the WID top-1% net-wealth share, both normalized to 1980.

5.6 Sufficient statistic

We now apply the analytical formula to the observed markup path. The markup path supplies the factor shares $(s_{K,t}, s_{W,t}, s_{\Pi,t})$, and the calibration supplies the incidence objects λ and ω, the depreciation rates δ_K and δ_C, and the baseline asset demand slope $\epsilon_D = \partial \log \bar{D}(r)/\partial r$. Household asset demand is closed with a constant semi elasticity around the calibrated steady state:

$$\log \bar{D}(r_t) - \log \bar{D}(r_0) = \epsilon_D (r_t - r_0).$$

For each year, the sufficient statistic solves the asset market equation

$$r_t \, \bar{D}(r_t) = \frac{\chi(r_t) s_{K,t} + \zeta(r_t) s_{\Pi,t}}{s_{W,t} + \lambda s_{\Pi,t}}.$$

The calculation evaluates the observed share movements and the claim valuation terms $\chi(r_t)$ and $\zeta(r_t)$ at the solved return. It holds fixed the transition distribution, wealth accumulation along the transition path, and other general-equilibrium feedbacks. Conditional on the baseline incidence

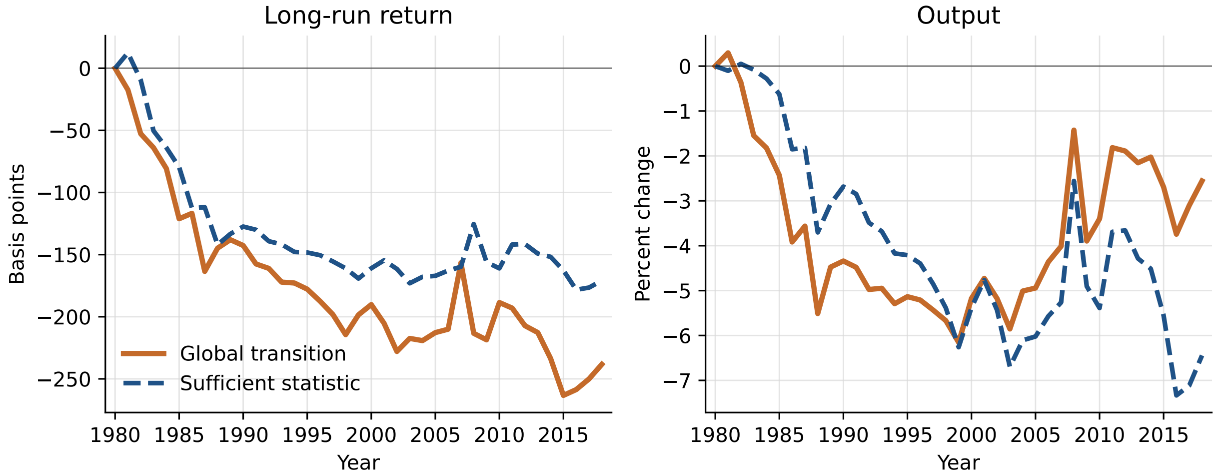

Figure 7: Global transition and sufficient statistic. The figure compares the sales-harmonic global perfect-foresight transition with the sufficient-statistic path computed from the same markup series and the same baseline calibration. Panel B also reports the representative-agent fixed-return output benchmark.

objects and asset demand slope, it asks how the observed markup path affects the return and output. Figure 7 compares the resulting sufficient-statistic path with the full transition.

Figure 7 shows how much of the full transition is captured by the sufficient statistic. The global path begins in 1980 with the return already 27 basis points below the calibrated steady state and output 2.7% above steady state, reflecting the anticipation effect in the perfect-foresight equilibrium. The sufficient statistic starts from the calibrated steady state by construction. By 2018, the global transition lowers the return by 216 basis points, while the sufficient statistic predicts a decline of 212 basis points. For output, the global transition is 2.9% above baseline and the sufficient statistic is 1.5% above baseline; both are far from the 15.1% loss in the fixed-return benchmark. We use the sufficient statistic to isolate the asset-market forces behind these responses.

Decomposing channels. Figure 8 decomposes the sufficient statistic implied return and output paths by attributing the changes to each term in the sufficient-statistic formula. Four forces emerge. First, the decline in the labor share s_W raises the return by 34.8 basis points because workers receive less income and therefore demand fewer assets. Second, the decline in the capital share lowers the return by 52.2 basis points because households need to hold fewer productive assets.

The dominant forces are redistribution and asset creation. Redistribution lowers the return by 263.1 basis points because a larger share of income accrues to entrepreneurs, who have higher asset demand per dollar of active income. Asset creation raises the return by 68.6 basis points because a higher profit share generates additional tradable rent claims. Overall, the redistribution effect dominates, leading to a decline in the equilibrium return.

Panel B of Figure 8 decomposes the muted output response. Holding the return fixed, an

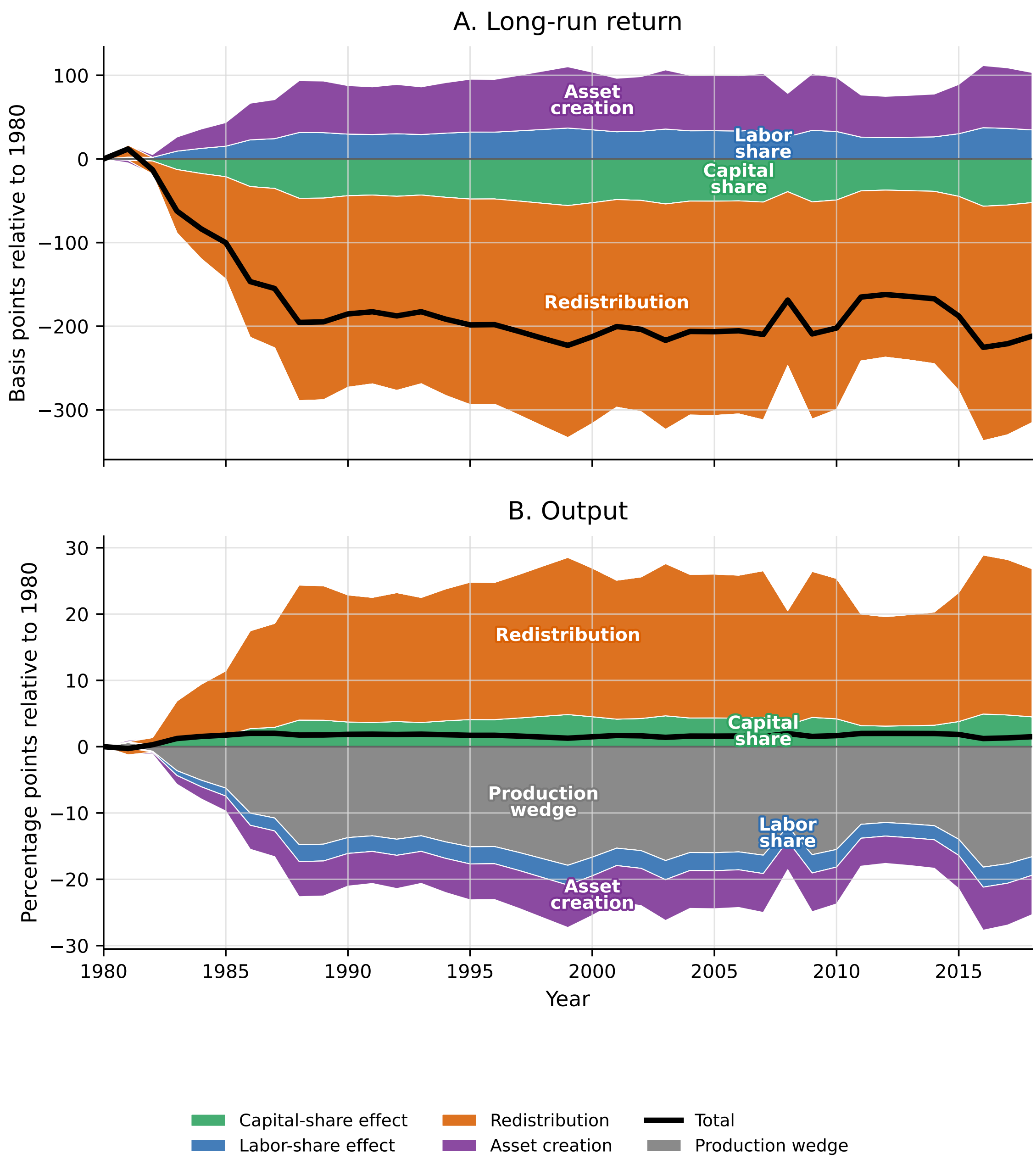

Figure 8: Decomposition of the sufficient-statistic return and output paths. Panel A reports contributions to $r_t^* - r_{\text{baseline}}^*$ in basis points. Panel B reports contributions to the output response in percentage points. The black lines are the total sufficient statistic responses. In Panel B, the gray area is the production wedge component; the colored areas map the asset market terms into output through the user cost.

increase in the markup depresses output by reducing firms' demand for capital. However, because the redistribution effect dominates and lowers the equilibrium return, the user cost of capital falls, offsetting most of the output loss that would arise under a fixed return.

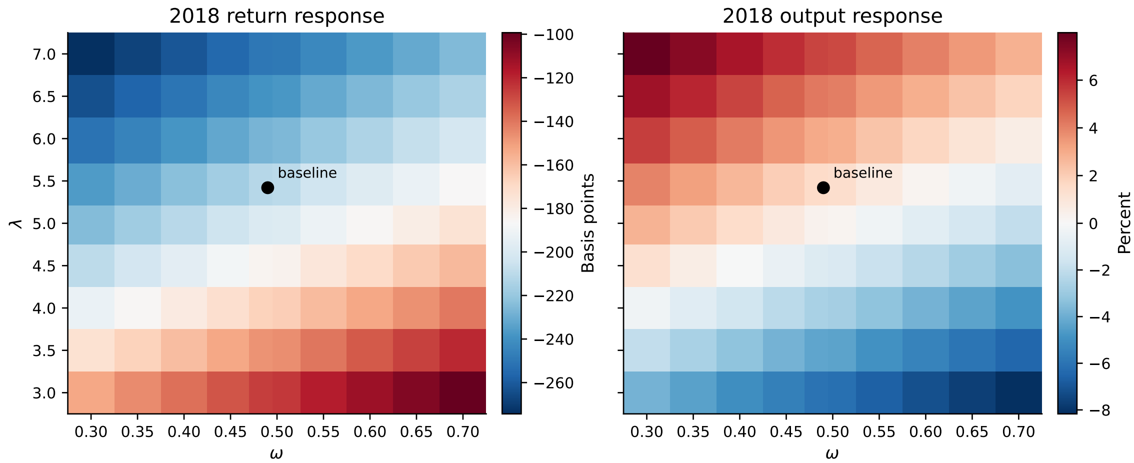

Figure 9: Incidence robustness over λ and ω. The figure reports the 2018 sufficient-statistic response to the cost-weighted markup path. Panel A plots the long-run return response in basis points. Panel B plots the output response in percent. The black point marks the baseline calibration.

Sensitivity of the results. Our analytical results highlight the importance of the two parameters governing the relative strength of redistribution and asset creation. We now examine the sensitivity of our conclusions to alternative values of (λ, ω) in Figure 9. To this end, we again leverage the sufficient statistic, evaluating the effects of the observed markup path under different parameter pairs. Specifically, we report the sufficient-statistic responses in 2018 to the same observed markup path. The exercise holds the asset-demand semi-elasticity fixed, varies λ over $[3, 7]$, and varies ω over $[0.3, 0.7]$. This design isolates the effects of the two incidence parameters without requiring a full recalibration of household discount factors.

The heat map illustrates the competition between redistribution and asset creation. Moving down the rows increases λ, strengthening the asset-demand effect of redistribution and lowering the equilibrium return. Moving across the columns increases ω, expanding the supply of tradable rent claims and raising the return. Across all alternative calibrations, the redistribution effect dominates the asset creation effect, so rising markups reduce rather than increase equilibrium returns. Consequently, the output response remains much more muted than in the fixed-return benchmark because equilibrium interest rates fall substantially across all calibrations.

Asset demand semi-elasticity. The sufficient statistic and the global transition give similar return movements because both depend on the slope of household asset demand. Let

$$\epsilon_D(r) \equiv \frac{\partial \log \bar{D}(r)}{\partial r}.$$

This semi-elasticity governs how much the required return must move to clear the asset market when a higher markup reallocates income and creates tradable rent claims. If this slope changed sharply over the relevant range of returns, the baseline sufficient statistic would give a poor guide

Table 6: Asset Demand Semi-elasticity

State	r	All HH	Workers	Entrep.	Claims
Calibrated baseline	5.00%	**10.92**	9.02	16.50	9.09
Long-run SS at 2018 markup	2.10%	7.51	7.80	7.29	12.35

Notes: All HH, Workers, and Entrep. report $\partial \log D/\partial r$. Claims reports $-\partial \log Q/\partial r$. Semi-elasticities are per unit change in the annual return. Thus an entry of 10.92 means that a 100-basis-point increase in the return raises desired assets by about 10.9 log points. The second row evaluates local slopes in the steady state that holds the 2018 markup fixed; Figure 6 reports the dated perfect-foresight path through 2018.

to the nonlinear transition. In the calibrated economy, the slope remains finite and of the same order of magnitude between the baseline steady state and the long-run steady state at the 2018 markup. Table 6 reports the local slope at the calibrated steady state and at the steady state that holds the 2018 markup fixed. The table also reports the semi-elasticity of tradable claim values.

The baseline aggregate semi-elasticity is 10.92. Entrepreneurs have a steeper asset demand schedule than workers at the calibrated steady state, so rent income that accrues to entrepreneurs raises aggregate desired assets more strongly at a given return. This slope is finite and leaves the asset market far from the perfectly elastic capital supply in the representative-agent benchmark.

The second row evaluates the same object after the markup reaches its 2018 level. Aggregate asset demand remains imperfectly elastic, with $\epsilon_D = 7.51$. The entrepreneur slope falls from 16.50 to 7.29, while the claim-value semi-elasticity rises from 9.09 to 12.35. Figure 10 shows the reason. A change in the return affects entrepreneur demand through two forces. The direct saving response raises desired assets when the return rises, holding the value of incorporation proceeds fixed. The valuation induced demand response lowers desired assets because a higher return reduces the sale value of future rent claims. The second force becomes larger in magnitude when the required return is low, since the duration of tradable rent claims is higher.

The decomposition makes the change in the entrepreneur slope transparent. At the calibrated baseline, the direct saving response is 18.37 and valuation induced demand is -1.87, giving a total entrepreneur semi-elasticity of 16.50. In the long run steady state at the 2018 markup, the direct saving response falls to 11.34 and the valuation induced response becomes -4.05, giving a total of 7.29. Private and liquid entrepreneurs receive similar asset weights in both steady states, so the decline comes from the local demand curves, especially the liquid founder demand curve. This is the valuation effect behind the similarity between the sufficient statistic and the global transition: the nonlinear model changes the distribution and the transition path, while the return movement remains governed by an asset demand slope of the same order of magnitude.

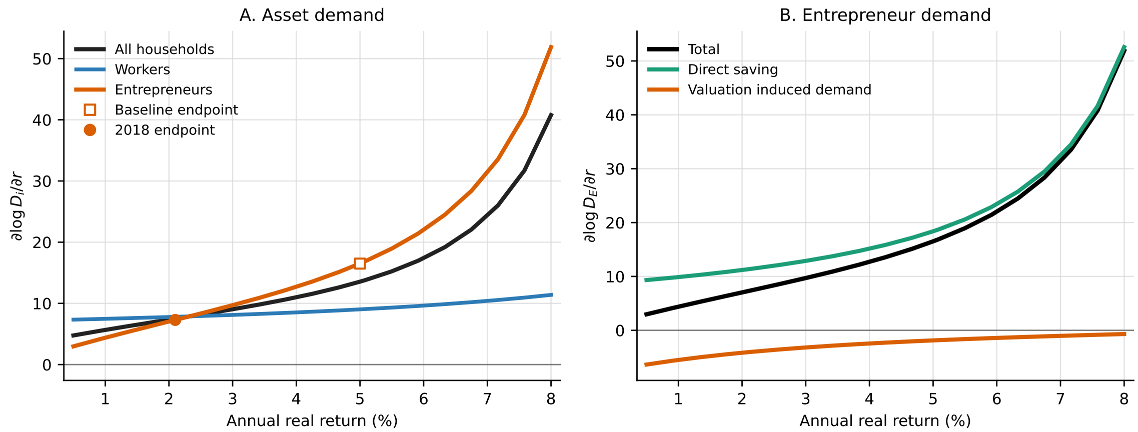

Figure 10: Asset demand semi elasticity and the valuation effect. Panel A plots local semi elasticities for all households, workers, and entrepreneurs. The curves use the cash flow environment of the long run steady state at the 2018 markup. The square marks the entrepreneur semi elasticity at the calibrated baseline; the circle marks the long run endpoint. Panel B decomposes entrepreneur demand in the same long run cash flow environment into the direct saving response and the valuation induced demand response. The direct saving response changes the household return holding sale proceeds fixed. The valuation induced demand response changes the IPO transfer grid holding the household return fixed.

6 Welfare and Policy

6.1 Welfare object

Note about welfare: it seems like entrepeneurs are having a huge welfare lost due to very high entrepeneurial income risk. I think we may want to focus on worker welfare only.

The welfare statistic for Figure 6 is a date-1980 consumption-equivalent variation over the solved transition. It compares transition value functions, including continuation values, to the no-shock 1980 economy. For workers, the CEV scales the GHH net-consumption index; for entrepreneurs, it scales consumption. The calculation uses baseline population weights and each group's own intertemporal elasticity.

Table 7 reports long-run welfare costs. Workers lose 7.9% in net-consumption-equivalent terms. Entrepreneurs lose much more because the transition raises profit rents but also reallocates risk and asset prices across entrepreneur states; under CRRA preferences, low-consumption states receive high marginal utility weight. The population-weighted CEV is −8.7%. The utilitarian welfare-index CEV is close to the entrepreneur number because the utilitarian aggregator values those high-marginal-utility entrepreneur states strongly. For this reason, the worker and entrepreneur rows are the most transparent welfare objects.

Marketable wealth, not all wealth. The headline distribution object is the top-1% share of marketable wealth, the object emphasized in the tax-capitalization literature on top wealth (Saez

Table 7: Transition welfare cost

	CEV (%)
Workers	-7.9
Entrepreneurs	-46.3
Population-weighted CEV	-8.7
Utilitarian SWF CEV	-46.3

Notes: The table reports date-1980 transition CEVs for the observed product-markup path. The population-weighted row averages the group CEVs using baseline masses. The utilitarian row is the uniform proportional change in the baseline welfare index that reproduces transition social welfare. With CRRA curvature and a small entrepreneur group exposed to large rent-income risk, the utilitarian row puts substantial weight on low-consumption entrepreneur states; the group rows show the incidence behind that number.

and Zucman, 2016; Smith, Zidar and Zwick, 2023). Expanded wealth measures that add Social Security and defined-benefit pensions are useful for distributional accounting (Congressional Budget Office, 2024), but they do not map directly into the asset-market clearing condition. This is the sense in which the paper studies marketable wealth and rent-claim exposure rather than post-tax inequality.

Product markups versus labor markdowns. The transition in Figure 6 uses the observed cost-weighted product-markup path. The same sufficient statistic applies to labor markdowns, but the current nonlinear transition code feeds a path for μ_t into the dynamic policy block. A symmetric markdown transition requires feeding a path for ν_t and recomputing the transition.

The asset-creation object is a market value. The supply object is the market value of claims to rents, not the number of listed firms. Acquisitions can move private rents into listed incumbents without an IPO, and delisting removes traded claims without eliminating the underlying business. The flow-of-funds version of ζ should separate issuance, revaluation, and retirement.

The level versus the safe rate. The model has one return, so it does not decompose the observed decline between safe rates and risky returns, the wedge emphasized by Farhi and Gourio (2018). Section 7 describes the two-asset extension where this distinction belongs.

Worker capture of markdown rents. If workers recapture part of monopsony rents through rent-sharing (Lamadon, Mogstad and Setzler, 2022; Kline et al., 2019), the markdown component of s_Π shrinks. The markdown transition would scale down. The markup transition is unchanged.

Other drivers of r^*. Demographics, fiscal policy, and global asset demand move the same asset market (Auclert et al., 2021; Rachel and Summers, 2019; Del Negro et al., 2019; Kopecky and Taylor, 2022). The experiments here hold those forces fixed and report the ceteris paribus effect of wedge changes.

7 Extensions in Progress

Four extensions are under way; each is stubbed here deliberately, with its role in the argument stated.

7.1 Transition welfare and markdown dynamics

The markup transition dates the aggregate, distributional, and welfare effects of product market power. One dynamic object remains: the observed markdown path should enter the nonlinear transition as a path for ν_t, so the labor-market experiment is solved with the same discipline as the product-markup path.

7.2 The fiscal block

Government bonds belong in asset supply only together with the taxes that service them: proportional labor and profit taxes preserve the model's exact scaling, and the statistic generalizes with after-tax shares plus a bond term, with the government budget as a side condition. Bonds financed by taxes on saving-generating income raise r^* unambiguously; profit-tax-financed debt acts as an asset swap that securitizes rents at par rather than at $\zeta(r) < 1$. The lesson already visible: adding a bond stock to supply *without* modeling its tax financing one-sidedly distorts the statistic, which is why the present draft sets $B = 0$ rather than including bonds incompletely.

7.3 Two assets: bonds and equity

With firms financing capital by leverage θ and rent claims priced as equity, the statistic becomes a two-equation system in (r_b, r_e) with asset-specific multipliers λ_b, λ_e and a cross-elasticity parameter. The provisional analytics deliver a sharp horse race for the equity premium: securitized rent creation widens the premium whenever any rents are tradable, while entrepreneurs' portfolio tilt toward equity compresses it—connecting the mechanism to the safe-rate-versus-return-on-capital wedge of Farhi and Gourio (2018) and to demand-system asset pricing (Koijen and Yogo, 2019; Gabaix and Koijen, 2021).

7.4 Measuring ζ from the flow of funds

The supply weight $\zeta(r) = rQ(r)\omega$ has a direct flow-of-funds counterpart: the market value of claims on pure rents held outside the founding household, decomposable into revaluation, incorporation (IPO and acquisition of private firms), and claim destruction (delisting). Building this series—and a time-varying ω_t, given the secular rise of pass-through business (Smith et al., 2019)—is the most direct empirical test of the asset-creation margin.

8 Conclusion

Market power creates rents. This paper shows that rent incidence matters for the long-run return once household asset demand is imperfectly elastic. Profit income paid to high-saving entrepreneurs raises asset demand and lowers the return required to clear the asset market. Profit income capitalized into tradable claims raises asset supply and pushes the return upward. The equilibrium effect of market power therefore depends on two incidence objects: the entrepreneur asset-demand multiplier, λ, and the tradable rent share, ω.

We derive a sufficient statistic that maps factor shares, λ, and ω into the long-run return. The statistic clarifies why the representative-agent fixed-return benchmark can overstate the output cost of market power. In that benchmark, the return absorbs none of the markup shock, so firms reduce capital demand and output falls sharply. In the heterogeneous-agent economy, rent income shifts toward households with high asset demand. At measured U.S. incidence, this redistribution force dominates asset creation, the long-run return falls, and the lower user cost offsets much of the production distortion.

The quantitative exercise applies this logic to the estimated U.S. sales-harmonic markup path. We discipline λ using SCF active-income and wealth moments for active business owners and workers, and discipline ω using the split between private profit income and tradable profit claims. Along the perfect-foresight transition, the long-run return falls by 216 basis points by 2018. Output is 2.9 percent above the calibrated baseline, compared with a 15.1 percent loss in the fixed-return representative-agent benchmark. The model also produces a large rise in the top 1 percent wealth share. The asset market absorbs much of the output cost through a lower return, and this absorption comes with a distributional cost.

The paper therefore connects two facts often studied separately: rising market power and falling long-run returns. Profit income can lower the natural rate when it accrues to high-saving owners, even though capitalized profit claims work in the opposite direction. The sign and magnitude depend on rent incidence. This distinction also matters for interpreting wealth concentration. A lower return raises the valuation of tradable rent claims, while profit income paid to high-saving entrepreneurs increases asset accumulation at the top.

We are currently extending the analysis to welfare and policy. The welfare question is how the transition reallocates consumption, risk, business-sale values, and wealth across households. The policy question is how antitrust enforcement, labor-market policy, profit taxation, and public rent recapture change the destination of rents. Policies that generate similar production-side wedges can have different effects on the long-run return, output, and wealth concentration because they assign rents to different balance sheets. Evaluating these policies requires pricing the asset-market incidence of rents together with the production distortion that creates them.

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A Proofs and Derivations

A.1 Aggregation with heterogeneous wedges

This appendix derives the aggregate representation used in Section 2.1. Firm i produces $y_i = z_i v_i$ from a common constant returns input composite $v_i = F(k_i, \ell_i)$ with unit cost c_v. Aggregate output is a homothetic index with $PY = \int p_i y_i \, di$. Define $q_i \equiv y_i / Y$ and $s_i \equiv p_i y_i / (PY)$.

Productivity. Aggregate use of the input composite is

$$V = \int \frac{y_i}{z_i} \, di = Y \int \frac{q_i}{z_i} \, di.$$

Hence $Y = ZV$, with

$$Z^{-1} \equiv \int q_i z_i^{-1} \, di.$$

The allocation of output across producers determines Z through a quantity weighted harmonic mean of firm productivities.

Aggregate markup. The aggregate markup is the cost-weighted arithmetic mean of firm markups, equivalently the sales-weighted harmonic mean. Since $p_i = \mu_i c_v / z_i$, firm revenue satisfies $p_i y_i = \mu_i c_v v_i$. Aggregating gives

$$PY = c_v V \mu, \qquad \mu \equiv \int \mu_i \frac{v_i}{V} \, di.$$

Thus $P = \mu c_v / Z$. Moreover,

$$s_i = \frac{\mu_i}{\mu} \frac{v_i}{V}, \qquad \mu^{-1} = \int s_i \mu_i^{-1} \, di.$$

This is the Edmond, Midrigan, and Xu aggregation: aggregate marginal cost uses the cost-weighted markup, which is the sales-weighted harmonic mean.

Factor shares and aggregate markdown. Now let the common composite be Cobb–Douglas, $v_i = k_i^{\alpha} \ell_i^{1-\alpha}$. Capital is rented competitively and labor is marked down. The firm factor shares are

$$\frac{r^k k_i}{p_i y_i} = \frac{\alpha}{\mu_i}, \qquad \frac{w_i \ell_i}{p_i y_i} = \frac{1-\alpha}{\mu_i \nu_i}.$$

Integrating against revenue shares gives

$$s_K = \alpha \int \frac{s_i}{\mu_i} \, di = \frac{\alpha}{\mu}, \qquad s_W = (1-\alpha) \int \frac{s_i}{\mu_i \nu_i} \, di = \frac{1-\alpha}{\mu \nu}.$$

The aggregate markdown separates the labor wedge from the product wedge:

$$\nu^{-1} = \frac{\int s_i(\mu_i \nu_i)^{-1}\,di}{\int s_i \mu_i^{-1}\,di}.$$

Using the firm labor share condition,

$$\nu_i w_i \ell_i = (1-\alpha)\mu_i^{-1} s_i PY,$$

so the same object can be written as

$$\nu^{-1} = \int c_i \nu_i^{-1}\,di, \qquad c_i \equiv \frac{\nu_i w_i \ell_i}{\int \nu_j w_j \ell_j\,dj}.$$

The weights c_i are shares of the shadow wage bill, the wage bill that would be paid if the markdown wedge were removed holding employment fixed. This is the labor market analogue of the cost weights in the aggregate markup. The observed wage bill is already reduced by the markdown, so the aggregate markdown must be weighted by shadow labor cost.

The aggregate factor shares are therefore

$$s_K = \frac{\alpha}{\mu}, \qquad s_W = \frac{1-\alpha}{\mu\nu}, \qquad s_\Pi = 1 - s_K - s_W.$$

Under the common Cobb–Douglas technology, heterogeneous markups and markdowns enter factor shares only through μ and ν.

Misallocation. Let $\mathcal{Z}^*$ denote frontier TFP and let $\Omega \le 1$ denote misallocation, so realized TFP is $A = \Omega \mathcal{Z}^*$. Under Cobb–Douglas, Ω contains two components. The first is the output allocation term $Z/\mathcal{Z}^*$ from the allocation of output across producers. The second is an input mix component. Since

$$V = \int k_i^\alpha \ell_i^{1-\alpha}\,di = K^\alpha L^{1-\alpha} \int \hat{k}_i^\alpha \hat{\ell}_i^{1-\alpha}\,di,$$

where $\hat{k}_i \equiv k_i/K$ and $\hat{\ell}_i \equiv \ell_i/L$, aggregate output can be written as

$$Y = Z\left(\int \hat{k}_i^\alpha \hat{\ell}_i^{1-\alpha}\,di\right) K^\alpha L^{1-\alpha}, \qquad \Omega = \frac{Z}{\mathcal{Z}^*}\int \hat{k}_i^\alpha \hat{\ell}_i^{1-\alpha}\,di.$$

Markup dispersion affects Ω through Z. Markdown dispersion also affects Ω through the input mix component because it changes how each firm combines capital and labor. Substituting the factor demands gives

$$\hat{k}_i \propto \frac{s_i}{\mu_i}, \qquad \hat{\ell}_i \propto \frac{s_i}{\mu_i \nu_i w_i}, \qquad \frac{\hat{\ell}_i}{\hat{k}_i} \propto (w_i \nu_i)^{-1}.$$

The markup cancels from the relative input choice, while the markdown adjusted wage remains. By Jensen's inequality, the input mix component is at most one, with equality if and only if $w_i \nu_i$ is constant across firms. A second order expansion gives

$$\int \hat{k}_i^{\alpha} \hat{\ell}_i^{1-\alpha}\, di \simeq 1 - \frac{\alpha(1-\alpha)}{2} \mathrm{Var}_{\hat{k}}\big(\log w_i \nu_i \big).$$

Thus markdown dispersion lowers Ω by distorting the input mix across firms. Realized output is

$$Y = AK^{\alpha} L^{1-\alpha}.$$

This is the production side separation used in the main text: under Cobb–Douglas, wedge dispersion affects realized TFP, while factor shares depend on the cross section only through the aggregate wedges.

A.2 Misallocation and the Asset Market Channel

This appendix measures how much the baseline separation changes when production is CES in place of Cobb–Douglas. The exercise holds aggregate wedges fixed and summarizes dispersion by realized TFP, $A = \Omega \mathcal{Z}^*$. We abstract from markdown dispersion, so that Ω remains a single Hicks-neutral object and the economy is represented by a common-wedge CES firm. The question is whether a change in Ω moves the asset market by changing factor shares.

Under Cobb–Douglas, a fall in Ω lowers output but leaves factor shares unchanged. The return equation is therefore unchanged. Under CES, factor shares depend on the user cost of capital relative to productivity, r^k/A. A fall in Ω raises r^k/A, changes the capital and labor shares, and moves the return through the asset market equation. The response is proportional to $1 - \sigma_{KL}$ and vanishes at $\sigma_{KL} = 1$.

Let production be constant returns to scale and CES,

$$Y = A\, F(K, L), \qquad F = [\alpha K^{\rho} + (1-\alpha) L^{\rho}]^{1/\rho}, \qquad \rho = \frac{\sigma_{KL} - 1}{\sigma_{KL}},$$

with capital elasticity $\varepsilon_K \equiv F_K K / F$, where σ_{KL} is the elasticity of substitution between capital and labor and is distinct from the household's CRRA parameter. The user cost satisfies $r^k = (A/\mu) F_K$, and the factor shares are $s_K = \varepsilon_K / \mu$, $s_W = (1 - \varepsilon_K)/(\mu \nu)$, and $s_{\Pi} = 1 - s_K - s_W$.

The capital cost share responds to the relative price of capital with elasticity $1 - \sigma_{KL}$, so, holding

Table A1: Effect of misallocation on shares and the return under CES production ($d\log\Omega = -0.03$, $\epsilon_D = 10.9$).

σ_{KL}	dr	ds_K	ds_W
0.6	$+10$ bp	$+0.51$ pp	-0.51 pp
0.8	$+4$ bp	$+0.22$ pp	-0.22 pp
0.9	$+2$ bp	$+0.10$ pp	-0.10 pp
1.0	0 bp	0 pp	0 pp
1.1	-2 bp	-0.09 pp	$+0.09$ pp
1.2	-3 bp	-0.18 pp	$+0.17$ pp

Notes: The baseline sets $\nu = 1$, so $ds_\Pi = -\frac{\nu-1}{\nu} ds_K = 0$ in this exercise. Calibration $r = \delta_K = 0.05$, $\delta_C = 0.06$, $\omega = 0.49$, $\lambda = 5.42$, $\mu = 1.0417$, $\nu = 1$, $\varepsilon_K = 1/3$.

the wedges fixed,

$$d\log\varepsilon_K = (1-\sigma_{KL})\, d\log\frac{r^k}{A},$$

$$ds_K = (1-\sigma_{KL})\, s_K\, d\log\frac{r^k}{A},$$

$$ds_W = -\frac{1}{\nu}\, ds_K, \qquad ds_\Pi = -\frac{\nu-1}{\nu}\, ds_K.$$

A fall in Ω raises r^k/A. Under gross complements ($\sigma_{KL} < 1$) the capital share s_K rises and the labor share s_W falls; under gross substitutes ($\sigma_{KL} > 1$) s_K falls and s_W rises. The rent share s_Π moves by $-(\nu-1)/\nu$ times the move in s_K, a move more than an order of magnitude smaller, and is zero at $\nu = 1$.

These shifts move the right side of the asset market equation $r\bar{D}(r) = (\chi s_K + \zeta s_\Pi)/(s_W + \lambda s_\Pi)$, and r adjusts to restore it. Differentiating at the Cobb–Douglas baseline and using $r^k = r + \delta_K$, the return solves

$$\left[\frac{1}{r} + \epsilon_D - \frac{\delta_K s_K (r+\delta_K)^{-2} + \omega\delta_C s_\Pi (r+\delta_C)^{-2}}{\chi s_K + \zeta s_\Pi}\right] dr$$
$$= (1-\sigma_{KL})\, s_K \left[\frac{\chi - \zeta\frac{\nu-1}{\nu}}{\chi s_K + \zeta s_\Pi} + \frac{1+\lambda(\nu-1)}{\nu(s_W+\lambda s_\Pi)}\right]\left(\frac{dr}{r+\delta_K} - d\log\Omega\right),$$

where $\epsilon_D = \partial\log\bar{D}/\partial r$ is the asset demand semielasticity and the bracket on the left is the slope of the asset market in r, positive at the calibration. The right side is proportional to $1-\sigma_{KL}$, so a fall in Ω raises r under complements and lowers it under substitutes. The semielasticity ϵ_D enters only the left side slope, so a more inelastic asset demand, a smaller ϵ_D, clears the shift with a larger move in r. The rise in r raises r^k, which reinforces the share movement under complements and offsets it under substitutes, so the response is larger under complements; the positive asset market slope keeps that feedback bounded.

The perturbation $d \log \Omega = -0.03$ lies within the 2 to 6% value added misallocation losses measured by Edmond, Midrigan and Xu (2023). Attributing the entire loss to the experiment would roughly double the entries. Over the central range $\sigma_{KL} \in [0.6, 1.2]$, the return moves by at most 10 basis points. The corresponding rent share movement is zero because the baseline sets $\nu = 1$. At $\sigma_{KL} = 0.5$, a stress case below most estimates, the return moves about 14 basis points. These movements are small relative to the 216-basis-point return response generated by the observed aggregate markup path in the main transition. Thus the separation is exact under Cobb–Douglas, and away from Cobb–Douglas the feedback from misallocation to the return remains quantitatively small at estimated elasticities.

A.3 Rent shares from a homothetic single-aggregator (HSA) demand system

This appendix microfounds the rent-share state z and shows it carries no markup dispersion, so the cross-section stays in the common-wedge case of Section 2. Demand comes from a homothetic single-aggregator (HSA) system (Matsuyama and Ushchev, 2017) with a multiplicative appeal shifter. The asset market needs a distribution of rent shares with the properties the calibration targets, and the construction below is one microfoundation that delivers them.

Demand. A continuum of product lines $m \in \mathcal{M}$ is consumed in quantities q_m. Demand is

$$q_m = z_m \frac{E}{\mathcal{A}} D\left(\frac{p_m}{\mathcal{A}}\right),$$

where E is aggregate expenditure and $z_m > 0$ is a multiplicative appeal shifter with $\int_{\mathcal{M}} z_m \, dm = 1$. The function D is positive, twice differentiable, and strictly decreasing, with elasticity $\varepsilon(x) \equiv -xD'(x)/D(x) > 1$ and ε nondecreasing (Marshall's second law), so the pricing problem below has a unique interior solution. The single aggregator $\mathcal{A}$ is defined by the adding-up condition $\int_{\mathcal{M}} z_m \,(p_m/\mathcal{A})\, D(p_m/\mathcal{A})\, dm = 1$, which has a unique positive root under these conditions. The appeal z_m is a *pure horizontal* taste shifter, orthogonal to marginal cost; quality interpretations that raise cost are excluded precisely because they would move the markup. The system nests CES, $D(x) = x^{-\varepsilon}$.

Appeal is markup-neutral. Lines are priced atomistically: each takes $\mathcal{A}$ and E as given, even though ownership is organized into positive-measure baskets below. The perceived demand elasticity is

$$-\frac{\partial \log q_m}{\partial \log p_m} = \varepsilon\left(\frac{p_m}{\mathcal{A}}\right),$$

which depends on $p_m/\mathcal{A}$ alone and not on z_m: a multiplicative shifter scales the demand curve without rotating it. With common marginal cost c, every line solves the same first-order condition $p_m = \mu(p_m/\mathcal{A})\, c$, where $\mu(x) = \varepsilon(x)/(\varepsilon(x) - 1)$, so all lines set the same price $p^\star$ and the same markup $\mu^\star$. The cross-section is markup-homogeneous by construction.

Rent shares. At the symmetric price the adding-up condition gives $(p^\star/\mathcal{A})D(p^\star/\mathcal{A}) = 1$, so the revenue share is $s_m = z_m(p_m/\mathcal{A})D(p_m/\mathcal{A}) = z_m$ and line profit is $\pi_m = (1 - 1/\mu^\star)p_m q_m \propto z_m$. The measure of lines is fixed and there is no free entry, so Π is a pure rent to incumbent ownership with no free-entry dissipation. Aggregate pure profit is

$$\Pi = \int_{\mathcal{M}} \pi_m \, dm = \left(1 - \tfrac{1}{\mu^\star}\right) E = \left(1 - \tfrac{1}{\mu^\star}\right) Y,$$

set by the common markup and independent of the cross-sectional distribution of $\{z_m\}$. With a common labor markdown ν, markdown rents accrue to each line in proportion to its size and distribute in the same shares, so z is the entrepreneur's share of *total* aggregate rents.

Ownership and dynamics. Entrepreneurs own baskets of lines $\{B_i\}$ that partition $\mathcal{M}$. Entrepreneur i earns

$$\pi_i = \Pi \, z_i, \qquad z_i \equiv \int_{B_i} z_m \, dm, \qquad \int z_i \, di = \int_{\mathcal{M}} z_m \, dm = 1.$$

The owner-specific shock is a *basket-level common factor* that scales the appeal of every line in B_i together, so it survives aggregation within the basket and makes z_i a non-degenerate, stationary, mean-one process—the AR(1) for z in the calibration. Were appeal shocks instead independent across an entrepreneur's continuum of lines, a law of large numbers would make z_i deterministic and the idiosyncratic rent risk would vanish. Because the shocks are relative, $\int z_i \, di = 1$ at every date: they reallocate rents across entrepreneurs without moving aggregate profit Π, the factor shares, or realized TFP. The rent distribution is thus orthogonal to the Section 2 accounting, which is what lets the household problem scale exactly with Π.

What the construction requires. Three features are essential, and each is a modeling choice. (i) Lines are infinitesimal and priced atomistically, so each entrepreneur takes substitution within her basket as external; with internalization, markups would rise in basket share (Atkeson and Burstein, 2008) and dispersion would return. (ii) Appeal enters multiplicatively and is orthogonal to cost; cost heterogeneity, or quality entering as a price equivalent, would move $p_m/\mathcal{A}$ across lines and break markup homogeneity. (iii) The appeal shocks are relative, so the cross-sectional reallocation leaves the aggregate markup, Π, and realized TFP untouched.

A.4 Stationary legal-state masses and the tradable share

Let N_P, N_C, N_L be the masses of private businesses, incorporated businesses, and liquid entrepreneurs. The laws of motion are

$$N_{P,t+1} = (1-\kappa)N_{P,t} + \delta_C N_{L,t}, \quad N_{C,t+1} = (1-\delta_C)N_{C,t} + \kappa N_{P,t}, \quad N_{L,t+1} = (1-\delta_C)N_{L,t} + \kappa N_{P,t}.$$

In the stationary composition with active-business mass $N_P^* + N_C^* = \eta$: $\kappa N_P^* = \delta_C N_C^*$ and $N_L^* = N_C^*$, hence

$$N_C^* = \eta \frac{\kappa}{\kappa + \delta_C}, \qquad N_P^* = \eta \frac{\delta_C}{\kappa + \delta_C}, \qquad N_L^* = \eta \frac{\kappa}{\kappa + \delta_C}.$$

Define the tradable rent share $\omega = \int \tau_j z_j \, dj$ ($\tau_j = 1$ for incorporated claims). If legal status is independent of z (profit-share-neutral incorporation), incorporated businesses carry the stationary z-distribution and $\omega = N_C^*/\eta = \kappa/(\kappa + \delta_C)$, which is (9). Without that restriction the correct supply object is $\int_{\tau_j=1} q(z_j; \Pi, r)\, dj$; the reduced-form object $Q(r)\omega\Pi$ applies under profit-share-neutral incorporation.

A.5 Claim valuation

Dividing (7) by Π, the normalized price $\theta_q(z;r) = q(z;\Pi,r)/\Pi$ solves

$$(1+r)\theta_q(z;r) = \mathbb{E}\left[z' + (1-\delta_C)\theta_q(z';r) \mid z\right],$$

a recursion free of Π. Taking expectations under the stationary distribution of z (mean one) and solving the resulting scalar equation gives $\mathbb{E}_\pi \theta_q = 1/(r + \delta_C)$, which is (8). If z is constant the pointwise price is $q = \Pi z/(r + \delta_C)$.

A.6 Proof of Proposition 1 (linearity)

Proof. **Workers.** With GHH preferences, the intratemporal labor choice can be solved before the savings problem. Let

$$y^W(w,e) = \max_\ell \{we\ell - v(\ell)\}.$$

For $v(\ell) = \psi_\ell \ell^{1+1/\varphi}/(1+1/\varphi)$,

$$y^W(w,e) = \frac{1}{1+\varphi}\psi_\ell^{-\varphi}(we)^{1+\varphi}.$$

Aggregate labor compensation is

$$W = \int we\ell^*(w,e)\, d\Lambda_e = \psi_\ell^{-\varphi} w^{1+\varphi} \int e^{1+\varphi}\, d\Lambda_e,$$

so $y^W(w,e) = W\tilde{e}$ with $\tilde{e} = e^{1+\varphi}/[(1+\varphi)\int e^{1+\varphi} d\Lambda_e]$, which is independent of the aggregate scale W. Setting $x = c - v(\ell)$, $b = a/W$, $b' = a'/W$, and $\hat{x} = x/W$, the worker problem is equivalent to

$$v^W(b,e) = \max_{\hat{x}, b' \geq 0} \{u(\hat{x}) + \beta_W \mathbb{E}[v^W(b',e') \mid e]\}, \qquad \hat{x} + b' = Rb + \tilde{e}.$$

The normalized problem contains no W; the guess $V^W(a,e) = W^{1-\sigma} v^W(a/W, e)$ verifies by homogeneity of u. Normalized policies g_W and the invariant distribution Λ_W^r are therefore independent of W, and

$$D_W(r,W) = W \int g_W(b,e)\, d\Lambda_W^r \equiv \bar{D}(r)\, W.$$

Entrepreneurs. Set $b = a/\Pi$, $\theta = t/\Pi$, $\tilde{c} = c/\Pi$, and let $\theta_q(z;r)$ be the normalized claim price of Appendix A.5, which is independent of Π. Guess $V^P(a,z) = \Pi^{1-\sigma} v^P(b,z)$ and $V^L(t,a) = \Pi^{1-\sigma} v^L(\theta, b)$. The normalized budgets are

$$\tilde{c} + b' = Rb + z \qquad \text{and} \qquad \tilde{c} + b' = Rb + \theta,$$

incorporation sends the entrepreneur to the normalized state $v^L(\theta_q(z;r), b')$, and the transfer state resets to zero unless a replacement business arrives. Neither normalized problem contains Π, so normalized policies g_E and the invariant distribution Λ_E^r are independent of Π, and

$$D_E(r,\Pi) = \Pi \int g_E(b,z,\theta)\, d\Lambda_E^r \equiv \lambda(r)\, \bar{D}(r)\, \Pi.$$

□

A.7 Proof of Theorem 1

Proof. The clearing identity follows from Proposition 1 (demand side), the supply construction $S(r) = K + Q(r)\omega\Pi$ of Appendix A.4–A.5, and market clearing. The factor-share form follows by multiplying clearing by r/Y:

$$r\bar{D}(r)\left[\frac{W}{Y} + \lambda(r)\frac{\Pi}{Y}\right] = \frac{rK}{Y} + rQ(r)\,\omega\,\frac{\Pi}{Y}.$$

Since $r^k = r + \delta_K$, the net capital term is $rK/Y = \chi(r)s_K$ with $\chi(r) = r/(r+\delta_K)$; collecting terms and using $\zeta(r) = rQ(r)\omega$ gives (11). □

A.8 Derivations for Section 4

Redistribution ($\omega = 0$). The statistic is $r\bar{D} = \chi s_K/(s_W + \lambda^P s_\Pi)$ where λ^P is the private-only entrepreneur coefficient. With markup-only Cobb–Douglas shares $(s_K, s_W, s_\Pi) = (\alpha/\mu, (1 -$

$\alpha)/\mu, 1 - 1/\mu)$:

$$r\bar{D}(r) = \frac{\chi(r)\,\alpha/\mu}{(1-\alpha)/\mu + \lambda^P(r)\,(1-1/\mu)},$$

which at $\chi = 1$, $\lambda^P = 1$ collapses to $\alpha/(\mu - \alpha)$, decreasing in μ. With markdown-only shares $(\alpha, (1-\alpha)/\nu, (1-\alpha)(1-1/\nu))$:

$$r\bar{D}(r) = \frac{\chi(r)\,\alpha}{(1-\alpha)/\nu + \lambda^P(r)\,(1-\alpha)(1-1/\nu)},$$

which at $\chi = 1$, $\lambda^P = 1$ collapses to $\alpha/(1-\alpha)$: the denominator $(1-\alpha)/\nu + (1-\alpha)(1-1/\nu) = (1-\alpha)$ exactly, so ν drops out at the equal-asset-demand case. For $\lambda^P > 1$ the denominator is strictly increasing in ν, so r^* strictly falls.

Asset creation ($\omega = 1$, $\delta_C = 0$ so $Q = 1/r$). The statistic is $r\bar{D} = [\chi s_K + s_\Pi]/(s_W + \lambda^I s_\Pi)$. With markup-only shares at $\chi = 1$, $\lambda^I = 1$ this is $(\mu - 1 + \alpha)/(\mu - \alpha)$, increasing in μ iff $\alpha < 1/2$. With markdown-only shares at $\chi = 1$, $\lambda^I = 1$:

$$r\bar{D}(r) = \frac{\alpha + (1-\alpha)(1-1/\nu)}{(1-\alpha)/\nu + (1-\alpha)(1-1/\nu)} = \frac{\alpha}{1-\alpha} + \Big(1 - \frac{1}{\nu}\Big),$$

strictly increasing in ν.

With both wedges and $\lambda^I = 1$, $\chi = 1$,

$$r\bar{D}(r) = \frac{1 - s_W}{1 - s_K} = \frac{1 - \frac{1-\alpha}{\mu\nu}}{1 - \frac{\alpha}{\mu}}.$$

Differentiation gives $\partial/\partial\nu > 0$ and $\partial/\partial\mu \propto (1-\alpha) - \alpha\nu$, the condition used in the asset-creation case.

Local sign comparison. Write the equilibrium as $r\bar{D}(r) = \mathrm{RHS}(r; s_W, s_K, s_\Pi)$ with $\mathrm{RHS} = (\chi s_K + \zeta s_\Pi)/(s_W + \lambda s_\Pi)$; since $r\bar{D}(r)$ is increasing in r, the equilibrium r^* moves in the direction of RHS. A markup raises s_Π by ds_Π and lowers s_K, s_W by $\alpha\, ds_\Pi$ and $(1-\alpha)\, ds_\Pi$; a markdown leaves s_K fixed and moves $ds_W = -ds_\Pi$. Evaluating $d\,\mathrm{RHS}$ at the undistorted baseline ($s_K = \alpha$, $s_W = 1-\alpha$, $s_\Pi = 0$, $N = \chi\alpha$, $D = 1-\alpha$) gives, for the markup,

$$\mathrm{sign}\left(dr^*\right) = \mathrm{sign}\left[(1-\alpha)\,\zeta - \alpha\,\chi\,\lambda\right],$$

so r^* falls iff $\lambda > (1-\alpha)\zeta/(\alpha\chi)$; for the markdown the same computation gives $\mathrm{sign}[\zeta(1-\alpha) - \alpha\chi(\lambda - 1)]$, i.e. $\lambda > 1 + (1-\alpha)\zeta/(\alpha\chi)$. At $\alpha = 1/3$, $\chi = 0.50$, and $\zeta = 0.223$, the transparent cutoffs are 0.89 and 1.89; around the calibrated product markup $\mu_0 = 1.0417$, the markdown cutoff is 1.95.

B Microfoundations of Linear Asset Demand

The sufficient statistic requires only that group asset demands be linear in group permanent income with an upward-sloping $\bar{D}(r)$. This appendix records three standard environments delivering that structure, and a general principle.

B.1 Standard incomplete markets (Aiyagari)

A type-g household with permanent income scale X_g, idiosyncratic income $X_g e_t$, CRRA utility, and no borrowing solves the Bewley–Huggett–Aiyagari problem (Bewley, 1977; Huggett, 1993; Aiyagari, 1994). The argument of Appendix A.6 gives $V_g = X_g^{1-\sigma}\widetilde{V}_g(e, a/X_g)$ and stationary demand $D_g = \bar{D}_g(r)X_g$; precautionary saving makes $\bar{D}_g$ finite below the discount rate and steeply increasing as $r \to \beta^{-1} - 1$.

B.2 Perpetual-youth OLG

With survival probability q, group discount factors β_g, and growth-adjusted returns, the closed form is

$$D_g(r, X_g) = \underbrace{\frac{q^2\big(\gamma_g(r) - 1\big)}{(1 + r - q)\big(1 - q\gamma_g(r)\big)}}_{\bar{D}_g(r)} X_g, \qquad \gamma_g(r) \equiv \big(\beta_g(1+r)\big)^{1/\sigma},$$

with $\beta_E > \beta_W$ delivering $\lambda > 1$ in closed form.

B.3 Asset in utility

With homothetic preferences over consumption and asset services, $\max\,(c^{1-\theta_g}a^{\theta_g})^{1-\sigma}/(1-\sigma)$ subject to $c + \rho(r)a = X_g$, the expenditure share is fixed and $D_g = [\theta_g/\rho(r)]X_g$: linearity from homotheticity, $\lambda > 1$ from heterogeneous θ_g.

B.4 A general homogeneity principle

The structure extends well beyond the baseline. Suppose preferences are CRRA; income flows and transfers scale with the group scale X_g; there is no borrowing; and returns are *scale-free*: the joint distribution of returns (and any aggregate growth shock Γ' with $\mathbb{E}[\Gamma^{1-\sigma}] < \infty$) may depend on the aggregate state, idiosyncratic draws, the group, and *normalized* wealth $b = a/X_g$—but on (a, X_g) only through b. Then value functions satisfy $V_g = X_g^{1-\sigma}v_g(b, \cdot)$ and stationary demand for each asset is linear in X_g. The proof normalizes the budget by X_g and deflates the continuation by $\Gamma'^{1-\sigma}$, the device of Constantinides and Duffie (1996). The principle admits uninsurable idiosyncratic investment risk (Angeletos, 2007), return heterogeneity across groups and increasing in normalized wealth (Fagereng et al., 2020), and Merton-style portfolio choice over many assets; it excludes anything denominated in absolute dollars (fixed participation costs, lump-sum taxes), under which the statistic holds as a local linearization. This is the formal basis for the claim that the asset block of a large model class is summarized by per-dollar coefficients $\{\bar{D}_j, \lambda_j\}$.

C Measurement Appendix

C.1 The Compustat product-markup path

The Compustat-based markup path is constructed from North America annual fundamentals. The raw panel supplies sales, cost of goods sold, net property, plant, and equipment, selling, general, and administrative expense, firm identifiers, fiscal years, and NAICS industries. Sales, variable input costs, and SG&A are deflated with the GDP deflator; capital is net property, plant, and equipment. The estimating sample fills isolated one-year gaps in sales, COGS, and SG&A when adjacent firm-year observations exist, trims the bottom and top one percent of the sales-to-COGS ratio by year, and keeps industries with at least 100 firm-year observations.

The production-function step estimates firm markups within two-digit NAICS sectors. The estimating sample requires positive sales, COGS, capital, and SG&A. The production function is translog and includes date fixed effects. COGS is the variable input and net property, plant, and equipment is the fixed capital input. For firm i in year t, the estimated variable-input elasticity $\hat{\theta}^v_{it}$ implies

$$\hat{\mu}_{it} = \hat{\theta}^v_{it} \frac{\text{sales}_{it}}{\text{COGS}_{it}}.$$

This is the production-function markup formula of De Loecker and Warzynski (2012); the translog implementation follows the Ackerberg–Caves–Frazer control-function approach (Ackerberg, Caves and Frazer, 2015). Revenue-based markups can reflect demand, quality, outsourcing, and variable-input measurement in addition to product-market power (De Ridder, Grassi and Morzenti, 2025). The quantification therefore uses the 1980-normalized movement in the aggregate markup and calibrates the initial profit share inside the model.

The annual aggregate reported in the paper is

$$\hat{\mu}^H_t = \frac{\sum_i \text{sales}_{it}}{\sum_i \text{sales}_{it} / \hat{\mu}_{it}} = \sum_i \omega^c_{it} \hat{\mu}_{it}, \qquad \omega^c_{it} = \frac{\text{sales}_{it} / \hat{\mu}_{it}}{\sum_j \text{sales}_{jt} / \hat{\mu}_{jt}}.$$

The reported "cost-weighted" path is therefore the sales-weighted harmonic aggregate, equivalently an implied-economic-cost-weighted mean. The arithmetic sales-weighted index rises more, by 33.2% at its 2016 peak and 30.4% by 2018. That index records the contribution of revenue reallocation toward high-markup firms. The baseline transition uses the harmonic series because equation (6) maps firm markups into factor shares through inverse markups.

The available aggregate series runs from 1962 to 2018. All transition exercises use the 1980–2018 segment. The raw harmonic markup is 1.0631 in 1980, 1.2270 in 2016, and 1.2118 in 2018. The model

Table A2: Private profit share and implied tradable share

Construction	Private share $(1-\omega)$	Implied tradable share ω
Unadjusted taxable domestic private share	0.48	0.52
Book-tax adjusted baseline	**0.51**	**0.49**
Current-federal-tax fallback	0.48	0.52
Less tax-loss carryforward change	0.58	0.42
Plus investment tax credits	0.52	0.48
Plus unrecognized tax benefits	0.57	0.43

Notes: Entries are means over 1994–2022. The private share is total nonfinancial corporate profits minus public-firm profits, divided by total nonfinancial corporate profits. The implied tradable share is its complement. Public profits are recovered from current federal tax expense grossed up by the statutory rate; the gap between book and taxable income (the "book-tax spread") motivates the adjustment variants (Manzon and Plesko, 2002; Desai and Dharmapala, 2006).

Table A3: SCF moments for the entrepreneur asset-demand multiplier

SCF moment	1989	All waves	2016–22
Entrepreneur mass	2.34%	2.10%	1.90%
Entrepreneur wealth share	29.5%	31.6%	32.9%
Entrepreneur active-income share	10.1%	8.5%	6.1%
Entrepreneur assets / active income	31.42	35.19	45.37
Worker assets / active income	8.49	6.71	5.95
Ratio, active-income basis	3.71	**5.42**	7.63
Ratio, broad-income robustness	3.54	3.53	3.79

Notes: Entrepreneurs are active business owners in the exact weighted top five percent of net worth within the age-18–64 universe. Active income is wage and salary income plus business and farm income. The broad-income robustness adds rent, trust, royalty, pension, Social Security, and disability income for both groups. All ratios use survey weights and average across implicates.

rescales these levels to the calibrated baseline markup, so the inputs to the sufficient statistic and nonlinear transition are the normalized movements 1.1542 in 2016 and 1.1399 in 2018.

C.2 The private profit share and the tradable rent share

Table A2 reports adjustment variants around the private profit share used to infer ω. The model object is a rent-flow share measured with corporate-profit accounts. Private C-corporations and private-equity-held firms can be non-traded; acquisitions can turn private rents into tradable claims without an IPO. A profit-flow split is therefore closer to the model object than a count of public firms, while still approximating a rent-flow share with corporate-profit accounts. The rise of pass-through business income after 1986 (Smith et al., 2019) points to a private-business margin owned by active households, which is the margin captured by $1-\omega$ in the baseline calibration.

C.3 The SCF asset-demand multiplier λ

Table A3 reports the moments behind $\lambda = 5.42$. The all-wave active-income ratio is the baseline because it uses the same income concept for workers and entrepreneurs and averages across waves. The 1989 and recent columns show how the moment varies across periods; the active-income ratio remains above one in every column.

D Quantitative Appendix

D.1 Computation

The nonlinear economy is solved in stationary equilibrium and along the annual perfect-foresight transition. The stationary equilibrium chooses the return, group discount factors, productivity, and baseline wedges to match the targets in Table 5. Household policy functions and invariant distributions determine asset demand for workers and entrepreneurs. Along the transition, the return clears the asset market each year, with market-clearing errors below 2×10^{-8}. The sufficient-statistic calculation uses the same sales-harmonic markup series and the same baseline calibration as the nonlinear transition.

D.2 Sufficient statistic implementation

The sufficient-statistic calculation takes the normalized sales-harmonic markup path as given. For each date t, the markup determines the factor shares $(s_{K,t}, s_{W,t}, s_{\Pi,t})$. The calibration supplies λ, ω, r_0, δ_K, δ_C, and the baseline semi elasticity

$$\epsilon_D = \left. \frac{\partial \log \bar{D}(r)}{\partial r} \right|_{r_0}.$$

Define

$$M(r, s_t) = \frac{\chi(r) s_{K,t} + \zeta(r) s_{\Pi,t}}{s_{W,t} + \lambda s_{\Pi,t}}, \qquad \chi(r) = \frac{r}{r + \delta_K}, \qquad \zeta(r) = \frac{r\omega}{r + \delta_C}.$$

Household asset demand is closed by the constant semi elasticity schedule

$$\bar{D}(r_t) = \bar{D}(r_0) \exp\{\epsilon_D (r_t - r_0)\}.$$

The return plotted in the sufficient-statistic figures is the root of

$$\log\left(\frac{r_t}{r_0}\right) + \epsilon_D (r_t - r_0) = \log M(r_t, s_t) - \log M(r_0, s_0).$$

This scalar equation evaluates the observed share movements, capital depreciation adjustment, and tradable-claim valuation at the solved return. It holds the incidence objects and the asset demand slope fixed at their baseline values, so the statistic isolates the asset-market effect of the markup path before transition distributions and wealth accumulation are added.

D.3 Robustness over entrepreneur definitions

The baseline uses active owners in the top five percent of working-age wealth. Two variants clarify the mapping from the SCF to the model object. Dropping the top-five wealth restriction raises the entrepreneur mass and broadens the owner group in the model. Replacing active income with broad income lowers the all-wave ratio from 5.42 to 3.53, mainly because broad income includes flows that are not paid by the production side of the model. These variants move the level of λ while preserving the economic object: entrepreneur asset demand per dollar of model income relative to worker asset demand.

D.4 The asset-demand semi-elasticity in the data

The elasticity that governs how much of the output cost the asset market absorbs is the asset-demand semi-elasticity $\epsilon_D = \partial \log D / \partial r$. In our calibration it is an equilibrium object, recovered by perturbing the return in the solved model, and it equals 10.92 at the baseline (Table 6). Its empirical counterpart is the semi-elasticity of household capital supply, equivalently asset demand, to the return. In a stationary equilibrium the capital stock and household assets move together, so $d \log K / dr$ and $\partial \log D / \partial r$ coincide up to the asset-to-capital ratio.

Moll, Rachel and Restrepo (2022) survey this semi-elasticity in their study of automation and wealth inequality, where it likewise sets how far the return moves as desired capital shifts. They observe that the available quasi-experimental estimates all lie below 35, far more inelastic than the value near 50 their own model implies. The estimates come from wealth and capital-income tax reforms: Zoutman (2015) and Jakobsen et al. (2020) from Dutch and Danish reforms, Brülhart et al. (2022) from the Swiss wealth tax, and Kleven and Schultz (2014) from Danish income-tax reforms, with implied semi-elasticities $d \log K / dr$ from roughly 1 to 35. Our equilibrium $\epsilon_D = 10.92$ lies within this range. The mapping from ϵ_D to the mitigation share is transparent through the sufficient statistic (11): a more elastic asset market requires a smaller fall in the return to clear and mitigates less, while a more inelastic one mitigates more. The absorption we report rests on an elasticity within the measured range.

D.5 Selected incidence paths

Figure A1 reports dated sufficient-statistic paths for five selected points in the incidence space. Each path uses the cost-weighted markup series and the same fixed asset-demand semi-elasticity as Figure 9. Panel A plots the return that clears the asset market. Panel B plots output and adds the representative-agent fixed-return benchmark generated by the same markup path. The

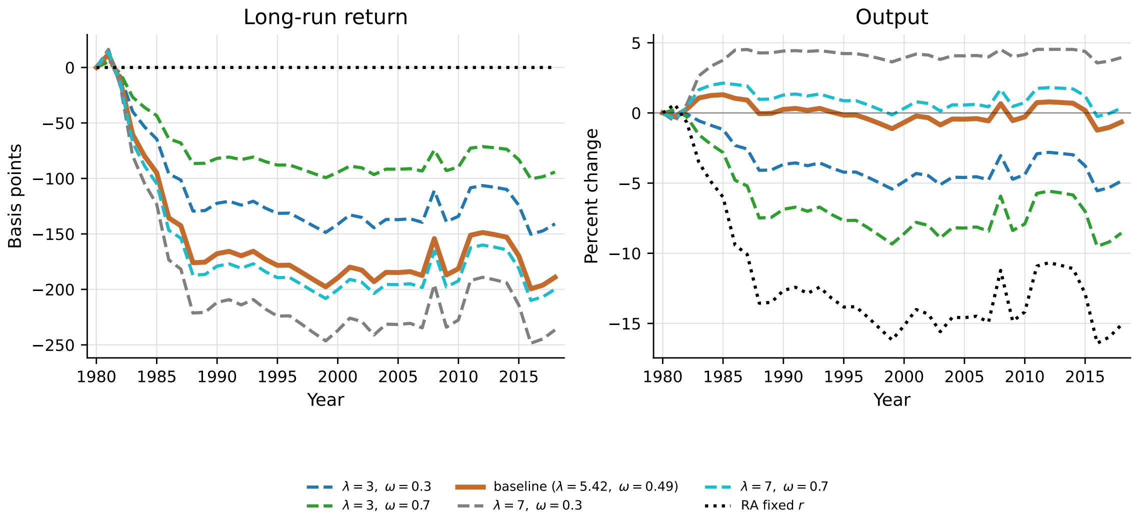

Figure A1: Selected incidence paths. The figure reports sufficient-statistic paths for selected values of λ and ω. Panel A plots the long-run return response in basis points. Panel B plots output responses and includes the fixed-return representative-agent benchmark. The baseline calibration is $\lambda = 5.42$ and $\omega = 0.49$.

representative-agent line is common across points because λ and ω enter asset-market pricing, while fixed-return output depends only on the production-side markup movement.