

The End of Privilege: a Re-examination of the Net Foreign Asset Position of the United States

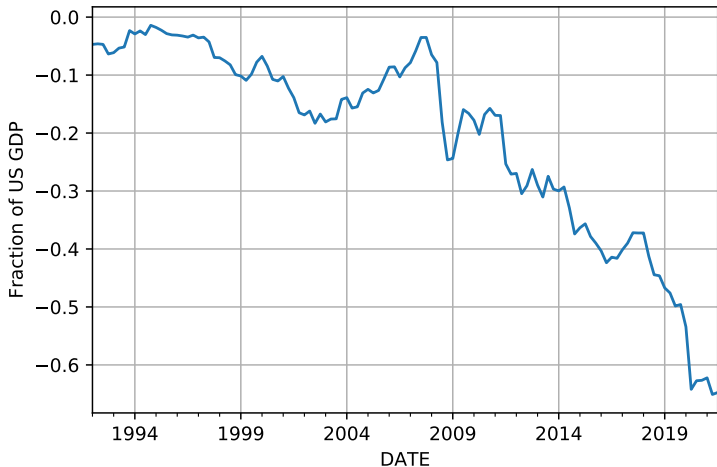
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Over last decade unprecedented decline in Net Foreign Asset Position of the United States



- NFA = Market value of foreign assets owned by Americans - U.S. assets owned by foreigners

Part 1: Accounting for NFA Dynamics

- Original view emphasized CA as determinant of NFA
- Newer view recognizes **valuations effects** matter
 - ▶ Gourinchas & Rey 2007 emphasized that changes in relative prices of portfolios of foreign assets/liabilities (**valuation effects**) can induce adjustment in NFA
 - ▶ 1990s: United States run substantial CA deficits, yet NFA did not decline much due to positive valuation effects (**our notion of privilege**)
 - ▶ Post 2010: United States run modest CA deficits, yet rapidly deteriorating NFA due to negative valuations (**end of privilege**)
 - ▶ Key driver: **boom in U.S. equities** (relative for foreign)

Part 2: What does this mean for Americans?

- Use simple model + data to assess cause of U.S. equity boom
 - ▶ open economy version of Farhi and Gourio (2018)
- Preferred explanation: increase in profitability of U.S. corporations
- Implies large transfers of resources from U.S. to RoW
- Ex-post loss for U.S., ex-ante desirable?

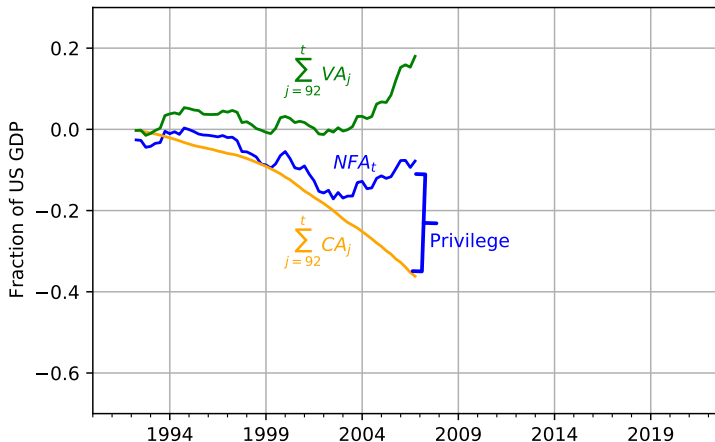
Part 1: Accounting for NFA Dynamics

$$NFA_{t+1} - NFA_t = \underbrace{CA_t}_{\text{Net lending abroad}} + \underbrace{VA_t}_{\text{Valuation Effects}}$$

- Iterating yields

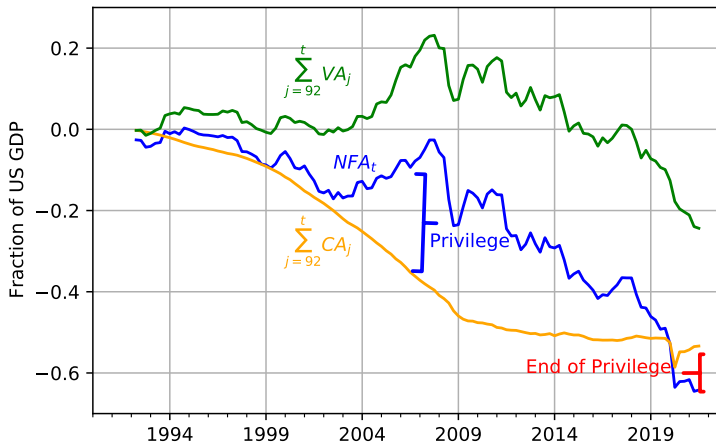
$$NFA_t - NFA_0 = \underbrace{\sum_{j=0}^t CA_j}_{\text{Cumul. net lending}} + \underbrace{\sum_{j=0}^t VA_j}_{\text{Cumul. valuations}}$$

The Privilege



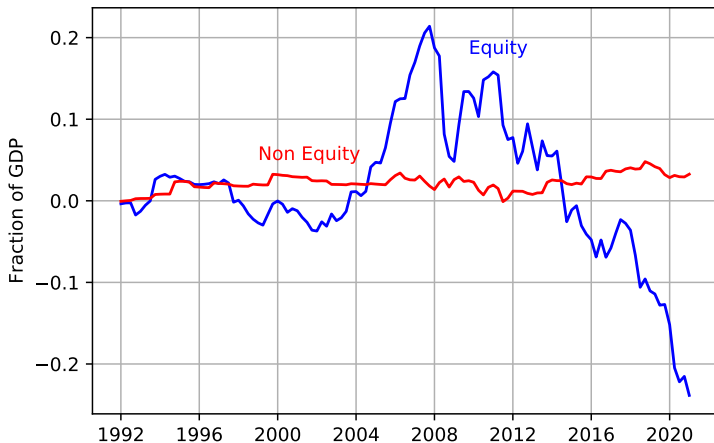
- Pre 2010: US run substantial CA deficits, yet NFA did not decline much due to positive valuation effects (Gourinchas and Rey, 2007)

The Privilege and its end



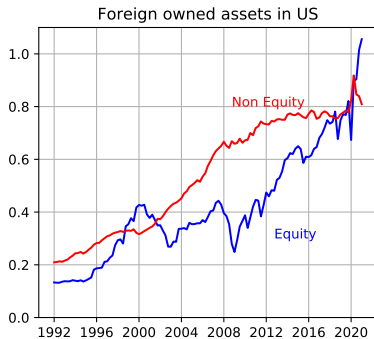
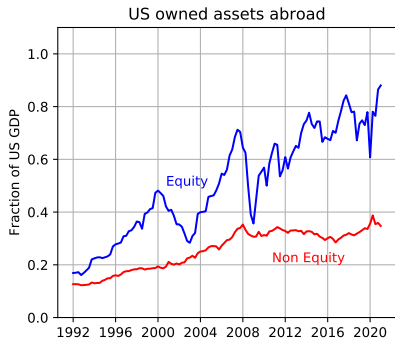
- Post 2010: US CA stabilizes, yet **negative valuation effects** drive decline in NFA

Negative Valuation effects: 2010-2021



- Valuation effects mostly in Portfolio and FDI equity

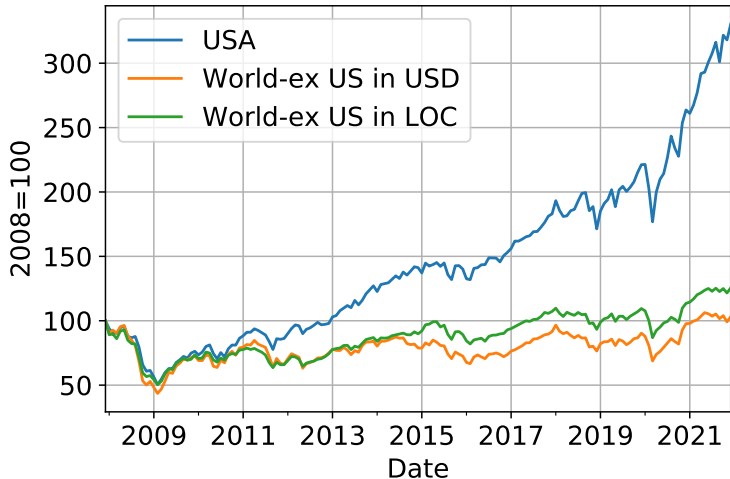
Large Gross Equity Positions



- Equity is both portfolio and direct investment equity
- Non-equity is bonds, loans, deposits, currency

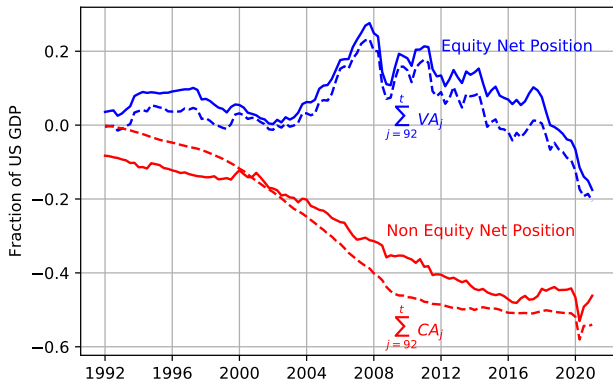
Equity prices divergence

MSCI Stock Indices 2008-2021



- Only small fraction of divergence due to USD appreciation

Equity v/s Non Equity Summary



- Current account mostly financed by non-equity flows
- Equity position driven by changes in equity valuations

NFA Dynamics Summary

- US NFA position fell from **-10% of GDP in 2007 to -65% in 2021**
- Current account deficits accounted for only 15pp of decline
- **Dominant driver (40pp): equity valuation effects**
- Reflecting strong performance of U.S. equities coupled with large (40% of GDP) foreign ownership of U.S. equity

Part 2: What does this mean for Americans?

- To answer need to understand what drives rising US equity values
- Farhi and Gourio (2018) in an international setting
- Look for shocks that match asset prices and macro data
- Implications for the NFA position? for US welfare?

Key Model Elements

- Two countries (US and RoW), one final good, continuum of intermediates produced with K and L
- Markups: Each intermediate Bertrand competition between leader (prod z_H) and follower (prod z_L) implies markup is $\frac{z_H}{z_L}$
- Equity: claims to dividends (including capital income and mark-ups) of intermediate firms, so mark-up $\uparrow \rightarrow$ dividend $\uparrow \rightarrow$ price \uparrow
- Fixed internationally diversified equity portfolios. Trade in risk free bond
- Can characterize closed form solution
- U.S. specific, one time, unexpected shock on BGP:
 - ▶ Increase in markups of U.S. corporations $\frac{z_H}{z_L} \uparrow$

Firms

- Final output is CES composite of intermediate varieties

$$Y = \left(\int_0^1 Y_i^{\frac{\varepsilon-1}{\varepsilon}} di \right)^{\frac{\varepsilon}{\varepsilon-1}}$$

- Each variety i can be produced by
 - ▶ single **leader firm** with productivity z_H
 - ▶ competitive fringe of **followers** with productivity z_L

$$Y_i = z K_i^\alpha (Z L_i)^{1-\alpha}$$

- Firms rent capital at rate R and labor at rate W
- Capital's share in production is α
- Growth in labor productivity Z at rate g

Firms

- Leader firms produce all output in equilibrium
- Gross markups are given by

$$\mu = \min \left\{ \frac{\varepsilon}{\varepsilon - 1}, \frac{z_H}{z_L} \right\}$$

- Assume $\mu = \frac{z_H}{z_L}$: leaders engage in **limit pricing**:
 - ▶ produce just enough to drive p_i down to followers' unit cost, discourage entry
- Other firms make investment decisions and rent out capital

$$\max_{\{K_{t+1}\}} E \sum_{t=0}^{\infty} \frac{1}{(1+r^*)^t} [R_t K_t + (1-\delta)K_t - K_{t+1}]$$

Households

- US preferences

$$E \sum_{t=0}^{\infty} \left(\frac{1}{1+\rho} \right)^t u(C_t, L_t)$$

where

$$u(C, L) = \frac{\left(C - Z \frac{L^{1+\sigma}}{1+\sigma} \right)^{1-\gamma}}{1-\gamma}$$

- GHH \Rightarrow labor supply independent of consumption
- ROW prefs: risk neutral $\gamma^* = 0 \Rightarrow r^* = \rho^*$

Portfolios

- US households hold fixed fractions λ and λ^* of domestic and foreign firms
- Trade risk free bonds internationally that pay r^*

$$C_t + B_{t+1} = W_t L_t + B_t + r^* B_t + \lambda D_t + \lambda^* D_t^*$$

where

$$D_t = R_t K_t + (1 - \delta) K_t - K_{t+1} + \Pi_t$$

- Equity valued at the discounted present value of dividends at world discount rate r^*

Equilibrium Factor Shares, Earnings, and Dividends

- Firm FOCs plus symmetry across varieties gives factor income shares

$$\frac{R_t K_t}{Y_t} = \frac{\alpha}{\mu}$$
$$\frac{W_t L_t}{Y_t} = \frac{1 - \alpha}{\mu}$$

- Rest of output is monopoly profits (factorless income)

$$\Pi_t = \frac{\mu - 1}{\mu} Y_t$$

- Optimal investment + FOC for labor supply

$$R_t = r^* + \delta$$
$$W_t = Z_t L_t^\sigma$$

- Dividends and Earnings

$$D_t = Y_t - W_t L_t - I_t$$
$$E_t = Y_t - W_t L_t - \delta K_t$$

Asset Values

- Firm value is discounted present value of dividends

$$P_t = \sum_{j=1}^{\infty} \frac{D_{t+j}}{(1+r^*)^j}$$

- Equals capital stock plus discounted value of monopoly profits

$$P_t = K_{t+1} + \sum_{j=1}^{\infty} \frac{\Pi_{t+j}}{(1+r^*)^j}$$

Ratios on a Balanced Growth Path

1. Buffett Ratio: $\frac{P}{Y} = \frac{K'}{Y} + \frac{1}{r^* - g} \frac{\mu - 1}{\mu}$

2. Capital-Output Ratio: $\frac{K}{Y} = \frac{1}{r^* + \delta} \frac{\alpha}{\mu}$

▶ (1)+(2) \Rightarrow Tobin's Q = P/K'

3. Dividend-Price Ratio: $\frac{D'}{P} = r^* - g$

4. Earnings-Price Ratio: $\frac{E'}{P} = \frac{D'}{P} + g \frac{K'}{P}$

- Four moments to calibrate four parameters:

$$g, r^*, \mu, \alpha$$

Need measures of P , K , D , E

- In our simple model, firms are 100% equity financed
⇒ P is total market value of non-financial assets
- Flow of Funds reports **market value and replacement cost** of non-financial assets in US
- Focus on **corporate sector**: this is what foreigners can buy

Corporate Sector Balance Sheet

Assets	Liabilities
Market value of non-financial assets = Enterprise value	Market value of equity
Financial assets (inc. FDI in ROW)	Financial liabilities (inc. ROW FDI in US)

- Model D is total firm cash flow that can be paid to investors:
- **$D = \text{Output} - \text{Wages} - \text{Investment} - \text{Corp. Taxes} - \text{IBT}$**

Targets,

- Pick $\Delta \frac{z_H}{z_L}$ to match P,Y of U.S./RoW corporate sector
- Need US corporations less competitive but also more productive but (consistent with lots of recent work)

		2007	2021	
		Model = Data	Data	Model
Valuation Metrics	P/Y	1.52	2.84	2.84
	P/D	30		
NIPA Metrics	Y/Y^*	1	1	1

$\Delta CA/Y$
Valuations/Y

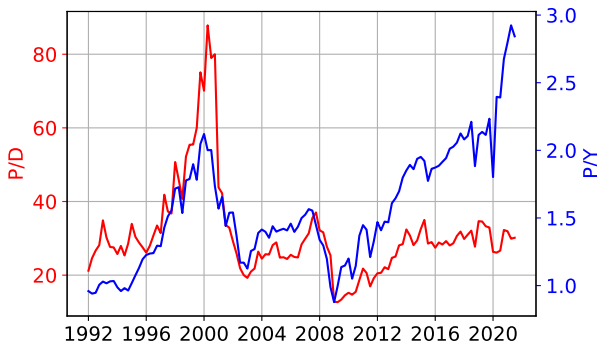
Targets, Results

- Pick $\Delta \frac{z_H}{z_L}$ to match P,Y of U.S./RoW corporate sector
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		Model = Data	Data	Model
Valuation Metrics	P/Y	1.52	2.84	2.84
	P/D	30	30	30
NIPA Metrics	Y/Y^*	1	1	1
	$\Delta CA/Y$		-15	+5.7
	Valuations/Y		-46	-39.6

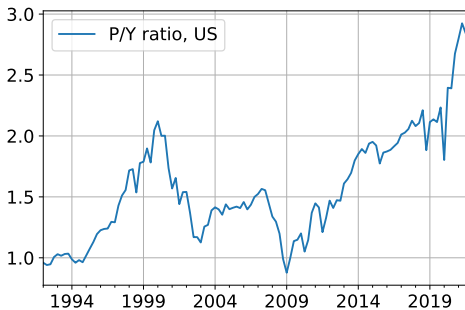
- Dividends: all non invested resources available to stakeholders
- Because higher US equity prices due to high dividends, decline in NFA associated to transfers of resources of **1.3% per year**

This equity boom looks different

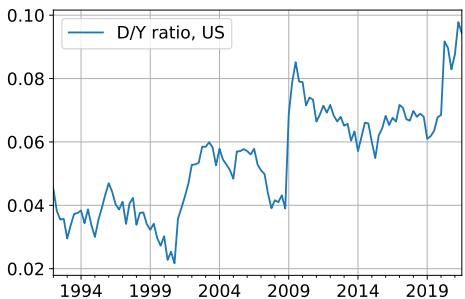


- dot-com boom: large increase in P/D ratio
- current boom: constant P/D ratio, justified by higher dividends

Dividends and P/Y ratio

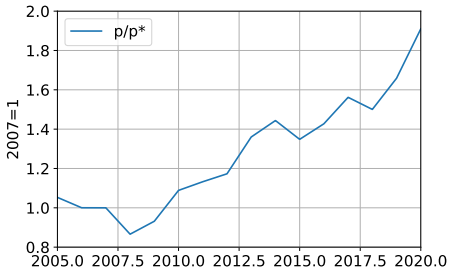


Value of US corporations rose relative to GDP..

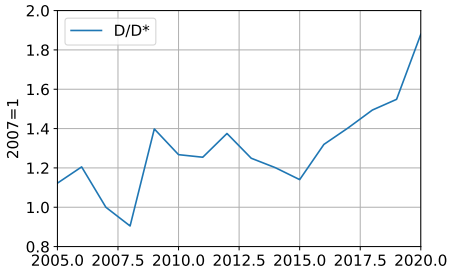


and so did dividends

Dividends and P/P* ratio

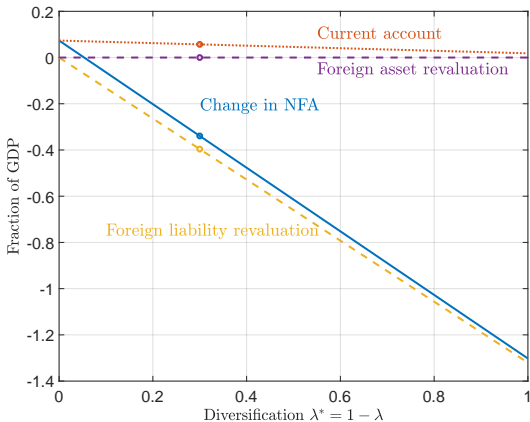


Value of US corporations rose relative to value of foreign corporations..



and so did dividends

Impact of Markup Shock on NFA



- Shock consistent with NFA, CA patterns

Unmeasured capital as driver of US equity boom?

- Increased investment opportunities in unmeasured capital (Crouzet and Eberly, 2021)?
- In closed economy: iso-morphic to mark-up model
- In open economy: Implies very large current account deficit

Unmeasured capital as driver of US equity boom?

- Increased investment opportunities in unmeasured capital (Crouzet and Eberly, 2021)?
- In closed economy: iso-morphic to mark-up model
- In open economy: Implies very large current account deficit
- Americans should borrow to finance investment in unmeasured capital
- International data favors mark-up story

Unmeasured Capital Experiment

- Production requires measured and unmeasured capital

$$Y = K_U^{(1-\nu)} \left(K_M^\alpha L^{1-\alpha} \right)^\nu$$

$$Y_M = Y - I_U$$

- Valuation of firms

$$P = K'_U + K'_M$$

- **Isomorphic to markup model in closed economy**

- ▶ High μ economy looks just like high $1 - \nu$ economy

- But models respond differently to shocks in open economy

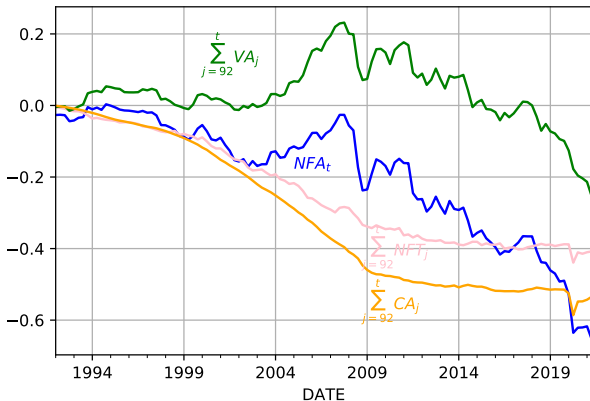
- ▶ $\uparrow P/Y$ by 130% of GDP \Rightarrow huge \uparrow in investment in unmeasured capital economy

- ▶ \Rightarrow massive and counterfactual current account deficit

Conclusions

- Large decline in U.S. NFA (end of privilege) due to relative high performance of US v/s RoW equity
- Unanticipated shocks to profitability of U.S. corporations can explain post 2010 macro, financial and international trends
- Imply large transfer of resources from U.S. to RoW (about 1.3% of US GDP each year): ex-post loss
- Transfer happens as U.S. corporations more productive, possibly ex-ante efficient

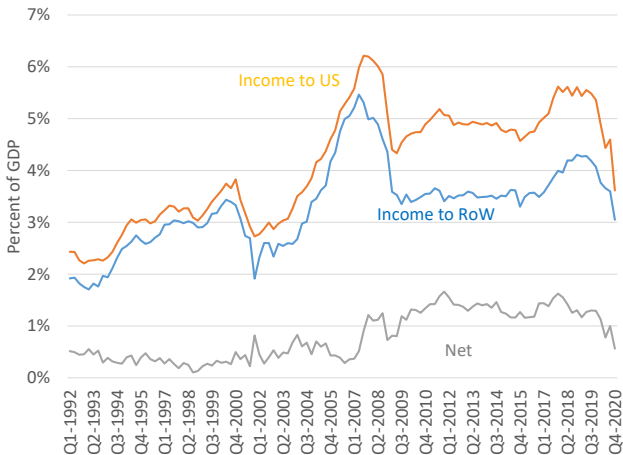
Alternative measures of net lending abroad



- Statistical discrepancy between two ways of measuring net lending abroad: current or financial account
- Similar conclusions regarding end of privilege

International Income Puzzle and Ex-Ante Privilege

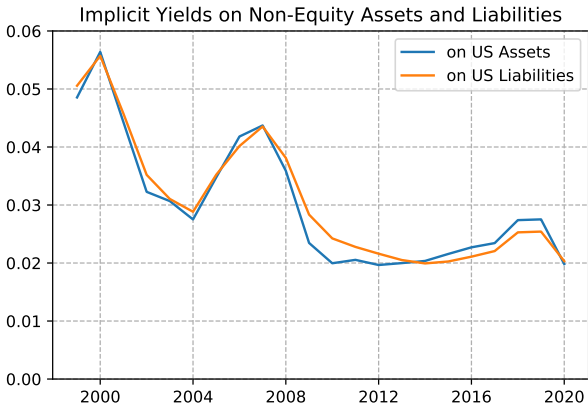
- NFA evolution contrasts with Net Factor Income from abroad: negative declining NFA, positive stable NFI



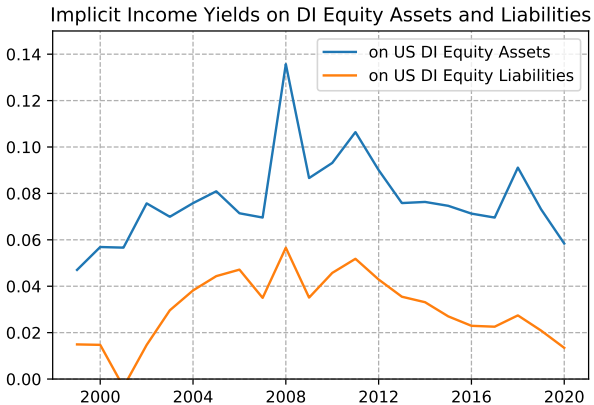
International Income Puzzle and Ex-Ante Privilege

- Are “Safe Assets” special?
 - ▶ Currency, Bank deposits, US Treasuries
 - ▶ average income yields on US non-equity external assets and liabilities are similar implicit interest rates
- Extraordinary “income yield” on US Direct Investment Equity Assets in ROW implicit DI yields
 - ▶ *Dark Matter?* (is value of DI equity in ROW understated)
 - ▶ *Profit Shifting?* (about 1/3 of DI equity income is in tax havens)
- Positive US Net Income despite negative Net Assets almost entirely due to DI equity asset income yield and small gap in dividend yields on portfolio equity assets and liabilities implicit PI yields NFAsummary

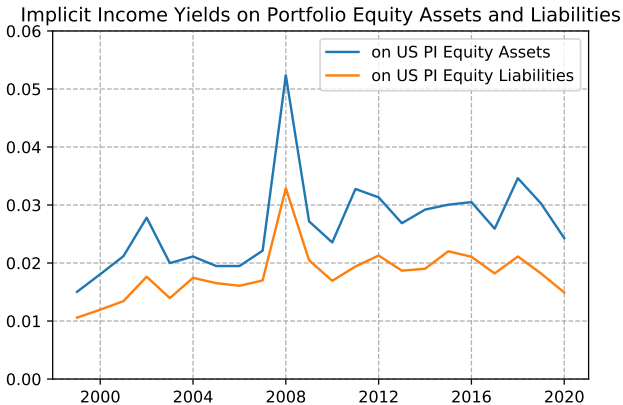
Implicit Income Yields on Non-Equity External Assets and Liabilities



Implicit Income Yields on DI Equity External Assets and Liabilities

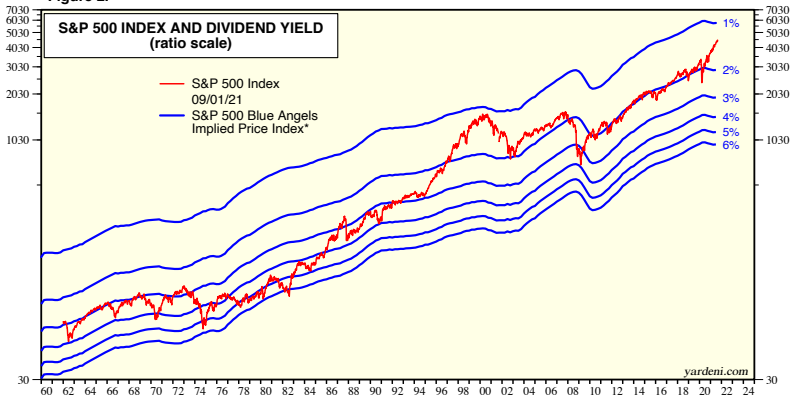


Implicit Income Yields on Portfolio Equity External Assets and Liabilities



S&P500 Dividends and Yields

Figure 2.



* Blue lines show hypothetical values of S&P 500 stock price index using actual S&P 500 dividend (4-quarter trailing sum) divided by dividend yields from 1% to 6%
Source: Standard & Poor's.