Unequal Decoupling

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Preliminary

Abstract

Who gains and who loses from geopolitical fragmentation in a world of heterogeneous countries? We develop a quantitative general-equilibrium, multi-country heterogeneous-agent framework that incorporates cross-country differences in income risk, wealth inequality, aggregate wealth, capital stocks, and net foreign asset positions, while also capturing rich non-Gaussian income dynamics in both advanced and emerging economies. By combining within-country household heterogeneity with between-country heterogeneity, the model provides a useful addition to the international macroeconomics literature on fragmentation, global imbalances, and inequality.

We use the model to study two fragmentation scenarios: the closure of the United States and the closure of China to trade and financial flows with the rest of the world. We find that the welfare effects are strongly heterogeneous across countries and within countries, depending on initial external positions and domestic wealth distributions. In the United States, only households at the top of the wealth distribution gain in both scenarios, while most households lose. Outside the United States, average welfare is generally positive when the United States closes, as capital becomes more abundant in other economies, whereas the effects are broadly reversed when China ceases lending. Overall, our results show that geopolitical fragmentation has unequal consequences across heterogeneous countries and across workers and capital owners within each country

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1 Introduction

Over the past three decades, emerging and advanced economies have become increasingly integrated through trade and finance, with the Global Financial Crisis representing only a temporary interruption. At the same time, income and wealth inequality have risen substantially, especially in advanced economies. Yet the global economy is now increasingly characterized by geopolitical fragmentation, as rising tensions between major powers and the proliferation of economic statecraft measures—such as sanctions, trade restrictions, and financial decoupling—threaten to disrupt the previously integrated international financial system.

These developments raise questions about the global macroeconomic implications of fragmentation, both within and across countries. If global trade and financial integration were to reverse, who would bear the costs, and who would benefit from a return to financial autarky? How would the economies of both rich and poor countries change if major players such as the United States or China closed themselves to trade and capital flows with the rest of the world?

To address these questions, we develop a quantitative framework by building a multi-country heterogeneous-agent incomplete-markets model that captures international financial integration and disintegration across multiple countries in general equilibrium, while accurately accounting for cross-country differences in (i) net foreign asset positions, aggregate wealth, and capital, (ii) idiosyncratic income risk and its non-Gaussian behavior, and (iii) wealth inequality.[1] To our knowledge, this is the first quantitative model to incorporate such extensive within- and across-country heterogeneity, providing a significant contribution to the international macroeconomics literature. In addition, the paper highlights how correctly accounting for rich income dynamics, and especially for higher-order risk, helps accounting for very skewed distributions of wealth.

We apply our international heterogeneous-agent model to study the aggregate and distributional welfare effects of two geopolitical fragmentation scenarios. These exercises examine what would happen if the United States (a major borrower) or China (a major lender) closed themselves off to international goods and asset markets.

First, consider a scenario in which the United States reduces its net foreign asset position to zero and moves to autarky, possibly as a consequence of aggressive policies to reduce trade deficits, such as tariffs. This shock would contract the global supply of assets, leading to a fall in the interest rate in the rest of the world and a rate rise in the United States. Given the need to generate higher returns, firms in the United States would invest less, resulting in

[1] Our baseline multi-country setup explicitly models 12 countries for which we have data on income risk from GRID – namely Argentina, Brazil, Canada, Denmark, Spain, France, Italy, Germany, Mexico, Norway, Sweden and the United States.

a lower capital–output ratio and reducing labor demand and wages. While capital owners benefit from higher returns, workers are worse off in the United States, whereas in the rest of the world, the opposite holds, with returns on capital pushed down by the reduction in the United States' external liability position. In terms of welfare, we find that in the United States, only households at the top of the wealth distribution experience welfare gains in both scenarios, while all other households incur losses. Outside the United States, the average welfare outcome is generally positive when the United States closes, owing to capital becoming more abundant in all countries.

Second, consider a scenario in which China ceases lending to the rest of the world and reduces its external wealth to zero, effectively moving to financial autarky. As a major lender, China's withdrawal (or exclusion) from financial markets would reduce the global supply of capital, leading to higher returns on capital and lower wages worldwide. In the United States, the drying up of external lending from China would produce outcomes similar to the first scenario—elevating returns on capital and reducing wages—while outside the United States, this geopolitical fragmentation shock would have very different effects than the contraction in US liabilities, as the return on capital would rise globally. Less wealthy households would be worse off due to lower wages and reduced consumption possibilities, so the welfare implications worldwide of China's exclusion differ sharply from those of the United States' exclusion.

Related literature. This paper contributes to several strands of the literature. First, it builds on the literature on incomplete markets and heterogeneous agents (Aiyagari, 1994; Bewley, 1986; Imrohoroglu, 1989; Krusell and Smith, 1998), extending these frameworks to incorporate non-Gaussian income risk as documented by Guvenen, Pistaferri and Violante (2022). While prior studies have shown that higher-order moments of income risk are crucial for understanding wealth inequality (Castañeda, Díaz-Giménez and Ríos-Rull, 2003), we explicitly calibrate these dynamics across multiple countries using data from the Global Repository of Income Dynamics (GRID).

Second, this work relates to research on household heterogeneity and global imbalances (de Ferra, Mitman and Romei, 2021; de Ferra, Mitman and Romei, 2020; Auclert et al., 2021) as well as emerging literature on geopolitical risks and their macroeconomic implications (Caldara and Iacoviello, 2022; Clayton, Maggiori and Schreger, 2023, 2024). Different from previous work, we analyze how geopolitical fragmentation interacts with domestic inequality to generate heterogeneous welfare outcomes within and across countries.

2 Model

Consider a world economy composed of J countries, and each country is indexed by $j = \{1, \ldots, J\}$. Each country is populated by a continuum of households with unitary mass, a continuum of firms with unitary mass, and a fiscal authority. Countries differ along two key dimensions: (i) the extent of uninsurable idiosyncratic income risk faced by households, and (ii) the degree of household patience within each economy. These differences give rise endogenously to cross-country heterogeneity in both the distribution of wealth and aggregate asset positions. Time is discrete and indexed by $t = \{0, 1, \ldots\}$.

2.1 Households

Each country j is inhabited by a continuum of households indexed by $i \in [0, 1]$. In two different versions of the model households can either be (i) ex-ante identical in preferences, or (ii) have permanent ex-ante discount factor $\beta_j \in (0, 1)$ heterogeneity.[2] Agents face uninsurable idiosyncratic shocks to their labor endowment e which evolves following the process described in 2.2. A household i in country j solves the following maximization problem:

$$\begin{aligned} &\max_{\{c_{i,j,t}, a_{i,j,t+1}\}} \mathbb{E}_0 \sum_{t=0}^{\infty} \beta_j^t \frac{c_{i,j,t}^{1-\gamma}}{1-\gamma} \\ &\text{s.t. } a_{i,j,t+1} + c_{i,j,t} = (1 + r_t) a_{i,j,t} + w_{j,t} e_{i,j,t} \\ &a_{i,j,t+1} \geq 0 \end{aligned} \tag{1}$$

where $a_{i,j,t+1}$ is the asset/savings choice subject to a borrowing constraint, $c_{i,j,t}$ denotes consumption, r_t is the world interest rate, and $w_{j,t}$ is the country-specific wage rate. Thus, $w_{j,t} e_{i,j,t}$ represents labor income, and the term $(1 + r_t) a_{i,j,t}$ captures returns on savings from the previous period.

2.2 Idiosyncratic income risk

We model idiosyncratic income risk as a parsimonious persistent-transitory stochastic process for labor endowment that can captures non-zero skewness and high kurtosis in log earnings changes as well as its persistence over time.[3] Our process for labor endowment/productivity e_t is written as follows:

$$\log(e_t) = z_t + \varepsilon_t \tag{2}$$

[2] We model discount factor heterogeneity as in Krueger, Mitman and Perri (2016) and Carroll et al. (2017).

[3] As shown in Guvenen et al. (2021) and Guvenen, Pistaferri and Violante (2022), changes in log residual earnings exhibit strong non-Gaussian skewness and kurtosis not only at short (1-year difference) horizons, but also at larger horizons as well.

$$z_t = \rho z_{t-1} + \eta_t \tag{3}$$

$$\varepsilon_t \sim \mathcal{N}(0, \sigma_\varepsilon^2)$$

$$\eta_t \sim \begin{cases} \mathcal{N}(\mu_{\eta 1}, \sigma_{\eta 1}^2) & \text{w/ probability } \theta \\ \mathcal{N}(\mu_{\eta 2}, \sigma_{\eta 2}^2) & \text{w/ probability } 1-\theta \end{cases}$$

where z_t is the persistent component and ε_t is the transitory component of income. The persistent component follows a stationary AR(1) process with shocks drawn from a normal mixture. Transitory shocks are i.i.d. and are drawn from a normal distribution with mean zero. The process is therefore described by the parameter set $\Omega = [\mu_{\eta 1}, \sigma_{\eta 1}, \sigma_{\eta 2}, \theta, \rho, \sigma_\varepsilon]$, where $\mu_{\eta 2} = -\theta\mu_{\eta 1}/(1-\theta)$ to ensure that $\mathbb{E}(\eta) = 0$.

In section 2.5 we discuss how we calibrate this process for each country. As shown by Civale, Díez-Catalán and Fazilet (2017), this process can accurately capture the variance, skewness, and kurtosis of 1-year log income changes, $\Delta \log(e_t) = \log(e_t) - \log(e_{t-1})$ as well as non-Gaussian behavior at longer horizons $\Delta_k \log(e_t) = \log(e_t) - \log(e_{t-k})$, where $k > 1$.

2.3 Production

Final goods. The production of final goods $Y_{j,t}$ in each country is carried out by a representative final-good producer that aggregates a continuum of domestic intermediate goods $y_{j,t}(i)$, $i \in [0,1]$, using the following technology:

$$Y_{j,t} = \left(\int_{i=0}^{1} y_{j,t}(i)^{\frac{\varepsilon_j - 1}{\varepsilon_j}} di \right)^{\frac{\varepsilon_j}{\varepsilon_j - 1}}, \tag{4}$$

where ε_j is the elasticity of substitution between intermediate goods in country j.

Intermediate goods. Intermediate goods producers in each country have access to a Cobb-Douglas production technology. Intermediate goods producer i rents capital $k(i)_{j,t}$ and effective labor $l(i)_{j,t}$ from competitive input markets:

$$y(i)_{j,t} = Z_j k(i)_{j,t}^{\alpha_j} l(i)_{j,t}^{1-\alpha_j}. \tag{5}$$

Firms compete under monopolistic competition and can freely set their prices. Denoting marginal cost for intermediate goods producer i as $s(i)_{j,t}$, cost minimization implies:

$$r_t = s(i)_{j,t} \alpha z k(i)_{j,t}^{\alpha - 1} l(i)_{j,t}^{1-\alpha},$$

$$w_{j,t} = s(i)_{j,t} (1-\alpha) z k(i)^{\alpha} l(i)^{-\alpha}.$$

where $s(i)_{j,t} = \frac{\varepsilon_j - 1}{\varepsilon_j}$ since prices are flexible. Due to symmetry, all intermediate goods firms in country j will choose the same factor inputs, implying that

$$r_t = \frac{\varepsilon_j - 1}{\varepsilon_j} \alpha z K_{j,t}^{\alpha-1} L_{j,t}^{1-\alpha}, \tag{6}$$

$$w_{j,t} = \frac{\varepsilon_j - 1}{\varepsilon_j} (1-\alpha) z K_{j,t}^{\alpha} L_{j,t}^{-\alpha}. \tag{7}$$

where $K_{j,t}$ is aggregate capital in country j and aggregate labor is $L_{j,t} = \mathbb{E}(e_{i,j,t})$.

Profits and shares. Given the flexible prices and monopolistic competition, intermediate goods firms will make flow profits each period:

$$d_{j,t} = \frac{1}{\varepsilon_j} Y_{j,t}. \tag{8}$$

We assume that the dividends of intermediate goods are traded in a stock market. In each country we normalize the number of shares $v_{j,t}$ to 1. The ex-dividend price of shares, $P_{j,t}$ satisfies a standard asset pricing equation:

$$P_{j,t} = \frac{1}{1 + r_t} \left(d_{j,t+1} + P_{j,t+1} \right). \tag{9}$$

Agents can trade shares freely across countries. The aggregate value of country j shares outstanding is thus given by $P_{j,t}$.

Capital depreciates at rate δ, and has a law of motion $K_{j,t+1} = (1-\delta)K_{j,t} + I_{j,t}$, where $I_{j,t}$ is aggregate investment. Aggregate productivity Z_j is fixed over time and country-specific, calibrated such that output is normalized to 1 in each country.

2.4 Equilibrium

A stationary equilibrium consists of: a world interest rate r; country-specific wages w_j; household policy functions for consumption $c_j(a, e)$ and savings $a'_j(a, e)$; and stationary distributions $D_j(a, e)$ for each country j such that:

1. Given r and w_j, the policy functions solve the households' optimization problem in each country j.

2. Factor prices satisfy equations 6 and 7 in each country.

3. Markets clear in each country:

- **Labor**: $L_j = \int e \, dD_j = 1$
- **Assets**: $A_j = \int a \, dD_j$ and $A_j = K_j + B_j + P_j$, where B_j is a country's net foreign asset position.
- **Goods**: $Y_j = C_j + I_j$

4. The distribution D_j is stationary for each country j.

5. The world asset market clears:

$$\sum_j \omega_j \left(\int a \, dD_j - K_j - P_j \right) = \overline{B} \tag{10}$$

where ω_j are country weights based on GDP and $\overline{B}$ is the aggregate net foreign asset position. For the entire world economy, $\overline{B} = 0$ but for our 12-country bloc, $\overline{B} < 0$.

2.5 Calibration

For all countries, we set $r = 0.01$, the capital depreciation rate $\delta = 0.05$, and the elasticity of intertemporal substitution to 1, such that $\gamma = 1$ and we have log-utility. In a given country's steady state, given that $L_j = 1$, $Z_j = \frac{1}{K_j^{\alpha_j}}$ such that output is normalized to 1. We calibrate the elasticity of output with respect to capital α_j to target the capital-income ratio for each country taken from the World Inequality Database (WID) such that $\alpha_j = \frac{K_j}{Y_j}^* (r + \delta)$ and therefore $w_j = (1 - \alpha_j)$.

Endowment process. For each country, we jointly calibrate the 6-parameter vector $\Omega = [\mu_{\eta 1}, \sigma_{\eta 1}, \sigma_{\eta 2}, \theta, \rho, \sigma_\varepsilon]$ to target six moments of income risk – namely the variance, skewness and kurtosis of 1-year and 5-year log residual income changes taken from the Global Repository of Income Dynamics (GRID). We do so via generalized method of moments (GMM) as in Civale, Díez-Catalán and Fazilet (2017). We then discretize the endowment process in each country j into a 27-point Markov chain with values $\mathbf{e}_j$ and transition matrix π_j with invariant distribution Π_j. The persistent AR(1) process with a Gaussian mixture is discretized using the method of Farmer and Toda (2017) and the transitory shock via Gauss-Hermite quadrature.

In Table 1, we show that our estimated process can accurately capture the observed empirical moments for the United States. A simulation of our discretized Markov chain also accurately captures the dynamics from our estimated stochastic process. We are similarly able to capture the observed empirical moments of income risk for the other 11 countries in our sample, with the details shown in Appendix B.

Table 1: Calibration of US Endowment Process

Moments	Data (GRID)	Estimated process	Discretized process	Parameters	
$\text{Var}(\Delta \log e)$	0.29	0.29	0.29	$\mu_{\eta 1}$	0.0078
$S(\Delta \log e)$	-0.90	-0.90	-0.90	$\sigma^2_{\eta 1}$	0.057
$K(\Delta \log e)$	13.4	13.3	13.4	$\sigma^2_{\eta 2}$	5.516
$\text{Var}(\Delta_5 \log e)$	0.58	0.58	0.58	θ	0.994
$S(\Delta_5 \log e)$	-0.65	-0.65	-0.64	ρ	0.859
$K(\Delta_5 \log e)$	8.75	8.77	8.65	σ^2_ε	0.092

Time preferences. As previously mentioned, we have two versions of the model. The first version assumes that all households in each country have identical discount factors, which we calibrate to match the net-wealth-to-income ratio (A/Y) in each country taken from WID. In the second version, we impose permanent heterogeneity in discount factors to improve our model's ability to replicate empirical wealth inequality. In this version, we assume that for some dispersion ζ, discount factors are uniformly distributed in a country with support $\left[\bar{\beta} - \zeta, \bar{\beta} + \zeta\right]$ and choose $(\bar{\beta}, \zeta)$ to target both aggregate net wealth and a vector of cumulative wealth shares $\boldsymbol{\psi} = [\psi_{80}, \psi_{60}, \psi_{40}, \psi_{20}]$, where ψ_x denotes the fraction of total wealth held by the top x%, as in Carroll et al. (2017).[4]

Table 2 summarizes the model calibration for the US. In Appendix B we provide the calibration details for the other countries in our sample. Importantly, we are able to calibrate both the endowment process and discount factor heterogeneity to match empirical moments of income risk and wealth inequality respectively in all countries.

Markups, Firm Values, and Capital. We now describe the calibration of the model under monopolistic competition. In this specification, total national wealth A_j in each country j is decomposed into the stock of physical capital K_j, the net foreign asset position B_j, and the market value of pure profits (or firm value) P_j:

$$A_j = K_j + B_j + P_j \tag{11}$$

For all countries, we take the aggregate market value of wealth A_j and the net foreign asset position B_j directly from the World Inequality Database (WID). The decomposition of the remaining domestic wealth—the sum of physical capital and firm value, $K_j + P_j$—depends on the market structure. In a perfect-competition benchmark, firms would earn no pure profits

[4] We discretize the uniform distribution with 5 points (each with mass 1/5). Increasing the number of points does not significantly change calibration accuracy.

($P_j = 0$); consequently, the residual domestic wealth would entirely be attributed to physical capital K_j. In this case, we could calibrate the elasticity of output with respect to capital, α_j, to target the capital-to-output ratio from WID, such that $\alpha_j \approx (K_j/Y_j)(r + \delta)$.

In the monopolistic competition specification, $P_j > 0$. We adopt a split strategy to identify these values, using granular data for the United States and model-implied markups for the remaining countries.

For the United States, we construct the value of physical capital K_{US} directly using data from the Financial Accounts of the United States. We define the aggregate capital stock as the sum of non-financial assets held by households, non-corporate businesses, the government, and the corporate sector. Detailed data sources and series identifiers are provided in Appendix C. With K_{US} observed, we determine the value of monopolistic rents P_{US} as the residual of total wealth:

$$P_{US} = A_{US} - B_{US} - K_{US} \tag{12}$$

We then calibrate the model parameters to match these aggregates. The US markup is set such that the steady-state present discounted value of profits equals P_{US}.[5] Simultaneously, α_{US} is calibrated to deliver the empirically constructed value of physical capital K_{US}.

For the remaining countries, comparable granular data on capital stocks are not uniformly available. We therefore rely on estimates of global market power to identify the decomposition. We utilize the markup series from De Loecker and Eeckhout (2018) (DLE). For each country j, we construct a model-implied markup by rescaling the calibrated US markup by the ratio of the DLE markup in country j relative to the DLE markup in the US.

Given these imputed markups, we calculate the implied steady-state value of firm profits, P_j, by discounting flow profits at the world interest rate. Physical capital is then recovered as the residual of observed wealth:

$$K_j = A_j - B_j - P_j \tag{13}$$

Finally, as with the US, we calibrate α_j for each country to match this implied capital stock. This approach ensures that while our breakdown of capital and rents varies across countries consistent with evidence on global markups, the model perfectly matches the aggregate wealth and net foreign asset positions reported in WID.

[5] In the steady state, the value of profits as a share of GDP is proportional to the markup: $P/Y = (\text{Markup}/Y)/r$.

Table 2: US Model Calibration

Parameter	Value	Target
r	0.01	-
δ	0.05	Standard
γ	1	Standard
α	0.35	$K/Y = 5.81$ (WID)
Endowment (jointly calibrated from GRID moments)		
$\mu\eta, 1$	0.0078	Var($\Delta \log e$)
$\sigma\eta, 1^2$	0.057	S($\Delta \log e$)
$\sigma\eta, 2^2$	5.516	K($\Delta \log e$)
θ	0.994	Var($\Delta_5 \log e$)
ρ	0.859	S($\Delta 5 \log e$)
$\sigma\varepsilon^2$	0.092	K($\Delta_5 \log e$)
Time preferences		
β	0.982	$A/Y = 5.17$ (WID)
$[\bar{\beta}, \zeta]$	$[0.963, 0.025]$	$[A/Y, \boldsymbol{\psi}]$

3 Non-Gaussian income risk in the incomplete markets model

This section describes the implications of accounting for the non-Gaussian properties of idiosyncratic income risk in a standard incomplete markets model with heterogeneous agents. Incorporating negative skewness and high kurtosis to household income shocks implies that in any given period (1) agents are more likely to face large negative shocks than large positive ones and (2) most agents experience small changes in earnings relative to overall dispersion, while a few experience extremely large shocks.

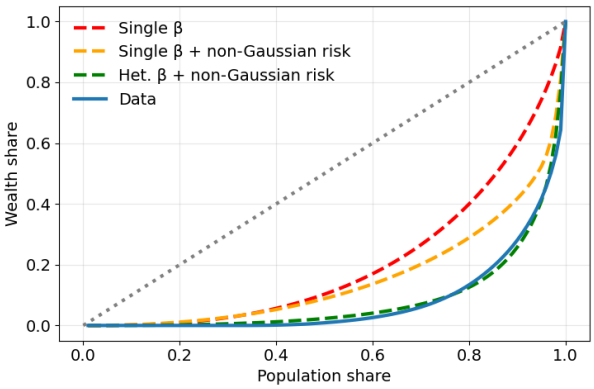
Through the lens of our model, these features have implications for wealth and income inequality as well as aggregate asset accumulation. As seen in Figure 1a, in a model with ex-ante identical preferences, embedding non-Gaussian income risk implies a much closer match of empirical patterns in wealth inequality relative to a model with a standard Gaussian process – i.e. one that only targets the variance of income changes and assumes a symmetric distribution without fat tails. This is particularly true for the right tail of the wealth distribution. Indeed, incorporating non-Gaussian behavior in income generates a 40% improvement in the accuracy of the (untargeted) wealth distribution vis-à-vis the data relative to the Gaussian counterpart.[6] To ensure that we correctly capture the entire shape of the wealth distribution for our quantitative exercise, we then impose ex-ante heterogeneity in time preferences which accurately captures the remaining 60% of the gap.

[6]The distance metric used is a simple sum of absolute differences (L1 norm) between the discrete percentile points in each model-implied Lorenz curve (i.e. the red and yellow dashed lines) relative to the empirical counterpart (blue, solid line). The distance metric for the model with non-Gaussian risk is 40% lower than that for the Gaussian counterpart.

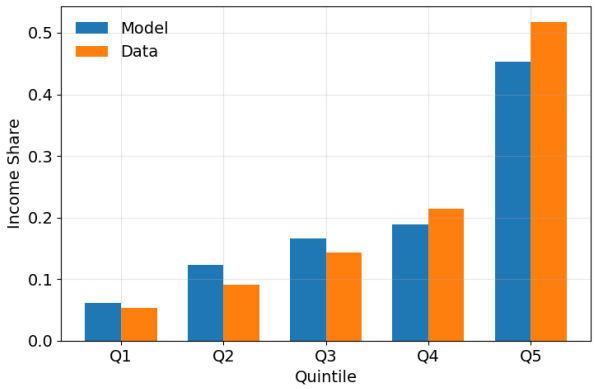
Furthermore, our stochastic process for income changes is also able to accurately capture the shape of the income distribution in levels. Figure 1b compares the income distribution in levels – which we do not target in our model – to the one implied by the stationary distribution of our Markov process. The model captures empirical patterns of income inequality, particularly the concentration of income at the top quintile of the distribution.

Figure 1: Income and Wealth Distributions in the US

(a) Wealth distribution by model type



(b) Income distribution by quintile



Accounting for high kurtosis in income changes – and its persistence – is particularly important in generating these results. A small fraction of agents experience large, persistent positive income shocks, enabling them to accumulate significant wealth through continued savings. This generates a long right tail in the asset distribution, leading to wealth concentration at the top. As demonstrated in Figure 2, calibrations of the US income process that increase the kurtosis of 1- and 5-year income changes (while holding the second and third moments constant) result in greater wealth inequality as well as larger aggregate wealth due to both a longer right tail and higher precautionary savings of agents close to the borrowing constraint.

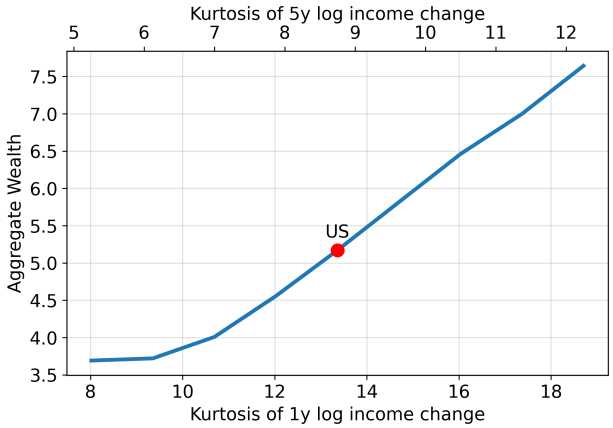
This finding echoes the insight in Castañeda, Díaz-Giménez and Ríos-Rull (2003) – the Pareto tail in wealth is driven by a Pareto tail in income shocks. However, while they parameterize the income process to directly match the wealth distribution, we instead calibrate our model's income process to match observed income dynamics, with a specific focus on capturing the non-Gaussian features of income changes. This allows us to explicitly model the impact of extreme income shocks on wealth accumulation, rather than inferring the income process from the resulting wealth distribution. By targeting income dynamics directly, we can assess the independent role of higher-order moments in shaping wealth inequality.

Interestingly, negative skewness has the opposite effect, as shown in Figure A.2 in Appendix A. All else equal, larger negative skewness in income leads to lower wealth inequality

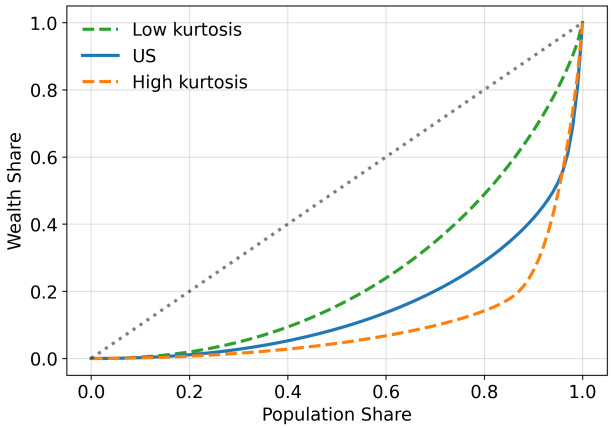
and aggregate wealth. A higher probability of negative shocks makes it harder for agents to accumulate large wealth positions, reducing the right tail and thus wealth dispersion. At the aggregate, while negative skewness increases precautionary savings close to the borrowing constraint, the quantitative effect of the thinning right tail dominates.

Figure 2: Comparative statics for different kurtosis calibrations

(a) Aggregate wealth



(b) Wealth distribution



4 Welfare effects of financial autarky

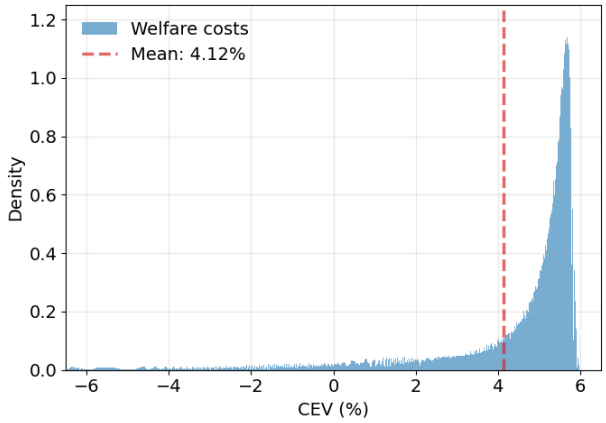
Before conducting our full quantitative analysis of global fragmentation, we first examine the distributional welfare consequences of financial autarky in two economies with starkly different external positions: the United States and Denmark. This partial equilibrium exercise illuminates the key mechanisms through which closing an economy to international capital flows affects different segments of the wealth distribution.

In our 2019 calibration, the United States is a net debtor, with an NFA position of -68% of GDP. To achieve autarky, the domestic interest rate rises to clear the domestic asset market. This interest rate adjustment generates significant redistributive effects. The higher cost of borrowing and reduced capital stock lower wages, creating welfare losses for households reliant primarily on labor income. In consumption-equivalent terms, this entails an aggregate welfare loss of 4.12%. However, this aggregate figure masks considerable heterogeneity: households at the top of the wealth distribution – who derive substantial income from capital – experience welfare gains from increased returns on their savings.

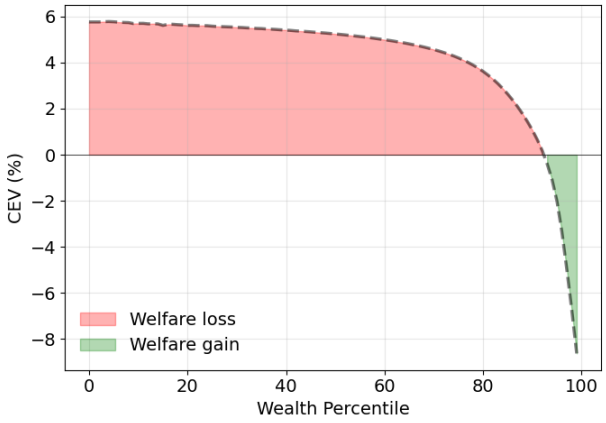
The effects are reversed for Denmark, a significant net creditor in our calibration (NFA = 93% of GDP). Closing the Danish economy to international capital flows requires a decline in the domestic interest rate. The resulting capital deepening raises wages and generates substantial welfare gains for the majority of Danish households. We estimate an aggregate

Figure 3: Welfare effects of financial autarky in the US

(a) Distribution of welfare effects



(b) Welfare effects across the wealth distribution

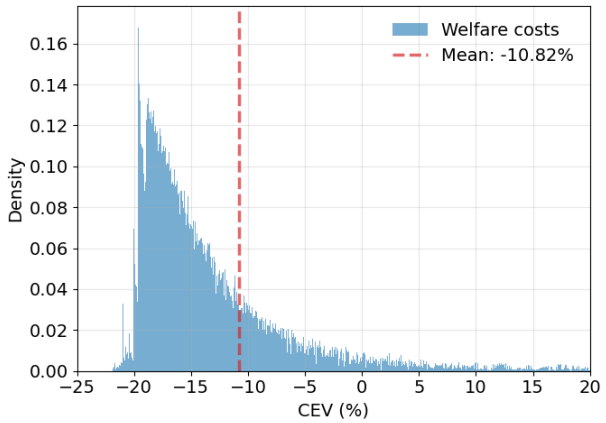


welfare gain of 10.8% in consumption-equivalent terms. However, wealthy households, who benefit most from the high returns available in integrated financial markets, experience large welfare losses.

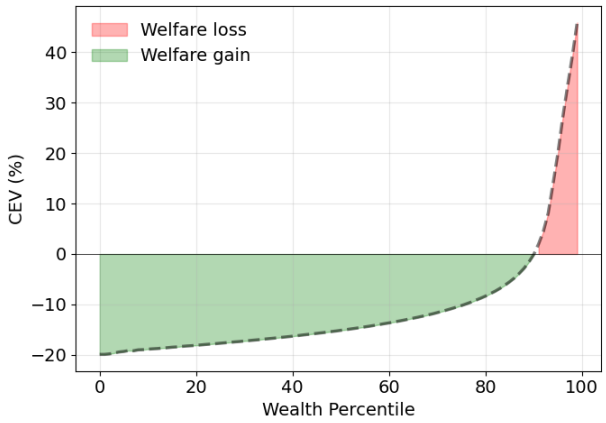
These results highlight how financial autarky disproportionately benefits (harms) labor income earners in creditor (debtor) nations while having the opposite effect on owners of capital. The magnitude of these effects depends crucially on the size and direction of pre-autarky external imbalances, capital or labor income shares, and within-country wealth inequality.

Figure 4: Welfare effects of financial autarky in Denmark

(a) Distribution of welfare effects



(b) Welfare effects across the wealth distribution



5 Geopolitical fragmentation

We now examine the global implications of financial fragmentation by considering two distinct scenarios. First, we analyze the consequences of the United States – the largest debtor in our sample – closing its financial markets to the rest of the world. Second, we study the impact of a "sudden stop" in international lending to our 12-country bloc, effectively forcing these economies to achieve aggregate external balance.

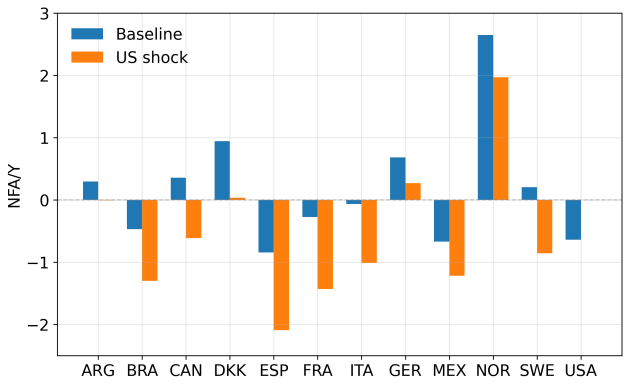
5.1 Scenario 1: Closing the US economy

We begin by considering a scenario where the United States moves to financial autarky. Mechanically, this requires the US to achieve external balance ($B_{US} = 0$) through adjustments in its domestic interest rate. Meanwhile, the remaining 11 countries must absorb the US external position to maintain the aggregate NFA position vis-à-vis the rest of the world. This absorption occurs through a decline in the world interest rate facing these economies.

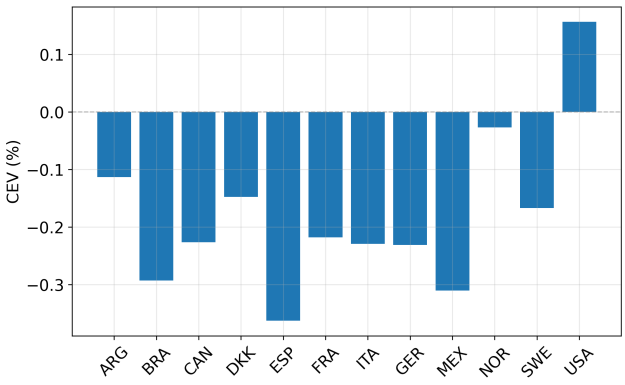
As shown in Figure 7, this reconfiguration of global capital flows has significant implications for external positions and welfare. The higher US autarky interest rate reduces domestic capital accumulation and wages, generating the aggregate welfare losses discussed in Section 4. However, the decline in the world interest rate facing other economies leads to capital deepening, higher wages, and substantial welfare gains. The magnitude of these gains varies with countries' initial positions and domestic characteristics – economies with higher capital shares and lower initial NFAs benefit more from the increased availability of capital.

Figure 5: Effects of US closure shock across countries

(a) Net foreign asset positions



(b) Aggregate welfare effects



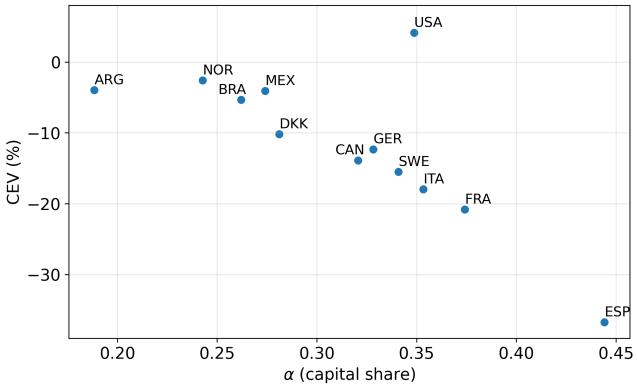


Figure 6: Caption

5.2 Steady State Welfare Effects

In the steady state, aggregate welfare declines for most countries. Within countries, however, the effects are heterogeneous: households that are relatively rich in capital tend to gain, whereas households that are relatively rich in labour tend to lose. We discuss these results in detail below.

At the aggregate level, welfare falls in all countries except the United States, as shown in the right panel of Figure 5b. The magnitude of the welfare change is heterogeneous and depends primarily on the parameters governing capital intensity, α_i. This relationship is illustrated in Figure 6. A useful proxy for aggregate welfare is aggregate consumption, defined as

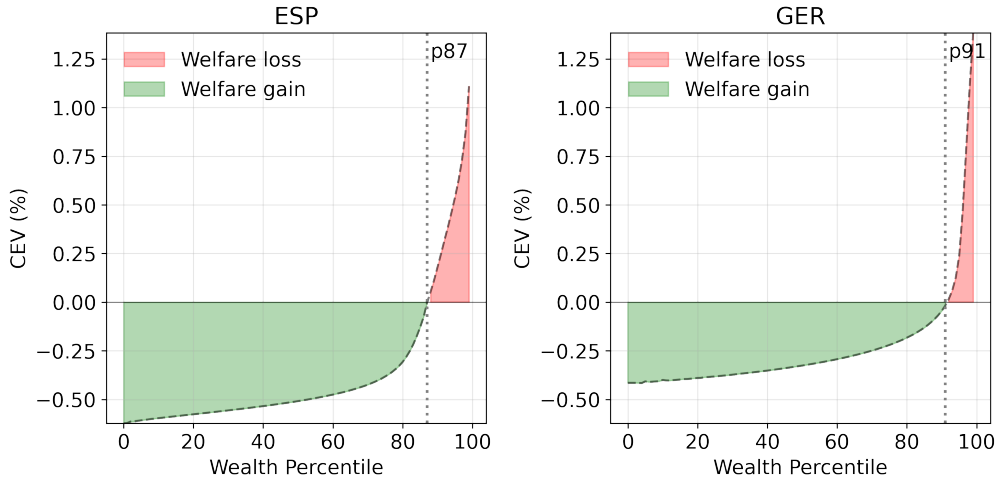
$$C = Y(r) + B(r), r. \tag{14}$$

Changes in the interest rate affect aggregate consumption through three main channels. First, there is a direct effect: debtor countries benefit from higher interest rates, whereas creditor (saver) countries benefit from lower rates. Second, the interest rate influences the initial level of wealth. In particular, a decline in the interest rate reduces the return on existing assets and thus lowers initial wealth. Third, the interest rate affects production. A lower interest rate reduces the cost of capital, encouraging firms to increase capital demand, hire more labour, and expand output. The strength of this channel depends on α_i. For countries with a low capital share (i.e., α_i close to zero), firms' production responds only weakly to changes in the interest rate. Overall, the production effect appears to dominate the direct interest rate and wealth effects.

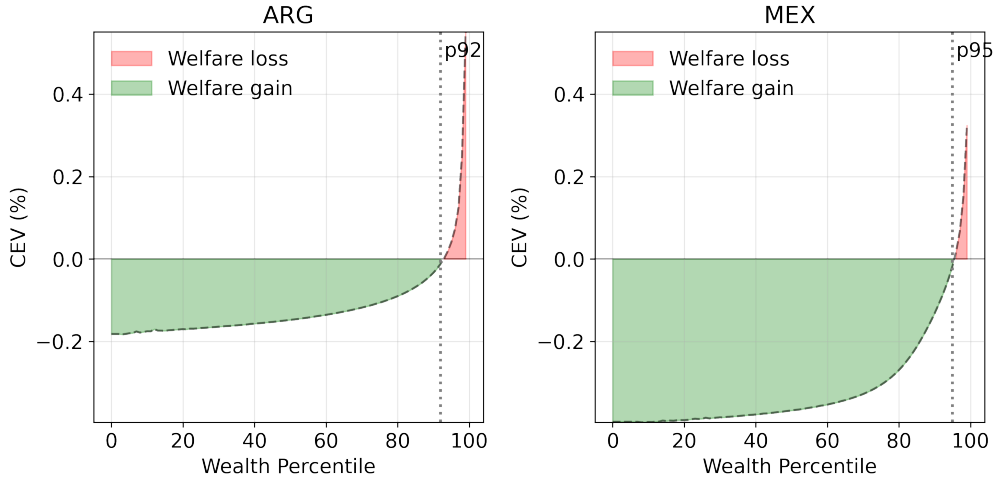
Finally, the shock has heterogeneous effects across households, as shown in Figures 7a and 7b. As firms expand production, they increase labour demand, which puts upward pressure on wages. Consequently, households that are relatively rich in labour but poor in capital benefit from higher wages. In contrast, wealthier households experience welfare losses due

to the decline in the return to capital following the U.S. closure.

Figure 7: Effects of US closure shock across countries



(a) Welfare of households in advanced economies



(b) Welfare of households in emerging economies

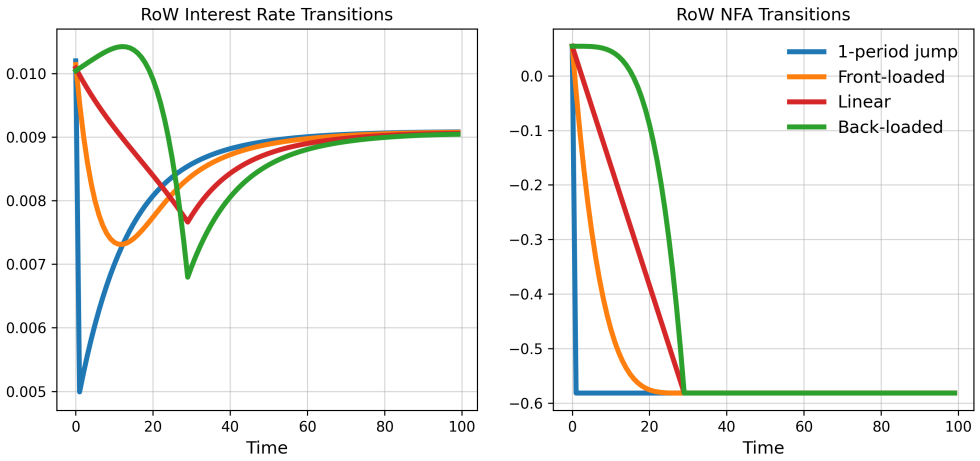
5.3 Transition

In the steady-state analysis above, we compared the initial and final equilibria without considering how the economy transitions between them. In practice, the U.S. deleveraging is unlikely to occur instantaneously; rather, it will unfold over several years through a gradual reduction in borrowing. We now examine how the speed and shape of this transition path shapes the world interest rate dynamics and the welfare consequences for households around the world.

We consider four alternative deleveraging paths for the U.S. Net Foreign Asset position: (i) *immediate* adjustment (one period), (ii) *front-loaded* deleveraging, (iii) *linear* (even-paced) deleveraging over 20 years, and (iv) *back-loaded* deleveraging. Each path is implemented via a time-varying tax on U.S. residents' foreign borrowing that induces the desired NFA trajectory.

The four paths generate markedly different dynamics for the rest-of-world interest rate, as illustrated in Figure 8. Under immediate adjustment, the interest rate collapses abruptly in the first period before converging to the new steady state. Front-loaded deleveraging produces a gradual but initially sharp decline that overshoots below the new steady-state level. Linear deleveraging generates a smooth, monotone decline. Back-loaded deleveraging keeps the rest-of-world interest rate above the new steady state for approximately 20 years before it falls sharply as the bulk of the adjustment occurs.

Figure 8: Interest rate and NFA dynamics under back-loaded deleveraging

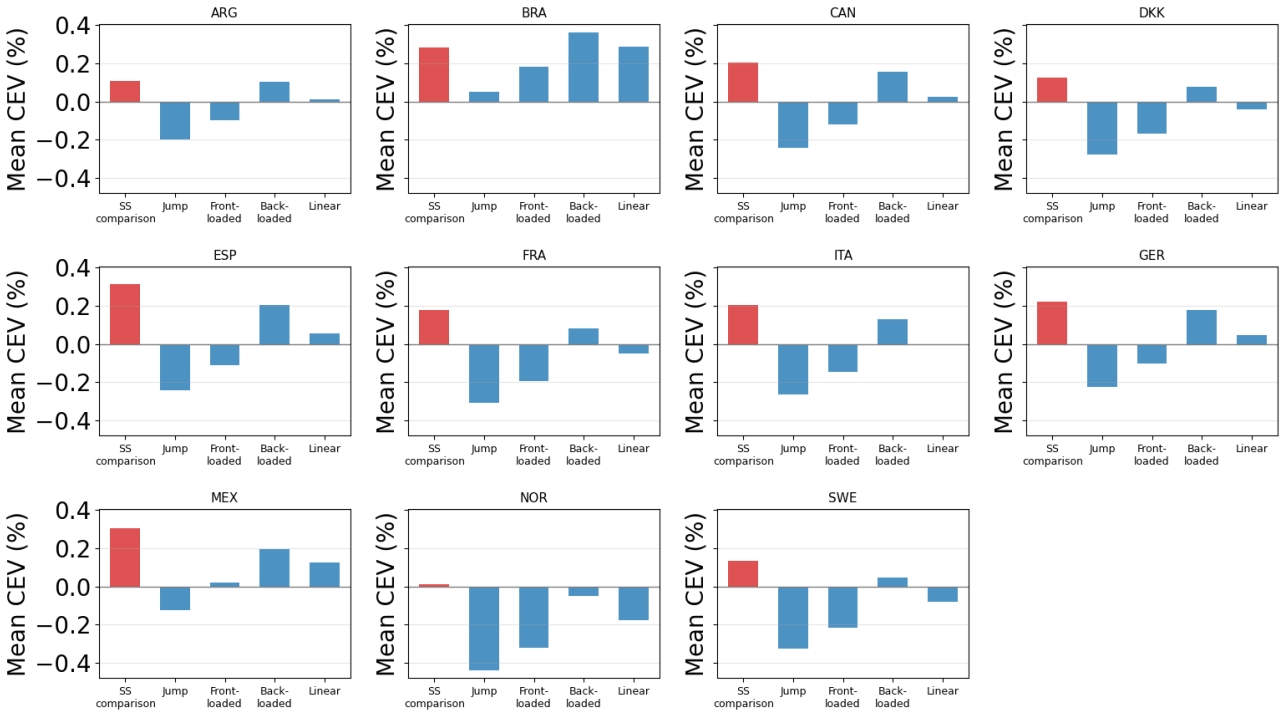


Notes: The figure shows the back-loaded deleveraging scenario, in which the U.S. Net Foreign Asset position closes gradually with most of the adjustment concentrated in later years. The panels show the NFA path and the corresponding rest-of-world interest rate dynamics.

The transition path has a critical impact on welfare, both in aggregate and in its distributional consequences. Figure 9 shows the welfare effects, measured in consumption equivalent variation, for all countries in our sample across the four deleveraging scenarios. Transition welfare effects are significantly larger in magnitude than the steady-state comparison alone would suggest, particularly for asset-rich households. When the interest rate drops sharply—as in the immediate or front-loaded scenarios—savers in the rest of the world experience capital losses on their existing asset holdings, generating welfare losses that substantially exceed the long-run steady-state effects. Workers, by contrast, benefit more uniformly across transition paths, as higher wages persist regardless of the speed of adjustment.

The distributional consequences within countries are illustrated in Figure 10 for Spain.

Figure 9: Welfare effects across countries by transition path



Notes: Each panel shows the aggregate consumption equivalent variation (CEV, positive values indicate welfare gains) for a given country under the four alternative deleveraging paths.

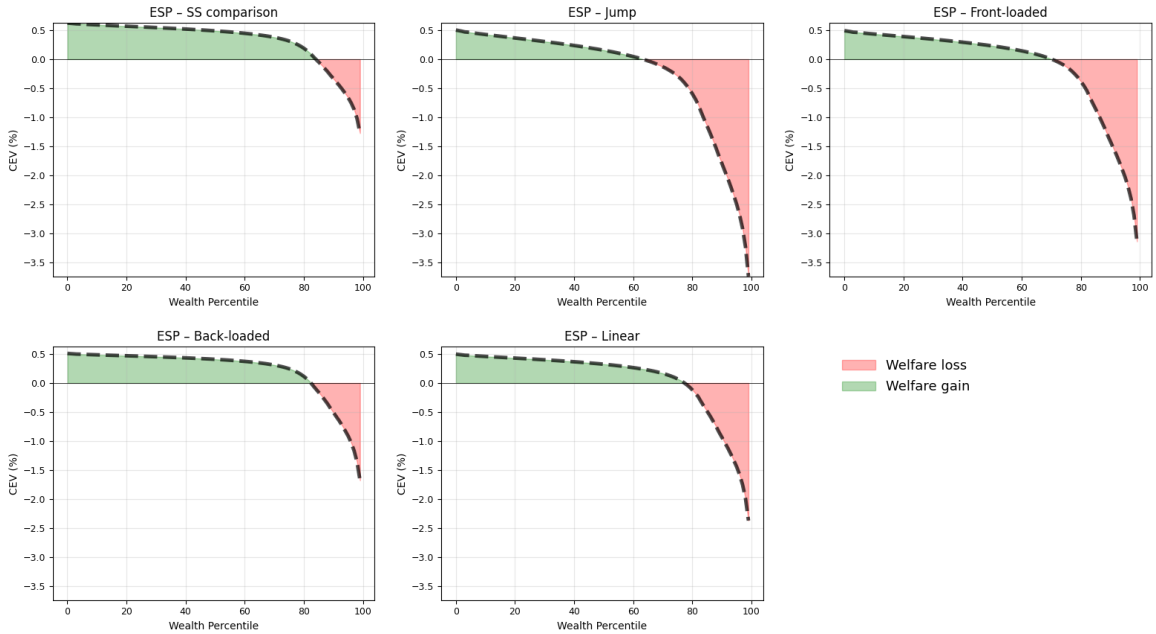
The back-loaded path generates the smallest short-run losses for asset holders, since the rest-of-world interest rate remains elevated for longer before falling. The immediate adjustment, by contrast, imposes the largest upfront losses on wealth-rich households. Workers gain under all four scenarios due to higher wages, though the magnitude varies with the deleveraging path. These patterns are consistent with the broader finding that the transition path matters independently of the long-run equilibrium: the same final steady state can generate very different welfare consequences depending on how quickly the adjustment occurs.

5.4 Scenario 2: A "sudden stop" in international lending

Our second scenario considers a "sudden stop" in international lending to our 12-country bloc, which is a net debtor in aggregate. This shock forces the bloc to achieve external balance ($\bar{B} = 0$) through adjustments in the world interest rate. The higher equilibrium interest rate induces greater saving in all economies but has heterogeneous effects across countries depending on their initial positions.

As shown in Figure 11, the closure of access to external financing leads to a significant restructuring of external positions and welfare losses across our sample. The magnitude of these losses varies systematically with countries' initial positions – economies with larger ini-

Figure 10: Welfare distribution within Spain by transition path



Notes: Each panel shows the distribution of CEV across households in Spain under the four alternative deleveraging paths, sorted by wealth percentile. Positive values indicate welfare gains relative to the initial steady state.

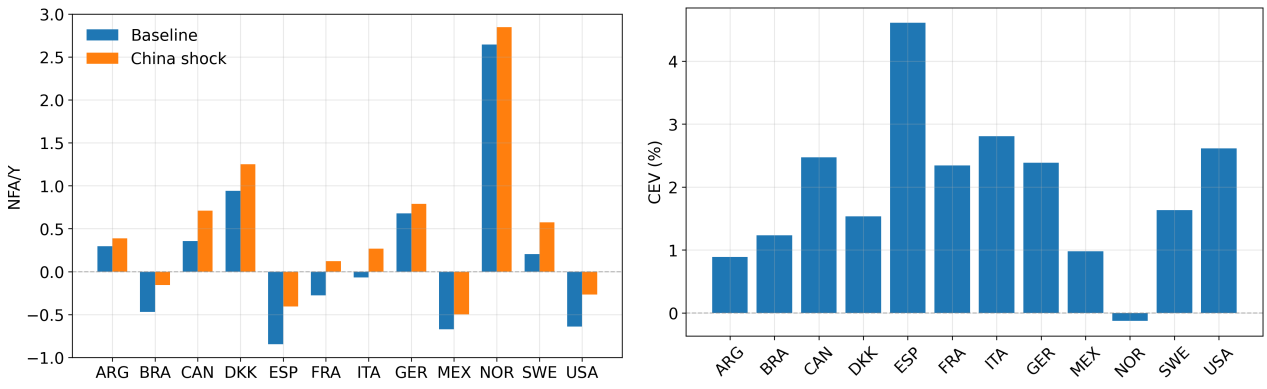
tial borrowing experience greater welfare declines as they are forced to reduce consumption more sharply to achieve external balance.

The welfare losses from the sudden stop are not distributed equally within countries. As detailed in Figure A.4, the higher interest rate generates a redistribution from workers to owners of capital in each economy. This redistribution is particularly pronounced in countries with high initial external debt, where the required adjustment in saving rates is largest.

Figure 11: Effects of financial fragmentation shock across countries

(a) Net foreign assets

(b) Aggregate welfare effects



These results highlight how the distribution of gains and losses from financial fragmen-

tation depends crucially on both the nature of the fragmentation – whether it involves individual country closure or broader sudden stops – and the interaction between external positions and domestic inequality. This interaction shapes both the aggregate response to fragmentation and its distributional consequences within countries.

6 Conclusion

This paper develops a quantitative framework to analyze the welfare consequences of financial fragmentation in a world where countries differ systematically in both the nature of household income risk and the distribution of wealth. Our framework makes two key contributions. First, we document substantial cross-country heterogeneity in higher-order moments of income risk and show that accurately capturing these non-Gaussian features of income dynamics is crucial for understanding patterns of wealth inequality. Second, we use this framework to quantify the aggregate and distributional effects of financial fragmentation both across and within countries.

We find that the welfare implications of financial fragmentation depend crucially on countries' initial external positions and domestic wealth distributions. In the United States, financial autarky benefits only households at the top of the wealth distribution, while imposing substantial costs on the majority of households through lower wages. The effects are reversed in creditor nations, where autarky generates gains for workers but losses for wealthy capital owners. When we consider a broader sudden stop in lending to the entire bloc, the welfare losses are concentrated in countries with larger initial borrowing and fall disproportionately on workers rather than capital owners.

These findings suggest that debates about financial fragmentation must consider not only the aggregate implications for capital allocation but also the substantial redistributive effects both across and within countries.

References

Aiyagari, S. Rao. 1994. "Uninsured Idiosyncratic Risk and Aggregate Saving." *The Quarterly Journal of Economics*, 109(3): 659–684.

Atkeson, Andrew, Jonathan Heathcote, and Fabrizio Perri. 2025. "Reconciling Macroeconomics and Finance for the U.S. Corporate Sector: 1929 to Present." Federal Reserve Bank of Minneapolis Staff Report. Preliminary draft.

Auclert, Adrien, Hannes Malmberg, Frederic Martenet, and Matthew Rognlie. 2021. "Demographics, Wealth, and Global Imbalances in the Twenty-First Century." *NBER Working Paper*, , (29161).

Bewley, Truman F. 1986. *Stationary Monetary Equilibrium with a Continuum of Independently Fluctuating Consumers.* Yale University Press.

Caldara, Dario, and Matteo Iacoviello. 2022. "Measuring Geopolitical Risk." *American Economic Review*, 112(4): 1194–1225.

Carroll, Christopher, Jiri Slacalek, Kiichi Tokuoka, and Matthew N White. 2017. "The distribution of wealth and the marginal propensity to consume." *Quantitative Economics*, 8(3): 977–1020.

Castañeda, Ana, Javier Díaz-Giménez, and José-Víctor Ríos-Rull. 2003. "Accounting for the US earnings and wealth inequality." *Journal of Political Economy*, 111(4): 818–857.

Civale, Simone, Luis Díez-Catalán, and Fatih Fazilet. 2017. "Discretizing a Process with Non-zero Skewness and High Kurtosis." mimeo.

Clayton, Christopher, Matteo Maggiori, and Jesse Schreger. 2023. "A Framework for Geoeconomics." *NBER Working Paper No. 31852*.

Clayton, Christopher, Matteo Maggiori, and Jesse Schreger. 2024. "A Theory of Economic Coercion and Fragmentation." *BIS Working Paper No. 1224*.

de Ferra, Sergio, Kurt Mitman, and Federica Romei. 2020. "Household heterogeneity and the transmission of foreign shocks." *Journal of International Economics*, 124: 103303. NBER International Seminar on Macroeconomics 2019.

de Ferra, Sergio, Kurt Mitman, and Federica Romei. 2021. "Why Does Capital Flow from Equal to Unequal Countries?" CEPR Press Discussion Paper 15647, Paris & London.

De Loecker, Jan, and Jan Eeckhout. 2018. "Global Market Power." National Bureau of Economic Research Working Paper 24768. Also available as CEPR Discussion Paper 13009.

Farmer, Leland E., and Alexis Akira Toda. 2017. "Discretizing Nonlinear, Non-Gaussian Markov Processes with Exact Conditional Moments." *Quantitative Economics*, 8(2): 651–683.

Guvenen, Fatih, Fatih Karahan, Serdar Ozkan, and Jae Song. 2021. "What Do Data on Millions of U.S. Workers Say About Labor Income Risk?" *Econometrica*, 89(5): 2303–2339.

Guvenen, Fatih, Luigi Pistaferri, and Giovanni L. Violante. 2022. "Global trends in income inequality and income dynamics: New insights from GRID." *Quantitative Economics*, 13(4): 1321–1360.

Imrohoroglu, Ayse. 1989. "Cost of Business Cycles with Indivisibilities and Liquidity Constraints." *Journal of Political Economy*, 97(6): 1364–1383.

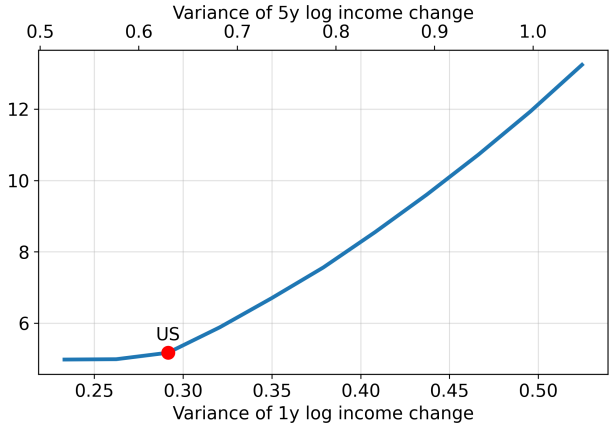
Krueger, Dirk, Kurt Mitman, and Fabrizio Perri. 2016. "Macroeconomics and Household Heterogeneity." *Handbook of Macroeconomics*, 2: 843–921.

Krusell, Per, and Anthony A Smith. 1998. "Income and Wealth Heterogeneity in the Macroeconomy." *Journal of Political Economy*, 106(5): 867–896.

Appendix A Additional Results

Figure A.1: Comparative statics for different variance calibrations

(a) Aggregate wealth



(b) Wealth distribution

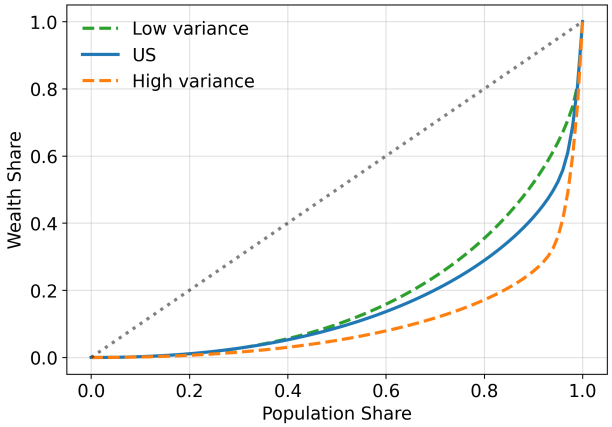
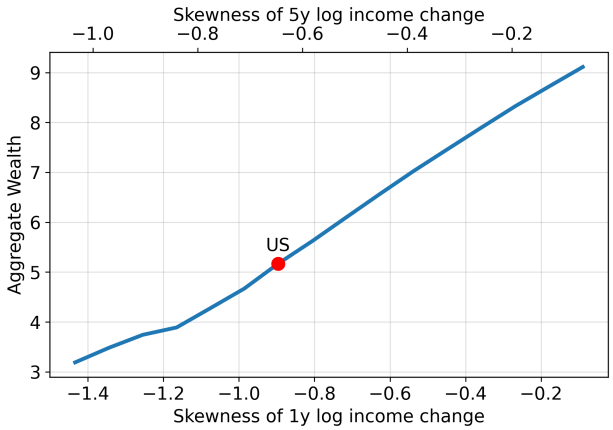


Figure A.2: Comparative statics for different skewness calibrations

(a) Aggregate wealth



(b) Wealth distribution

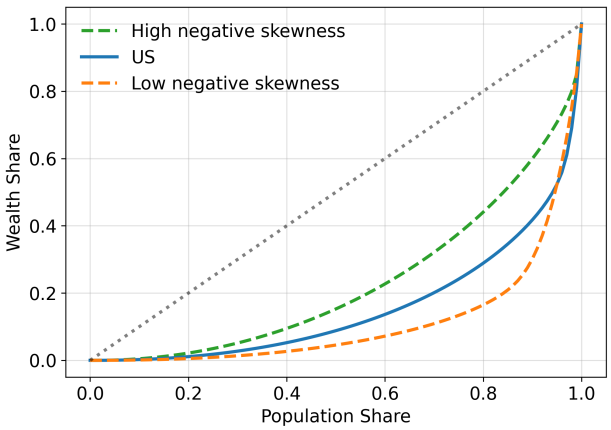


Figure A.3: Wealth effects from US closure across the wealth distribution

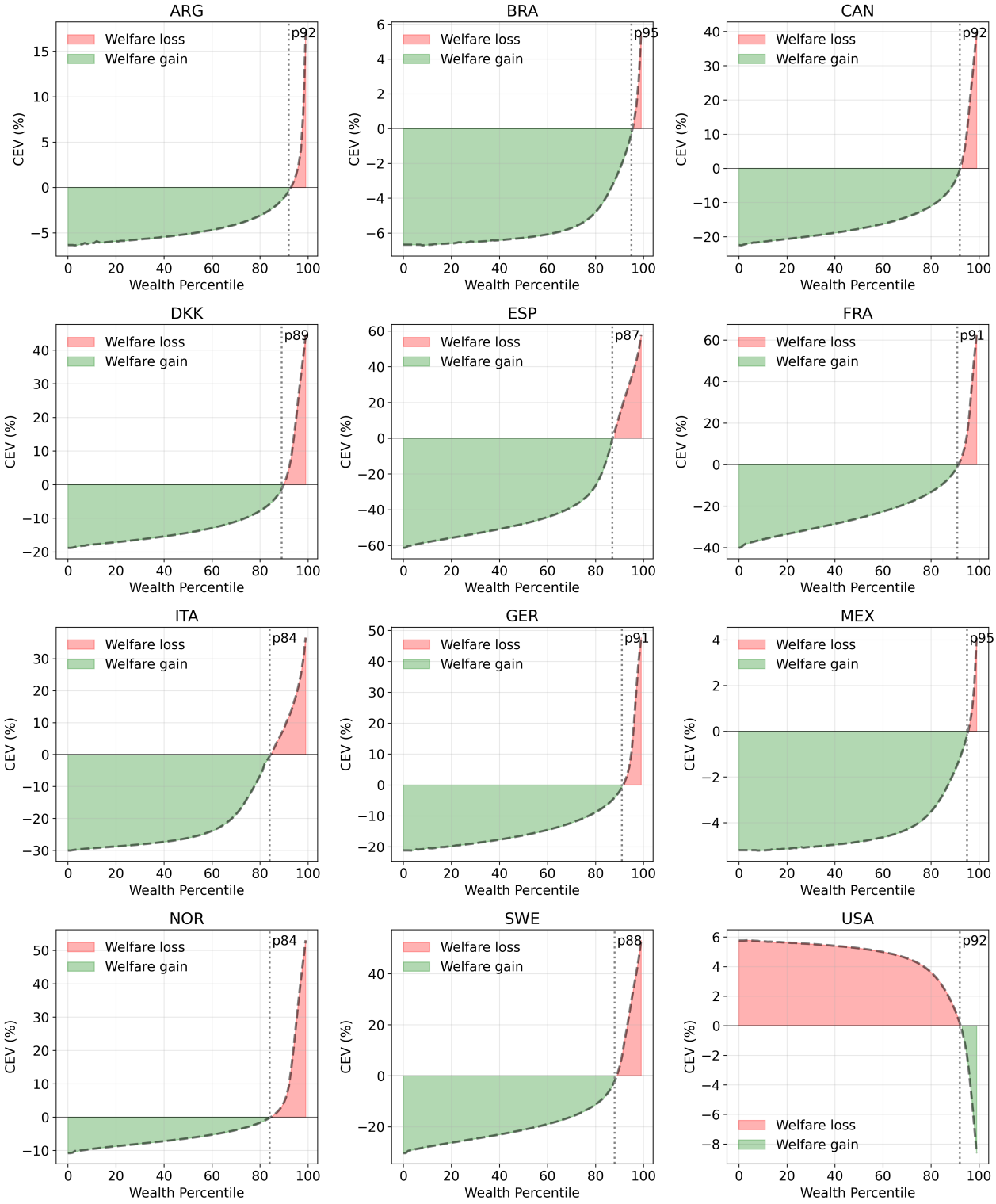
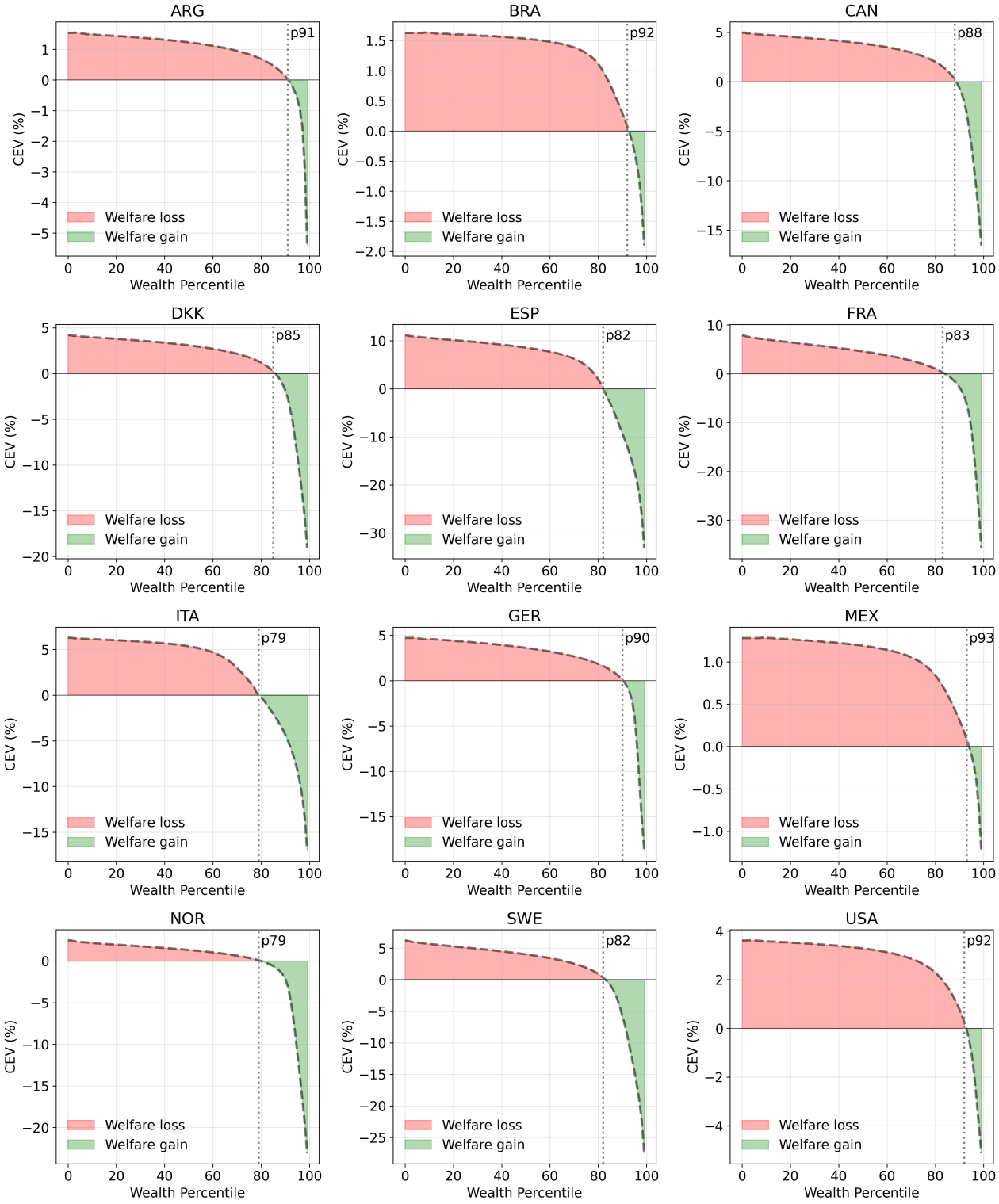
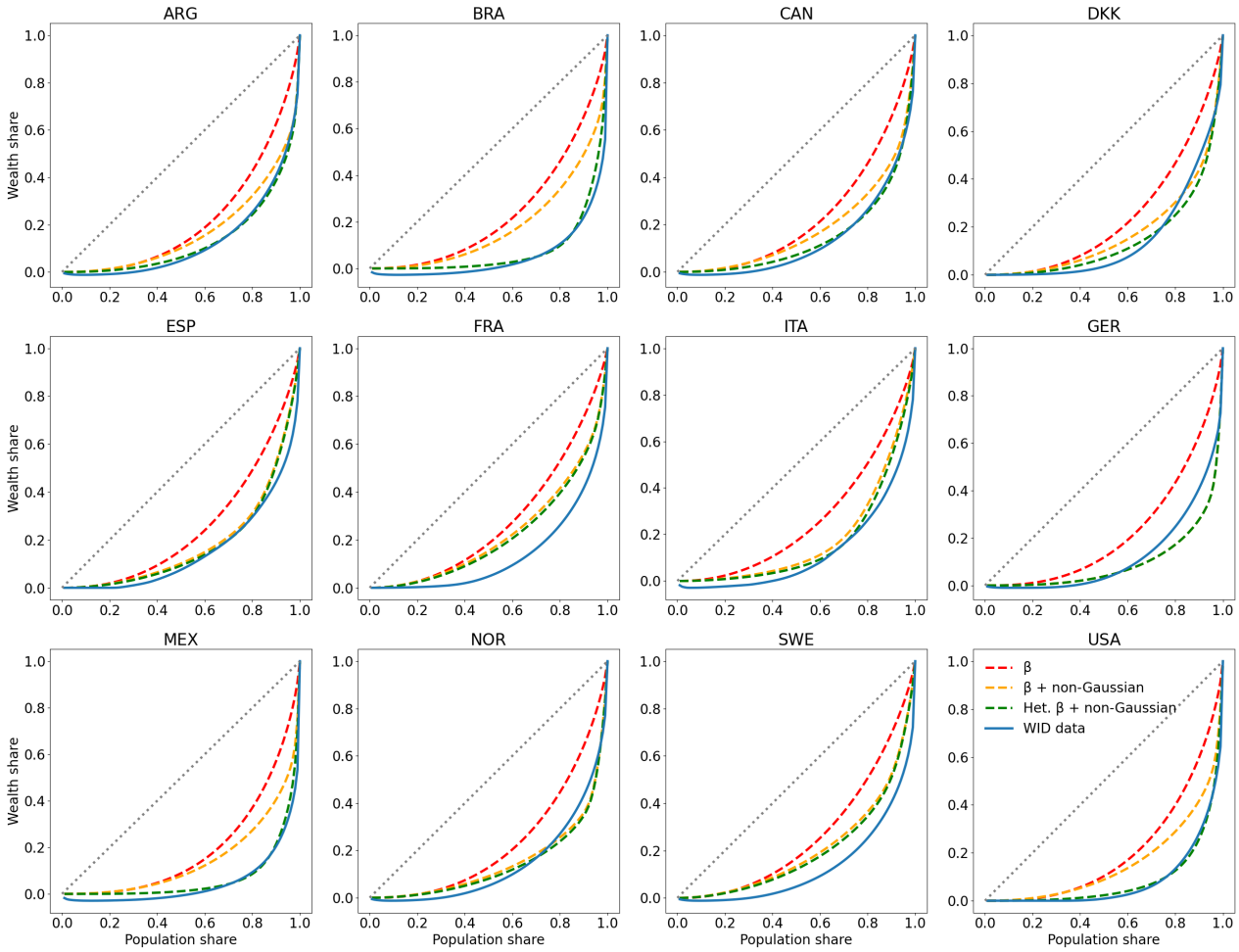


Figure A.4: Welfare effects from China closure across the wealth distribution



Appendix B Calibration

Figure B.1: Wealth distributions for each model variant



B.1 Argentina

Parameter	Value	Target
α	0.19	K/Y = 3.14 (WID)
β	0.978	A/Y = 3.45 (WID)
$[\bar{\beta}, \zeta]$	[0.971, 0.016]	$[A/Y, \boldsymbol{\psi}]$

Moments	Data (GRID)	Estimated process	Discretized process	Parameters	
Var($\Delta \log e$)	0.33	0.32	0.32	$\mu_{\eta 1}$	0.011
$S(\Delta \log e)$	-0.93	-0.94	-0.91	$\sigma^2_{\eta 1}$	0.046
$K(\Delta \log e)$	11.97	11.55	11.46	$\sigma^2_{\eta 2}$	4.245
Var($\Delta_5 \log e$)	0.56	0.58	0.58	θ	0.994
$S(\Delta_5 \log e)$	-0.72	-0.71	-0.70	ρ	0.845
$K(\Delta_5 \log e)$	8.25	8.56	8.40	σ^2_ε	0.109

B.2 Brazil

Parameter	Value	Target
α	0.26	K/Y = 4.37 (WID)
β	0.980	A/Y = 3.88 (WID)
$[\bar{\beta}, \zeta]$	[0.943, 0.045]	$[A/Y, \boldsymbol{\psi}]$

Moments	Data (GRID)	Estimated process	Discretized process	Parameters	
Var($\Delta \log e$)	0.32	0.30	0.30	$\mu_{\eta 1}$	0.006
$S(\Delta \log e)$	-0.57	-0.58	-0.60	$\sigma^2_{\eta 1}$	0.056
$K(\Delta \log e)$	9.45	8.79	8.86	$\sigma^2_{\eta 2}$	4.844
Var($\Delta_5 \log e$)	0.52	0.54	0.55	θ	0.997
$S(\Delta_5 \log e)$	-0.50	-0.49	-0.50	ρ	0.858
$K(\Delta_5 \log e)$	6.56	7.02	6.84	σ^2_ε	0.107

B.3 Canada

Parameter	Value	Target
α	0.32	K/Y = 5.35 (WID)
β	0.985	A/Y = 5.71 (WID)
$[\bar{\beta}, \zeta]$	[0.982, 0.007]	$[A/Y, \boldsymbol{\psi}]$

Moments	Data (GRID)	Estimated process	Discretized process	Parameters	
$\text{Var}(\Delta \log e)$	0.28	0.28	0.28	$\mu_{\eta 1}$	0.009
$S(\Delta \log e)$	-0.91	-0.92	-0.88	$\sigma^2_{\eta 1}$	0.042
$K(\Delta \log e)$	12.61	12.50	12.18	$\sigma^2_{\eta 2}$	4.384
$\text{Var}(\Delta_5 \log e)$	0.52	0.52	0.52	θ	0.993
$S(\Delta_5 \log e)$	-0.63	-0.63	-0.62	ρ	0.835
$K(\Delta_5 \log e)$	8.68	8.76	8.53	σ^2_ε	0.092

B.4 Denmark

Parameter	Value	Target
α	0.28	K/Y = 4.69 (WID)
β	0.985	A/Y = 5.63 (WID)
$[\bar{\beta}, \zeta]$	[0.983, 0.005]	$[A/Y, \boldsymbol{\psi}]$

Moments	Data (GRID)	Estimated process	Discretized process	Parameters	
$\text{Var}(\Delta \log e)$	0.18	0.18	0.18	$\mu_{\eta 1}$	0.004
$S(\Delta \log e)$	-0.85	-0.86	-0.83	$\sigma^2_{\eta 1}$	0.035
$K(\Delta \log e)$	15.28	15.19	15.19	$\sigma^2_{\eta 2}$	5.214
$\text{Var}(\Delta_5 \log e)$	0.34	0.34	0.35	θ	0.997
$S(\Delta_5 \log e)$	-0.71	-0.71	-0.65	ρ	0.871
$K(\Delta_5 \log e)$	10.64	10.70	10.75	σ^2_ε	0.059

B.5 Spain

Parameter	Value	Target
α	0.44	K/Y = 7.40 (WID)
β	0.987	A/Y = 6.56 (WID)
$[\bar{\beta}, \zeta]$	[0.987, 0.002]	$[A/Y, \boldsymbol{\psi}]$

Moments	Data (GRID)	Estimated process	Discretized process	Parameters	
Var($\Delta \log e$)	0.22	0.22	0.22	$\mu_{\eta 1}$	0.002
$S(\Delta \log e)$	-0.49	-0.49	-0.52	$\sigma^2_{\eta 1}$	0.058
$K(\Delta \log e)$	12.88	12.93	12.48	$\sigma^2_{\eta 2}$	10.588
Var($\Delta_5 \log e$)	0.41	0.41	0.41	θ	0.999
$S(\Delta_5 \log e)$	-0.28	-0.28	-0.28	ρ	0.810
$K(\Delta_5 \log e)$	8.84	8.81	8.57	σ^2_ε	0.070

B.6 France

Parameter	Value	Target
α	0.37	K/Y = 6.24 (WID)
β	0.988	A/Y = 5.96 (WID)
$[\bar{\beta}, \zeta]$	[0.987, 0.001]	$[A/Y, \boldsymbol{\psi}]$

Moments	Data (GRID)	Estimated process	Discretized process	Parameters	
Var($\Delta \log e$)	0.22	0.21	0.21	$\mu_{\eta 1}$	0.009
$S(\Delta \log e)$	-1.05	-1.07	-1.04	$\sigma^2_{\eta 1}$	0.021
$K(\Delta \log e)$	13.16	12.57	12.57	$\sigma^2_{\eta 2}$	2.617
Var($\Delta_5 \log e$)	0.35	0.37	0.37	θ	0.995
$S(\Delta_5 \log e)$	-1.09	-1.07	-1.01	ρ	0.877
$K(\Delta_5 \log e)$	10.04	10.48	10.39	σ^2_ε	0.078

B.7 Italy

Parameter	Value	Target
α	0.35	K/Y = 5.89 (WID)
β	0.986	A/Y = 5.82 (WID)
$[\bar{\beta}, \zeta]$	[0.985, 0.004]	$[A/Y, \boldsymbol{\psi}]$

Moments	Data (GRID)	Estimated process	Discretized process	Parameters	
Var($\Delta \log e$)	0.26	0.25	0.25	$\mu_{\eta 1}$	-0.001
$S(\Delta \log e)$	0.42	0.37	0.37	$\sigma^2_{\eta 1}$	0.073
$K(\Delta \log e)$	12.78	13.67	11.93	$\sigma^2_{\eta 2}$	13.555
Var($\Delta_5 \log e$)	0.42	0.43	0.43	θ	0.999
$S(\Delta_5 \log e)$	0.10	0.11	0.11	ρ	0.700
$K(\Delta_5 \log e)$	10.81	9.80	8.73	σ^2_ε	0.072

B.8 Germany

Parameter	Value	Target
α	0.33	K/Y = 5.47 (WID)
β	0.979	A/Y = 6.15 (WID)
$[\bar{\beta}, \zeta]$	[0.979, 0.001]	$[A/Y, \boldsymbol{\psi}]$

Moments	Data (GRID)	Estimated process	Discretized process	Parameters	
Var($\Delta \log e$)	0.17	0.16	0.16	$\mu_{\eta 1}$	0.000
$S(\Delta \log e)$	0.10	0.10	0.04	$\sigma^2_{\eta 1}$	0.050
$K(\Delta \log e)$	14.46	13.45	13.30	$\sigma^2_{\eta 2}$	9.906
Var($\Delta_5 \log e$)	0.35	0.36	0.37	θ	0.999
$S(\Delta_5 \log e)$	0.10	0.09	0.05	ρ	0.919
$K(\Delta_5 \log e)$	8.45	9.05	9.26	σ^2_ε	0.051

B.9 Mexico

Parameter	Value	Target
α	0.27	K/Y = 4.57 (WID)
β	0.974	A/Y = 3.95 (WID)
$[\bar{\beta}, \zeta]$	[0.922, 0.065]	$[A/Y, \boldsymbol{\psi}]$

Moments	Data (GRID)	Estimated process	Discretized process	Parameters	
Var($\Delta \log e$)	0.41	0.41	0.41	$\mu_{\eta 1}$	0.007
$S(\Delta \log e)$	-0.45	-0.45	-0.46	$\sigma^2_{\eta 1}$	0.087
$K(\Delta \log e)$	8.08	8.09	8.31	$\sigma^2_{\eta 2}$	5.735
Var($\Delta_5 \log e$)	0.78	0.78	0.80	θ	0.993
$S(\Delta_5 \log e)$	-0.30	-0.30	-0.31	ρ	0.838
$K(\Delta_5 \log e)$	6.01	6.00	6.05	σ^2_{ε}	0.134

B.10 Norway

Parameter	Value	Target
α	0.24	K/Y = 4.05 (WID)
β	0.984	A/Y = 6.69 (WID)
$[\bar{\beta}, \zeta]$	[0.983, 0.004]	$[A/Y, \boldsymbol{\psi}]$

Moments	Data (GRID)	Estimated process	Discretized process	Parameters	
Var($\Delta \log e$)	0.34	0.35	0.36	$\mu_{\eta 1}$	0.008
$S(\Delta \log e)$	-0.88	-0.88	-0.86	$\sigma^2_{\eta 1}$	0.049
$K(\Delta \log e)$	12.15	12.44	11.88	$\sigma^2_{\eta 2}$	6.444
Var($\Delta_5 \log e$)	0.63	0.61	0.63	θ	0.996
$S(\Delta_5 \log e)$	-0.71	-0.71	-0.71	ρ	0.846
$K(\Delta_5 \log e)$	9.98	9.71	9.06	σ^2_{ε}	0.126

B.11 Sweden

Parameter	Value	Target
α	0.34	$K/Y = 5.68$ (WID)
β	0.987	$A/Y = 5.89$ (WID)
$[\bar{\beta}, \zeta]$	[0.987, 0.002]	$[A/Y, \boldsymbol{\psi}]$

Moments	Data (GRID)	Estimated process	Discretized process	Parameters	
$\text{Var}(\Delta \log e)$	0.23	0.23	0.23	$\mu_{\eta 1}$	0.006
$S(\Delta \log e)$	-0.78	-0.78	-0.79	$\sigma^2_{\eta 1}$	0.037
$K(\Delta \log e)$	11.79	11.59	11.26	$\sigma^2_{\eta 2}$	4.124
$\text{Var}(\Delta_5 \log e)$	0.39	0.40	0.40	θ	0.995
$S(\Delta_5 \log e)$	-0.53	-0.53	-0.53	ρ	0.821
$K(\Delta_5 \log e)$	8.50	8.66	8.37	σ^2_{ε}	0.078

Appendix C Data Appendix

C.1 Construction of US Capital Stock

We construct the aggregate capital stock for the United States using data from Table B.1 of the Financial Accounts of the United States (Z.1 release). The capital stock is defined as the sum of non-financial assets across the following sectors:

- **Households:** Direct holdings of non-financial assets (Line 2; FRED series `BOGZ1LM152010005A`).
- **Non-financial non-corporate business:** Non-financial assets (Line 7; FRED series `BOGZ1LM11201000`
- **Financial non-corporate business:** Non-financial assets (Line 12; FRED series `BOGZ1LM662090205A`).
- **Federal Government:** Non-financial assets (Line 16; FRED series `BOGZ1LM315015005A`).
- **State and Local Governments:** Non-financial assets (Line 20; FRED series `BOGZ1LM212010095A`).
- **Non-financial corporate business:** Non-financial assets (FRED series `NCBNATA027N`).

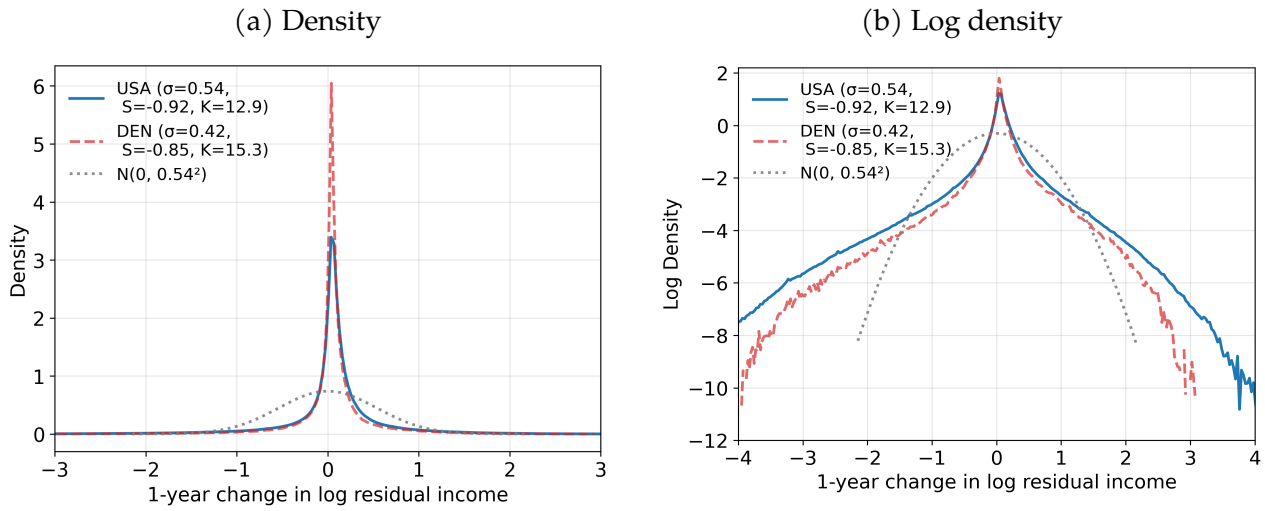
This strategy follows the reconciliation of macroeconomics and finance for the US corporate sector outlined in Atkeson, Heathcote and Perri (2025). The value of firms' profits corresponds to the market value of domestic corporations minus their book value (non-financial assets).

Appendix D Motivation

In this section, we highlight empirical facts about central elements of our quantitative framework: income risk, wealth inequality, and global imbalances.

First, as documented in Guvenen, Pistaferri and Violante (2022), idiosyncratic income risk features non-Gaussian properties such as negative skewness and high kurtosis across countries (Figure D.2). That is – in any given period (i) households are more likely to face large negative shocks than large positive ones and (ii) most households experience small changes in earnings relative to overall dispersion, while a few experience extremely large shocks. Furthermore, at the cross-section, even though income changes in all countries feature deviations from normality, the moments of income dynamics at short and longer horizons are heterogeneous across countries (Figure D.3).

Figure D.2: Income dynamics in the US and Denmark



Second, within-country wealth inequality displays significant cross-country heterogeneity that is closely related to differences in income risk, as seen in Figure D.4a. Countries with larger income volatility, as measured by the variance of 1y log income changes, also tend to display higher wealth inequality. Finally, countries also differ considerably in terms of aggregate net wealth and capital accumulation, leading to considerable differences in external imbalances. As seen in Figure D.4b, in our 12-country sample of advanced and emerging economies, some countries like Norway and Denmark are large net foreign creditors, while others such as the US, Spain, Brazil, and Mexico are net debtors vis-à-vis the rest of the world.

Figure D.3: Income risk moments across countries

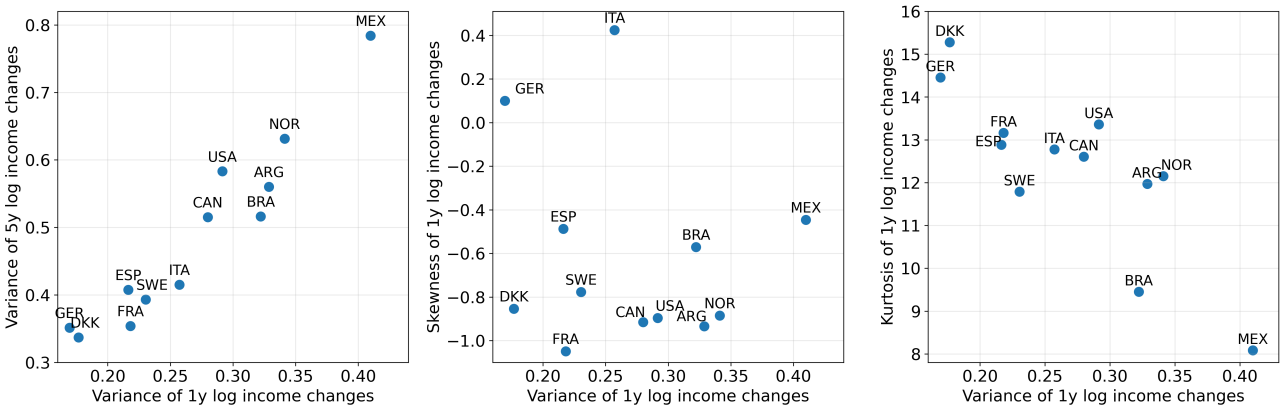


Figure D.4: Wealth aggregates and inequality across countries

(a) Wealth inequality vs. income risk

(b) Aggregate wealth, capital, and NFA

