Redistributive Capital Taxation Revisited

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This paper uses a rich quantitative model with endogenous skill acquisition to show that capital-skill complementarity provides a quantitatively significant rationale to tax capital for redistributive governments. The optimal capital income tax rate is 67%, while it is 61% in an identically calibrated model without capital-skill complementarity. The skill premium falls from 1.9 to 1.84 along the transition following the optimal reform in the capital-skill complementarity model, implying substantial indirect redistribution from skilled to unskilled workers. These results show that a redistributive government should take into account capital-skill complementarity when taxing capital.

JEL classification: E25, J31.

Keywords: Capital taxation, capital-skill complementarity, inequality, redistribution.

Appendix - For Online Publication

A Definition of Competitive Equilibrium for the Cobb-Douglas Economy

The state of a worker of type i in a period t is fully described by the worker's productivity and asset holdings. Let $(z_i, a_i) \in \mathcal{Z}_i \times \mathcal{A}$ denote this state. Let $\Lambda_{i,t}(z_i, a_i)$ denote the distribution of workers of type i across productivities and assets. The initial, $t = 0$, distributions are given exogeneously.

Definition: Given initial conditions, a recursive competitive equilibrium is a government policy $(T_t(.), \tau_t, D_t, G_t)_{t=0}^{\infty}$, allocation for the firm, $(K_t, L_{s,t}, L_{u,t})_{t=0}^{\infty}$, value and policy functions for agents, $(v_{i,t}(z_i, a_i), c_{i,t}(z_i, a_i), l_{i,t}(z_i, a_i), a_{i,t+1}(z_i, a_i))_{t=0,i=u,s}^{\infty}$, skill choices, shares of workers who are skilled, $(\pi_{s,t})_{t=0}^{\infty}$, a price system $(r_t, w_{s,t}, w_{u,t}, R_t)_{t=0}^{\infty}$ and distributions over individual states, $(\Lambda_{i,t}(z_i, a_i))_{t=0,i=u,s}^{\infty}$, such that:

1. In each period $t \geq 0$, taking factor prices as given, $(K_t, L_{s,t}, L_{u,t})$ solves the firm's problem given by:

$$\max_{K_t, L_{s,t}, L_{u,t}} \qquad F(K_t, L_{s,t}, L_{u,t}) - r_t K_t - w_{s,t} L_{s,t} - w_{u,t} L_{u,t},$$

2. Given government policy and the price system, the policy functions solve the consumer's problem given by equation (2) in the paper.

3. Skill choice is consistent with equation (3) in the paper, that is in any period t, all those with $\psi \leq \overline{\psi}_t$ attend college and all other do not. Moreover, the evolution of the fraction of skilled in each period is consistent with skill choice: $\pi_{s,t} = \chi \pi_{s,t-1} + (1-\chi)\pi^n_{s,t}$, where $\pi^n_{s,t} = \int_{\mathbb{R}_+} I_{\psi \leq \overline{\psi}_t}(\psi) dH(\psi)$ is the fraction of newborns who choose to become skilled in period t and $I_{\psi \leq \overline{\psi}_t}(\psi)$ is the indicator function, $\pi^n_{u,t} = 1 - \pi^n_{s,t}$ for all t, and $\pi_{s,0}$ is given.

4. The evolution of distributions of agents across productivities and assets over time is consistent with agent choices. That is, for all $t \geq 0$, $i = u, s$ and $(z'_i, a'_i) \in \mathcal{Z}_i \times \mathcal{A}$:

$$\Lambda_{i,t+1}(z'_i, a'_i) = \frac{\chi \sum_{z_i \in \mathcal{Z}_i} \Pi_i(z'_i|z_i) \int_{\{a_i : a_{i,t+1}(z_i, a_i) \leq a'_i\}} d\Lambda_{i,t}(z_i, a_i) + (1-\chi)\pi^n_{i,t+1} \Lambda^z_i(z'_i)}{\chi + (1-\chi)\pi^n_{i,t+1}},$$

where $(\Lambda_{i,0}(z_i, a_i))_{i=u,s}$ is given and Λ^z_i is the stationary distribution associated with the Markov chain that describes the evolution of the productivity shock for type i.

5. Markets for assets, labor and goods clear: for all $t \geq 0$,

$$K_t + D_t = \sum_{i=u,s} \pi_{i,t} \int_{\mathcal{Z}_i \times \mathcal{A}} a_{i,t}(z_i, a_i) d\Lambda_{i,t-1}(z_i, a_i),$$
$$L_{i,t} = \pi_{i,t} \int_{\mathcal{Z}_i \times \mathcal{A}} l_{i,t}(z_i, a_i) z_i d\Lambda_{i,t}(z_i, a_i), \text{ for } i = u, s,$$
$$G_t + C_t + K_{t+1} = F(K_t, L_{s,t}, L_{u,t}) + (1-\delta)K_t,$$

where

$$C_t = \sum_{i=u,s} \pi_{i,t} \int_{\mathcal{Z}_i \times \mathcal{A}} c_{i,t}(z_i, a_i) d\Lambda_{i,t}(z_i, a_i)$$

is aggregate consumption in period t.

6. The government's budget constraint is satisfied every period: for all $t \geq 0$,

$$G_t + R_t D_t = D_{t+1} + \tau_t(r_t - \delta)K_t + \sum_{i=u,s} \pi_{i,t} \int_{\mathcal{Z}_i \times \mathcal{A}} T_t(l_{i,t}(z_i, a_i) w_{i,t} z_i) d\Lambda_{i,t}(z_i, a_i).$$

B Data Construction

Fraction of skilled agents. The fraction of skilled agents is calculated using Current Population Survey ASEC (March) data of the U.S. Census Bureau (2021*b*). We use data from the 2021 survey and use information about 2017. We focus on males aged 25 and older with earnings and follow Krusell et al. (2000) by defining the fraction of skilled agents as the ratio agents with a bachelor's degree or more divided by the total number of agents in Table P-16.

Government consumption-to-GDP ratio. The government consumption-to-output ratio is recovered from the National Income and Product Accounts (NIPA) data of U.S. Bureau of Economic Analysis (2021). It is defined as the ratio of nominal government consumption expenditure (line 15 in NIPA Table 3.1) to nominal GDP (line 1 in NIPA Table 1.1.5).

Government debt-to-GDP ratio. The government debt to GDP ratio is taken from the FRED database of U.S. Office of Management and Budget and Federal Reserve Bank of St. Louis (2023) for year 2015. The data series is called "Federal Debt Held by Private Investors as Percent of Gross Domestic Product" (series ID: HBPIGDQ188S). The precise number for 2015 is 59.2% which we round to 60% (government debt-to-GDP ratio keeps increasing after 2015).

Share of equipment capital in total capital stock. The share of equipment capital in total capital stock is calculated using Fixed Asset Tables (FAT) data of U.S. Bureau of Economic Analysis (2019). It is defined as the ratio of private equipment capital (line 5 in FAT Table 1.1) to the sum of private equipment and structure capital (line 5 + line 6 in FAT Table 1.1). This calculation gives a value of 0.32 in 2017, which we round to 1/3.

Capital-to-output ratio. Housing is excluded from both output and capital when calculating the capital-to-output ratio. For this calculation, output is defined using Table 1.5.5 in NIPA of U.S. Bureau of Economic Analysis (2021) as GDP (line 1) net of Housing and utilities (line 16) and Residential investment (line 41). Capital stock is calculated using the FAT of U.S. Bureau of Economic Analysis (2019), Table 1.1 as the sum of the stocks of private and government structure and equipment capital (line 5 + line 6 + line 11 + line 12). The ratio is relatively stable after 2015. We use the value of 2.07, which is the value for 2017.

Cross-sectional inequality statistics. All cross-sectional income and wealth moments (Gini for earnings and wealth, top 1% shares, quintile shares and relative skilled wealth) reported in Table 2 and in Table 4 in the paper are taken from Kuhn and Ríos-Rull (2020) and correspond to year 2016. The only data moment in Table 2 not taken from Kuhn and Ríos-Rull (2020) is the autocorrelation of earnings. Here, we use the same number as Boar and Midrigan (2022), see section 3.1 of that paper.

As for the rest of the data moments in Table 2, the earnings and wealth Gini are provided in Table 11 of Kuhn and Ríos-Rull (2020). 'Skilled' agents correspond to 'College' in Kuhn and Ríos-Rull (2020) and hence skilled earnings Gini and skilled wealth Gini are also directly taken from Table 11 of Kuhn and Ríos-Rull (2020). 'Unskilled' agents are the sum of 'Dropouts', 'High-school' and 'Some-college'. Unskilled earnings Gini and unskilled wealth Gini (which cannot be computed as a weighted average over the three groups in Table 11) were kindly provided by Kuhn (2021) upon our request. Earnings Top 1%'s share is taken from the first line of the 'Shares of Total Sample (%)' panel of Table 3 of that paper. Wealth Top 1%'s share is taken from the third line of the 'Shares of Total Sample (%)' panel of Table 5 (rounded to a full percent). Relative skilled wealth was constructed using Table 11 of that paper by first computing the average wealth of the unskilled (using the first and last vertical panel of Table 11) and then dividing the average wealth of the skilled by that number.

The earning quintiles in Table 4 are taken from the first line of the 'Shares of Total Sample (%)' panel of Table 3 and the wealth quintiles in Table 4 are taken from the third line of the 'Shares of Total Sample (%)' panel of Table 5 of Kuhn and Ríos-Rull (2020).

C The 1967 Economy

This section provides a detailed description of the steady state that corresponds to the 1967 U.S. economy. The 1967 economy is computed by taking the capital-skill complementarity model with all of its parameters that are calibrated to match the 2017 U.S. economy, as reported in Table 1, Table 2, and Table 3 in the paper, and changing only the price of equipment, the relative supply of skilled workers and tax policy to their values from 1967. Below we explain how we constructed the changes in these three key factors.

Price of equipment in 1967. The price of equipment in consumption good units is calculated using the series PERIC (Relative Price of Equipment, Index 2017=1, Annual, Seasonally Adjusted) in the Federal Reserve Economic Data (FRED) database as reported by DiCecio (2023), which is an update of the time series constructed in DiCecio (2009), who follows the methodology of Cummins and Violante (2002). The price of equipment decreased from 16 in 1967 to the normalized value of 1 in 2017. (Averaging the price of equipment over five year periods centered around 1967 and 2017 does not change the resulting ratio.) Therefore, the price of equipment is set to 16 in 1967 steady state. Since different types of labor have different elasticity of substitution with equipment capital, the decline in the relative price of equipment capital endogeneously implies a change in the skill premium, i.e., skill-biased technical change. In the calculations provided by both Cummins and Violante (2002) and DiCecio (2009), the price of structure capital relative to consumption remains virtually constant during this period. For this reason, we keep the price of structures in 1967 at its normalized price of 1.

Supply of Skilled Workers in 1967. We compute the fraction of skilled workers for 1967 following the same procedure we use to compute it for 2017. We consider only males who are 25 years and older and who have earnings and use data from CPS 1967, see U.S. Census Bureau (2021*a*). We find that the fraction of skilled workers was 0.1356 in 1967.

Government policies in 1967. Trabandt and Uhlig (2011), from whom we take the capital tax rate for the 2017 steady state, use the methodology of Mendoza, Razin and Tesar (1994) in calculating this tax rate. Since Trabandt and Uhlig (2011) only go back in time as far as 1995, we take the tax rate on capital income for 1967 directly from Mendoza, Razin and Tesar (1994). Since effective capital tax rate estimates are sensitive to short-term fluctuations in the inflation rate, we take an average over the five year window centered around 1967, which gives a capital tax rate of 41%. As for labor income taxes, Ferrière and Navarro (2018) estimate a value of 0.12 for the five year period centered around 1967 for the tax parameter τ_l, which represents the progressivity of the U.S. tax system.

As noted in the paper, government consumption to GDP ratio is relatively stable over time at 16%, we use this number for the 1967 steady state as well. In contrast, the government debt to GDP ratio, defined as before as "Federal Debt Held by Private Investors as Percent of Gross Domestic Product" (series HBPIGDQ188S in U.S. Office of Management and Budget and Federal Reserve Bank of St. Louis (2023)) is 21% in 1970, the earliest date for this time series. We use this number to represent the late 1960s (the government-debt-to-GDP ratio was relatively stable throughout the 1970s).

Comparison of the 1967 and 2017 economies. Table 5 in the paper compares the 1967 and 2017 model economies to the data along several dimension. (i) Skill premium comes from Heathcote, Perri and Violante (2010), (ii) the share of equipment in 1967 is computed analogously to 2017, as described above. (iii) The labor share is computed from NIPA of U.S. Bureau of Economic Analysis (2014) using the methodology described in Ríos-Rull and Santaeulàlia-Llopis (2010) and for details, we refer the reader to that paper. It offers several alternative ways of calculating the labor share. We use the following: we first calculate what Ríos-Rull and Santaeulàlia-Llopis (2010) call "unambiguously capital income" and "unambiguously labor income." Income which cannot be unambiguously classified as labor or capital income is then divided between capital and labor using the ratio between capital and labor income in unambiguously assigned income. To get the labor share, labor income is then divided by GNP. (iv) Real GDP comes from U.S. Bureau of Economic Analysis (2023). (v) Investment-to-output ratio. Housing is excluded from both output and investment when calculating the capital-to-output ratio. For this calculation, output is defined using Table 1.5.5 in NIPA of U.S. Bureau of Economic Analysis (2021) as GDP (line 1) net of Housing and utilities (line 16) and Residential investment (line 41). Investment is calculated using same table as the sum of the stocks of private and government non-residential investment (line 28 + line 56 + line 59 + line 62).

D Calibration of Cost of Skill Acquisition

This section provides a full description of the details of the calibration of the cost of skill acquisition. Consider the 2017 steady state. The model implies a utility premium for skilled workers at this steady state that is given by:

$$E_{s,2017}[v_{s,2017}(z_s,0)] - E_{u,2017}[v_{u,2017}(z_u,0)].$$

For the marginal individual who is indifferent between acquiring a college degree or not, this utility premium equals the cost of skill acquisition. That is, letting $\bar{\psi}_{s,2017}$ be the cost of skill acquisition for marginal worker, we have

$$\bar{\psi}_{s,2017} = E_{s,2017}[v_{s,2017}(z_s,0)] - E_{u,2017}[v_{u,2017}(z_u,0)].$$

Therefore, it has to be that $H(\bar{\psi}_{s,2017}) = \pi_{s,2017}$. An identical argument applied to 1967 steady state implies $H(\bar{\psi}_{s,1967}) = \pi_{s,1967}$. Assuming H is log-normally distributed with a mean and variance, we have two unknowns and two equations, which pins down the mean and variance of the distribution. The mean and the standard deviation of the normal distribution that corresponds to the calibrated H are 0.045 and 0.434.

E Decomposition of Welfare Gains

In welfare gains decompositions, it is more convenient to work with sequential definitions of allocations rather than the recursive definitions given until now. For that reason, we first give equivalent sequential definitions of allocations. Let $v_0 = (i, z_{i,0}, a_{i,0}) \in V_0$ denote a person's type in the initial steady-state distribution. This initial type is distributed according to some distribution $\Lambda_0(v_0)$. Although Λ_0 can be constructed from $\Lambda_{i,0}(z_{i,0}, a_{i,0})$ for $i = u, s$ which is given in the definition of equilibrium in Section A, we will not do so here as this is not needed for the welfare gains decomposition.

Denote the uncertain consumption-labor allocation a for type v_0 by $\Big\{\{c^a_{v_0,t}\},\{l^a_{v_0,t}\}\Big\}$. Utility from this allocation is given by

$$U\Big(\{c^a_{v_0,t}\},\{l^a_{v_0,t}\}\Big) = \mathbb{E}_0 \sum_{t=0}^{\infty} \beta^t \left[u(c^a_{v_0,t}) - v(l^a_{v_0,t})\right],$$

where the expectation is taken over productivity shocks conditional on initial type.

Define welfare gains of moving from allocation b to allocation a as:

(1)
$$\int_{v_0\in V_0} \mathbb{E}_0 \sum_{t=0}^{\infty} \beta^t \left[u(c^a_{v_0,t}) - v(l^a_{v_0,t})\right] d\Lambda_0(v_0) = \int_{v_0\in V_0} \mathbb{E}_0 \sum_{t=0}^{\infty} \beta^t \Big[u((1+\Delta)c^b_{v_0,t}) - v(l^b_{v_0,t})\Big] d\Lambda_0(v_0).$$

Insurance effect. Let average levels of consumption and labor in period t for a given initial type in allocation a be

$$C^a_{v_0,t} = \mathbb{E}_t c^a_{v_0,t} \quad \text{and} \quad L^a_{v_0,t} = \mathbb{E}_t l^a_{v_0,t}.$$

Define the cost of risk for initial type v_0 in allocation a as

$$\sum_{t=0}^{\infty} \beta^t \Big[u((1-p^a_{v_0,risk})C^a_{v_0,t}) - v(L^a_{v_0,t})\Big] = \mathbb{E}_0 \sum_{t=0}^{\infty} \beta^t \Big[u(c^a_{v_0,t}) - v(l^a_{v_0,t})\Big]. \tag{2}$$

The insurance effect Δ_I is then defined as

$$\log(1+\Delta_I) = \int_{v_0\in V_0} \log\left(1+\Delta_{I,v_0}\right) d\Lambda_0(v_0). \tag{3}$$

where $1+\Delta_{I,v_0} = \frac{1-p^a_{v_0,risk}}{1-p^b_{v_0,risk}}$ is the insurance effect for initial type v_0. Notice that the (aggregate) insurance effect is a weighted average of individual insurance effects in logs.

Redistribution effect. Let aggregate levels of consumption and labor in period t in allocation a be

$$C^a_t = \int_{v_0\in V_0} C^a_{v_0,t} d\Lambda_0(v_0) \quad \text{and} \quad L^a_t = \int_{v_0\in V_0} L^a_{v_0,t} d\Lambda_0(v_0).$$

Define cost of inequality in allocation a as

$$\sum_{t=0}^{\infty} \beta^t \left[u((1-p^a_{ineq})C^a_t) - v(L^a_t)\right] = \int_{v_0\in V_0} \sum_{t=0}^{\infty} \beta^t \left[u(C^a_{v_0,t}) - v(L^a_{v_0,t})\right] d\Lambda_0(v_0). \tag{4}$$

The redistribution effect Δ_R is then defined by

$$1+\Delta_R = \frac{1-p^a_{ineq}}{1-p^b_{ineq}}. \tag{5}$$

Level effect. Define level effect as

$$\sum_{t=0}^{\infty}\beta^t\left[u(C^a_t)-v(L^a_t)\right] = \sum_{t=0}^{\infty}\beta^t\left[u((1+\Delta_L)C^b_t)-v(L^b_t)\right]. \tag{6}$$

Proposition 1. *If* $u(c)=\log(c)$, *then*

$$1+\Delta = (1+\Delta_I)(1+\Delta_R)(1+\Delta_L).$$

Proof.

$$\begin{aligned}
&\int_{v_0\in V_0}\mathbb{E}_0\sum_{t=0}^{\infty}\beta^t\left[u(c^a_{v_0,t})-v(l^a_{v_0,t})\right]d\Lambda_0(v_0)\\
=&\int_{v_0\in V_0}\log(1-p^a_{v_0,risk})d\Lambda_0(v_0)+\int_{v_0\in V_0}\sum_{t=0}^{\infty}\beta^t\left[u(C^a_{v_0,t})-v(L^a_{v_0,t})\right]d\Lambda_0(v_0)\\
=&\int_{v_0\in V_0}\log(1-p^a_{v_0,risk})d\Lambda_0(v_0)+\log(1-p^a_{ineq})+\sum_{t=0}^{\infty}\beta^t\left[u(C^a_t)-v(L^a_t)\right]\\
=&\int_{v_0\in V_0}\log(1-p^a_{v_0,risk})d\Lambda_0(v_0)+\log(1-p^a_{ineq})+\log(1+\Delta_L)+\sum_{t=0}^{\infty}\beta^t\left[u(C^b_t)-v(L^b_t)\right]\\
=&\int_{v_0\in V_0}\log(1-p^a_{v_0,risk})d\Lambda_0(v_0)+\log(1-p^a_{ineq})\\
&+\log(1+\Delta_L)-\log(1-p^b_{ineq})+\int_{v_0\in V_0}\sum_{t=0}^{\infty}\beta^t\left[u(C^b_{v_0,t})-v(L^b_{v_0,t})\right]d\Lambda_0(v_0)\\
=&\int_{v_0\in V_0}\log(1-p^a_{v_0,risk})d\Lambda_0(v_0)+\log(1-p^a_{ineq})+\log(1+\Delta_L)-\log(1-p^b_{ineq})\\
&-\int_{v_0\in V_0}\log(1-p^b_{v_0,risk})d\Lambda_0(v_0)+\int_{v_0\in V_0}\mathbb{E}_0\sum_{t=0}^{\infty}\beta^t\left[u(c^b_{v_0,t})-v(l^b_{v_0,t})\right]d\Lambda_0(v_0)\\
=&\int_{v_0\in V_0}\mathbb{E}_0\sum_{t=0}^{\infty}\beta^t\left[u((1+\Delta_I)(1+\Delta_R)(1+\Delta_L)c^b_{v_0,t})-v(l^b_{v_0,t})\right]d\Lambda_0(v_0),
\end{aligned}$$

where the first equality follows from (2), the second one follows from (4), the third one from (6), the fourth one follows from (4) and the fifth equality follows from (2). A comparison of the ultimate equality with the definition of welfare gains given by (1) finishes the proof. □

Table A.1: $\gamma = 2$ Calibration: Aggregate Moments

Parameter	**Symbol**	**Value**	**Target**	**Source**
Technology (CSC)				
Production parameter	ω	0.2833	Labor share = 2/3	NIPA
Production parameter	ν	0.6573	Skill premium = 1.9	CPS
Production parameter	α	0.1909	Share of equipments, $\frac{K_e}{K} = 1/3$	FAT
Technology (CD)				
Total factor productivity	A	0.7869	Output level of CSC economy	
Production parameter	κ	0.5570	Skill premium = 1.9	CPS
Common parameters				
Discount factor	β	0.9378	Capital to output ratio = 2.07	NIPA, FAT
Tax function parameter	λ	0.8839	Government budget balance	
Disutility of labor	ϕ	20.40	Labor supply = 1/3	

This table reports the calibration procedure for parameters that target aggregate moments for the case when $\gamma = 2$. Model generated target moments are not reported as the match is perfect. The production function parameters α, ν and ω control the income shares of structure capital, equipment capital, skilled and unskilled labor in the capital-skill complementarity model (CSC). The production function parameter κ controls the income shares of the skilled and unskilled labor in the Cobb-Douglas model (CD). The tax function parameter λ controls the labor income tax rate of the mean income agent. CPS, FAT and NIPA stand for the Current Population Survey of the U.S. Census Bureau (2021*b*), the Fixed Asset Tables of the U.S. Bureau of Economic Analysis (2019) and the National Income and Product Accounts of the U.S. Bureau of Economic Analysis (2021), respectively.

Remark. *An alternative way of defining aggregate insurance component would be as follows:*

$$\sum_{t=0}^{\infty} \beta^t \int_{v_0 \in V_0} \left[u((1 - p^a_{risk}) C^a_{v_0,t}) - v(L^a_{v_0,t}) \right] d\Lambda_0(v_0) = \int_{v_0 \in V_0} \mathbb{E}_0 \sum_{t=0}^{\infty} \beta^t \left[u(c^a_{v_0,t}) - v(l^a_{v_0,t}) \right] d\Lambda_0(v_0)$$

and

$$1 + \Delta_I = \frac{1 - p^a_{risk}}{1 - p^b_{risk}}. \tag{7}$$

In case of logarithmic utility, the two definitions, given by (3) *and* (7), *deliver an identical aggregate insurance effect.*

F $\gamma = 2$ Calibration

Table A.1 and Table A.2 below report the values of internally calibrated parameters for the version of the model in which $\gamma = 2$. As in the baseline, we solve another version of the model which represents 1967 and recalibrate the distribution of the cost of skill acquisition, H, to match skill acquisition in the data. The mean and the standard deviation of the normal distribution that corresponds to the calibrated H are now 0.015 and 0.451 (not reported in the tables below).

Table A.2: $\gamma = 2$ Calibration: Distributional Moments

Panel A: Moments	**Data**	**Model**
Earnings Gini	0.68	0.66
Earnings Gini - skilled	0.66	0.66
Earnings Gini - unskilled	0.61	0.62
Earnings Top 1%'s share	0.23	0.24
Earnings autocorrelation	0.94	0.95
Wealth Gini	0.86	0.85
Wealth Gini - skilled	0.81	0.81
Wealth Gini - unskilled	0.82	0.81
Wealth Top 1%'s share	0.39	0.38
Relative skilled wealth	5.6	5.6
Panel B: Parameters	**Symbol**	**Value**
Normal state persistence (skilled)	ρ_s	0.7853
Normal state volatility of shocks (skilled)	$var(\varepsilon_s)$	0.1848
Transit into superstar state (skilled)	p_s	1×10^{-3}
Remain in superstar state (skilled)	q_s	0.9496
Productivity superstar state (skilled)	e_s	35.75
Normal state persistence (unskilled)	ρ_u	0.9915
Normal state volatility of shocks (unskilled)	$var(\varepsilon_u)$	0.0342
Transit into superstar state (unskilled)	p_u	8×10^{-5}
Remain in superstar state (unskilled)	q_u	0.0216
Productivity superstar state (unskilled)	e_u	43.45

This table reports calibration results regarding the wage risk parameters for the case when $\gamma = 2$. The model's ability to match calibration targets are reported in Panel A and the calibrated parameter values are reported in Panel B. All data moments correspond to 2016 U.S. economy and are taken from Kuhn and Ríos-Rull (2020), with the exception of the autocorrelation of earnings. Here, we use the same target as Boar and Midrigan (2022), see section 3.1 of that paper. Relative skilled wealth refers to the ratio of the average skilled asset holdings to the average unskilled asset holdings.

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