

Exorbitant Privilege and Exorbitant Duty

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Three Important Facts on US External Accounts

- A World Banker's Balance Sheet
- “Exorbitant Privilege” in normal times
- “Exorbitant Duty” in crisis times

Exorbitant Privilege

- Modern meaning: (Gourinchas and Rey (2007))
 - Excess return of US external assets over US external liabilities.
 - Important for long run sustainability (relaxes US intertemporal constraint). Stable external position despite trade deficits.
 - Asymmetric external balance sheet: World Banker;
- *First contribution*: Positive excess returns in good times.

Exorbitant Duty

- *Second contribution:* document a **new** stylized fact:
 - Large US **valuation losses** in crisis times
 - Transfers wealth **from** the US **to** the rest of the world.
 - Precisely at times when the global **marginal utility of consumption is high**.
- We call this the **'Exorbitant Duty'**

A Theoretical Framework

- *Third contribution:* Model to make sense of these facts;
 - 'Exorbitant Privilege' and 'Exorbitant Duty' are two sides of the same coin;

President Roosevelt, undelivered Jefferson Day address, April 11, 1945:

"Today we have learned in the agony of war that great power involves great responsibility."

- Leads to an **alternative interpretation** of the role of the center country in the International Financial System:
 - global shocks
 - risk appetite
 - fiscal capacity

External Balance Sheet

- Updated and improved data set of “From World Banker to World Venture Capitalist”, 1952Q1 to 2009Q4
 - Use historical data on positions (annual), flows (quarterly) and asset and asset price series for valuations.
 - More detailed decomposition on liability side (**corporate and government debt estimated separately**)
 - Use detailed **wartime Treasury Surveys** of cross border holdings (1941, 1943) to cross check our initial positions. Surveys of strategic importance (reparations, and identification of foreign agents)

'investigations to uncover enemy agents and enemy assets, especially after our entry into the war, were greatly facilitated by the [1941 Treasury Census of foreign-owned assets in the US].'

'The [1943 Treasury Census of American-owned assets in foreign countries] had its principal use in the war settlements, although it provided much greatly needed information during the latter part of the military phases of the war.' [Introduction to the 1941 and 1943 Surveys].

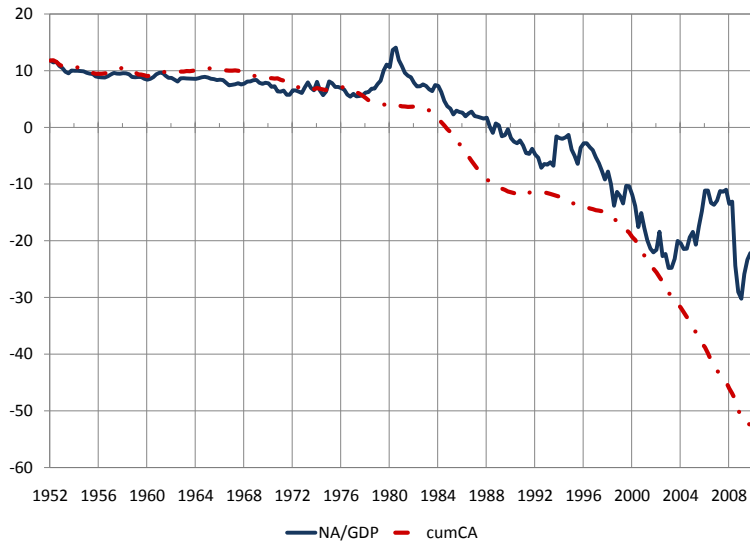
Methodology

$$P_{t+1}^i = P_t^i + F_{t+1}^i + V_{t+1}^i + OC_{t+1}^i$$

where

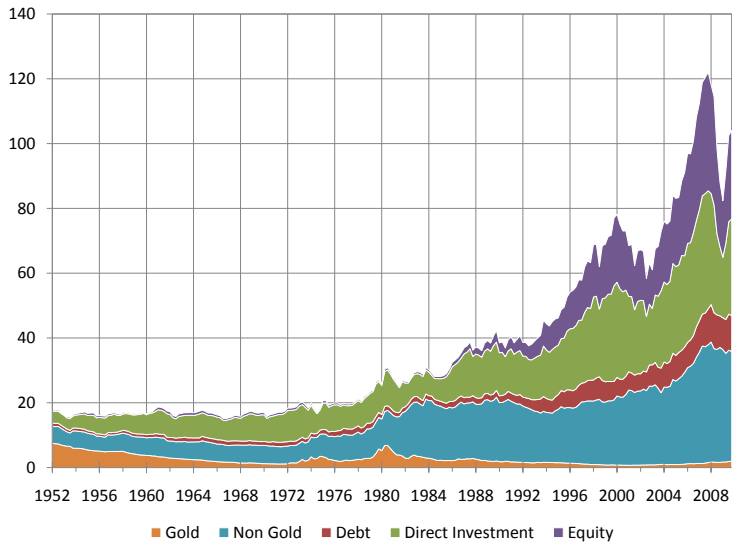
- P_t^i : Positions for assets i at the end of period t (BEA, FoF, surveys);
- F_t^i : gross financial flows during period t (Balance of Payments);
- V_t^i : Valuation gains or losses attributed to currency and local asset price movements;
- OC_t^i : Other changes reported by the BEA (in Q4); Reconciliation item.

US Net Foreign Asset Position (percent of output)



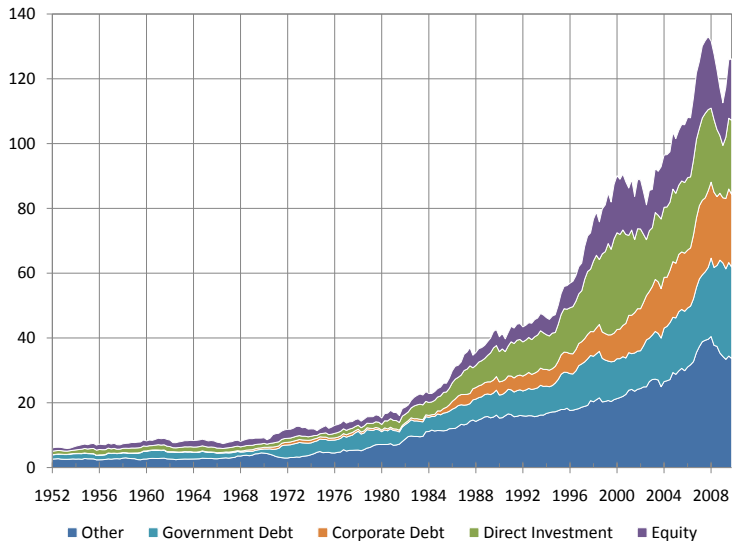
Source: BEA, SCB, 1941-43 Treasury Surveys, and authors' calculations

US Gross Asset Position (percent of output)



Source: BEA, SCB, 1941-43 Treasury Surveys, and authors' calculations

US Gross Liabilities Position (percent of output)



Source: BEA, SCB, 1941-43 Treasury Surveys, and authors' calculations

'Exorbitant Privilege'

- Gourinchas & Rey (2007) documented excess returns on US external assets of 3.32% for 1973-2004.
 - across asset classes (e.g. equity premium)
 - but also within asset class;
- Measuring returns

$$R_{t+1}^i = \frac{P_t^i + I_{t+1}^i + V_{t+1}^i}{P_t^i}$$

where

- R_{t+1}^i return on asset class i between t and $t + 1$;
- I_{t+1}^i investment income in $t + 1$ (from BoP);
- V_{t+1}^i valuation gain or losses in $t + 1$;

Recent Literature on 'Exorbitant Privilege'

- Obstfeld & Rogoff (2005): 3.1% for 1983-2003
- Lane & Milesi Ferretti (2007): 3.9% for 1980-2004
- Curcuru, Dvorack & Warnock (2008): 0.72% for 1994-2005
- Forbes (2008): 6.9% using Curcuru et al (2008)'s methodology for 2002-2006

- Issue?

$$P_{t+1}^i = P_t^i + F_{t+1}^i + V_{t+1}^i + OC_{t+1}^i$$

- How to treat OC_t ? mismeasured capital gain, financial flows, or initial position?

US Gross External Returns

average returns	1952:1-2009:4	1952:1-1972:4	1973:1-2009:4
	(a) : Valuations		
$r^a - r^l$	2.69%	1.30%	3.47%
r^a	5.84%	5.04%	6.30%
r^l	3.16%	3.74%	2.83%
	(b) : Financial Flows		
$r^a - r^l$	1.49%	1.25%	1.62%
r^a	4.91%	4.71%	5.02%
r^l	3.42%	3.46%	3.40%
	(c) : Mixed		
$r^a - r^l$	2.44%	1.28%	3.11%
r^a	5.76%	4.96%	6.21%
r^l	3.31%	3.68%	3.11%

Table : Panel (a): “Other changes” allocated to valuations; Panel (b): to financial flows; Panel (c): to valuations, except for debt assets and liabilities. r^a refers to gross assets, r^l to gross liabilities. Annualized quarterly real returns.

Excess Returns by Asset Class

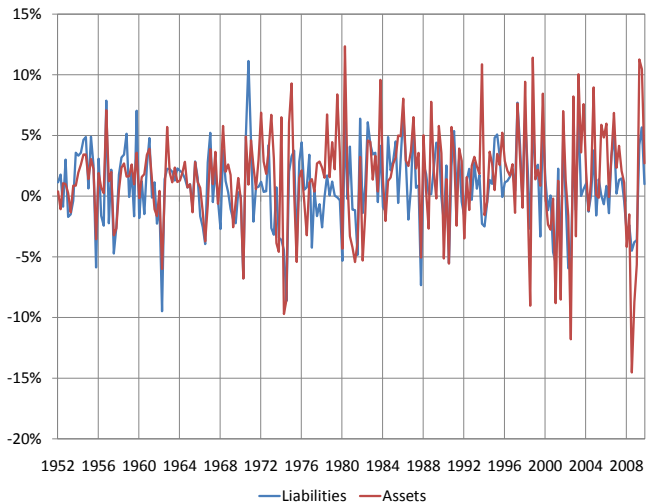
	r^o	r^d	r^{di}	r^e
	(a) : valuations			
1952:1-2009:4	-0.63%	4.71%	4.00%	4.11%
1952:1-1972:4	-2.02%	4.79%	2.24%	3.96%
1973:1-2009:4	0.16%	4.67%	4.99%	4.19%
	(b) : financial flows			
1952:1-2009:4	-1.37%	3.01%	1.99%	2.09%
1952:1-1972:4	-2.12%	3.98%	2.24%	3.59%
1973:1-2009:4	-0.94%	2.45%	1.85%	1.23%
	(c) : mixed			
1952:1-2009:4	-0.63%	3.01%	4.00%	4.11%
1952:1-1972:4	-2.02%	3.98%	2.24%	3.96%
1973:1-2009:4	0.16%	2.45%	4.99%	4.19%

Table : Panel (a): “Other changes” allocated to valuations; Panel (b): to financial flows; Panel (c): to valuations, except for debt assets and liabilities. r^o refers to the ‘other assets’; r^d to ‘debt’; r^{di} to direct investment and r^e to equities. Annualized quarterly real excess returns.

'Exorbitant Privilege'

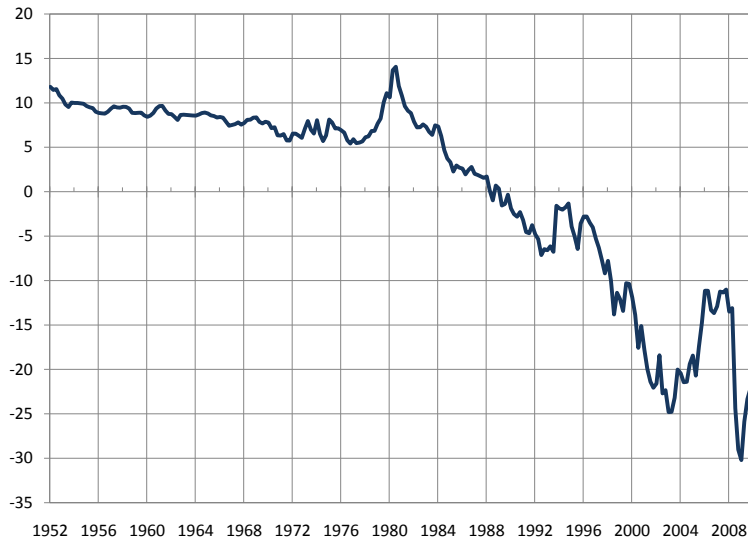
- Excess returns between 1.62% and 3.4% p.a.
- After 1973, collapse of fixed exchange rate system. Higher return and higher volatility.
- Important to look at long periods.

Real Quarterly Returns on US Gross Assets and Liabilities



Quarterly returns deflated by US Personal Consumption Expenditure deflator. Source: BEA, SCB, 1941-43 Treasury Surveys, and authors' calculations.

US Net Foreign Asset Position (percent of output)

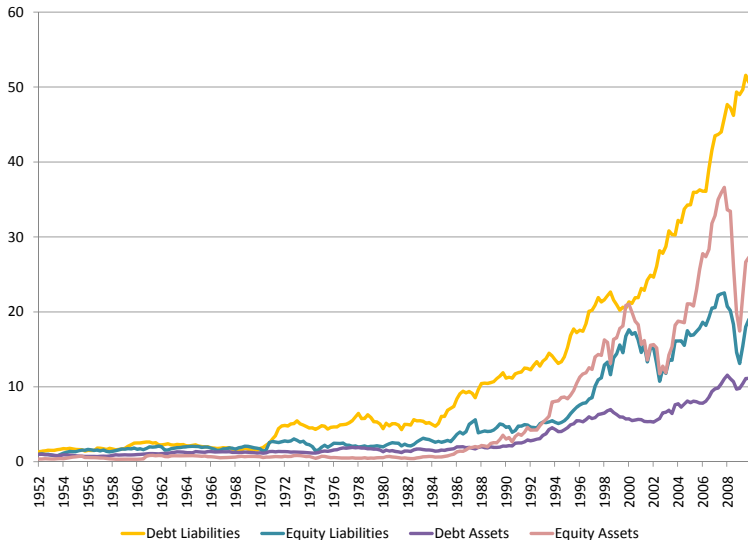


Source: BEA, SCB, 1941-43 Treasury Surveys, and authors' calculations

'Exorbitant Duty'

- During latest crisis, US net foreign asset position deteriorated massively
 - Between 2007:4 and 2009:1, NA drops from USD -1.6tr to USD -4.29tr, a decline of USD 2.7tr
 - Over same period, cumulated current account represents -809bn,
 - Valuation loss of USD 1.9tr, or about 13.4% of US GDP,

U.S. External Debt and Equity, percent of US GDP



Source: BEA, SCB, 1941-43 Treasury Surveys, and authors' calculations

Heatmap of Gains and Losses on NIIP



The figure reports total valuation gains/losses. **Dark red**: losses in excess of \$600bn. **Light red**: losses smaller than \$600bn. **Light green**: gains smaller than \$400bn. **Dark green**: gains in excess of \$400bn. Source: from Gourinchas, Rey and Truempler (2011)

Global Insurers/Liquidity Providers

- Global Liquidity Providers: U.S. (6%), Euro (1.36%), Switzerland (10.6%) and China (3.5% of GDP)
 - US (6% of GDP): losses on equity portfolio assets
 - Eurozone (1.36%) and Switzerland (10.6%): losses on direct investment and debt portfolio assets
 - China (3.5%): numbers are subject to more caution. Increase in DI liabilities and depreciation of Euro-denominated reserves assets.
- Global Liquidity Absorbers: other Emerging Market Economies (Russia, Emerging Asia, Brazil...); U.K.
 - Gains on equity liabilities
 - UK, additional gains on debt liabilities (\$515 bn)

'Exorbitant Duty'

- Deterioration also present to a smaller degree in earlier episodes
- Worsening of US net foreign asset position occurs largely through a **valuation loss**: risky assets collapse, while US government debt increases in value.
- This valuation loss transfers wealth from the US to the rest of the world.
- US provides a transfer at times when the **marginal utility of consumption is high**.
- We interpret the 'exorbitant duty' as an **insurance payment** and the 'exorbitant privilege' as the corresponding **insurance premium**.

A Simple Model of Insurance Provision

- 2 countries, Home (US) and Foreign (*), equal size 1/2.
- Endowment economy: y_t, y_t^* . Global output \bar{y}_t iid.
- Representative household with CRRA preferences:
$$E_t \sum_{s=t}^{\infty} \beta^s c_t^{1-\sigma} / (1 - \sigma),$$
- **US has more tolerance for risk:** $\sigma < \sigma^*$ (interpreted broadly as access to technology to reduce risk)
- Markets are complete.

A Simple Model

- Ex-ante symmetric equilibrium:

$$\frac{1}{2} \frac{c}{E\bar{y}} + \frac{1}{2} \left(\frac{c}{E\bar{y}} \right)^{\sigma/\sigma^*} = \frac{\bar{y}}{E\bar{y}}.$$

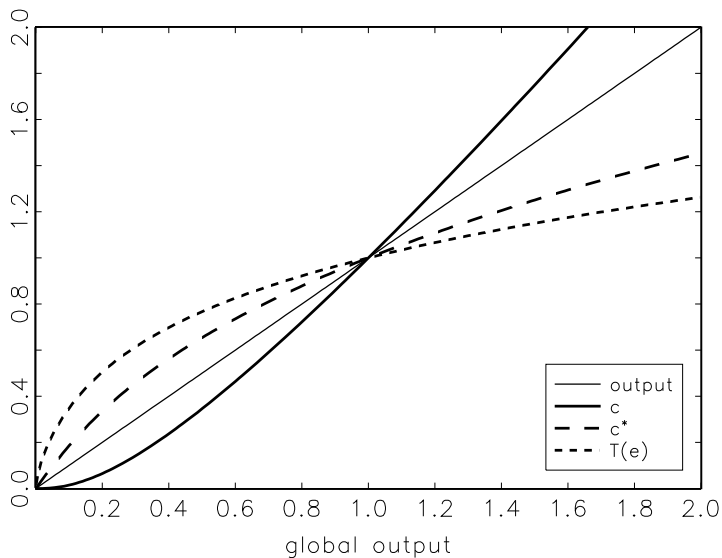
US 'insures' foreign against bad times.

- Implements allocation with US equity holdings of $\sigma^*/(\sigma + \sigma^*) > 1/2$: leveraged external portfolio
- Autarky risk-free interest rate (w/output log-linearly distributed, variance σ_ϵ^2)

$$E \ln R_t^{aut} = -\ln \beta - \frac{\sigma^2}{2} \sigma_\epsilon^2.$$

- lower autarky interest rate abroad since $\sigma^* > \sigma$ due to precautionary saving (Mendoza et al (2009); Caballero, Farhi & Gourinchas (2008))
- US runs trade deficit

Risk Sharing with Heterogenous Risk Aversion



The figure is drawn under the following assumptions: $E\bar{y} = 1$, $\sigma = 2$, $\sigma^* = 5$.

A Model of Global Disasters and Insurance

- Simple model is too stylized
 - single good, so no difference in risk-free returns
 - symmetric size
 - no episodes of global stress
- Richer model includes:
 - multiple goods (traded and non-traded) (Hassan (2009))
 - differences in size (Hassan (2009))
 - global disaster risk (Barro (2006) and Rietz (1988))
 - differences in 'fiscal capacity' (size)

A Model of Global Disasters and Insurance

- 2 countries, Home (US) and Foreign (*), home size α .
- Endowment economy:
 - y_t^T, y_t^{*T} **traded**,
 - y_t^N, y_t^{*N} **non traded**.
 - Global output of traded good $\bar{y}_t^T = \alpha y_t^T + (1 - \alpha) y_t^{*T}$.
- Representative household with CRRA preferences and $\sigma \leq \sigma^*$:

$$E_t \sum_{s=t}^{\infty} \beta^s c_s^{1-\sigma} / (1 - \sigma),$$

- CES preferences over T and N consumption:

$$c = \left[\gamma^{1/\theta} \left(c^T \right)^{\frac{\theta-1}{\theta}} + (1 - \gamma)^{1/\theta} \left(c^N \right)^{\frac{\theta-1}{\theta}} \right]^{\frac{\theta}{\theta-1}}$$

- Resource constraints: $c^N = y^N$ and $\alpha c^T + (1 - \alpha) c^{*T} = \bar{y}^T$
- Markets are complete internationally.

Business Cycles and Disasters

- Output Process:

$$\begin{aligned}\ln y_t^T &= \ln(\gamma) + \epsilon_t^T + v_t \\ \ln y_t^N &= \ln(1 - \gamma) + \epsilon_t^N + v_t\end{aligned}$$

- ϵ^i iid log-normal, sector & country specific;
- v_t is a stationary Barro-Rietz process:
 - with probability p_d output falls by $(1 - b)$ across sectors and countries.
 - with probability p_n output recovers
- Fiscal capacity: recovery rate r on government bonds may differ across countries during disasters: $r > r^*$.

Calibration

Parameters:

- γ : 0.25. Share of traded goods
- θ : 1 (el. of subst. b/w T and N)
- σ : 3 (so goods are gross substitutes)
- σ_ϵ^2 : 0.02 (bus. cycle shocks)
- p_d : 1.17% cond. prob. of disaster (from Barro (2006))
- p_n : 2% cond. prob. of recovery
- b : 0.42 collapse in output in disaster (from Barro (2006))
- r^* : 0.75 foreign recovery rate

Model Simulation

Parameters		(1)	(2)	(3)	(4)
α		0.75	0.75	0.75	0.75
θ		1	1	1	1
σ^*		4	3	4	4
b			0.42	0.42	0.42
r^*			1	1	0.75
Equity Premium	(n.)	0.13	4.08	4.52	4.52
(percent)	(d.)				
T-bill excess return	(n.)	0.03	0.04	-1.87	0.34
(percent)	(d.)		0.04	-0.36	0.10
NA excess return	(n.)	0.00	0.00	0.15	0.15
(percent)	(d.)		0.00	0.17	0.17
Trade Balance	(n.)	0.00	0.00	-0.72	-0.72
(% of output)	(d.)		0.00	1.38	1.38
Net Foreign Assets	(n.)	0.00	0.00	0.00	0.00
(% of output)	(d.)		0.00	-14.48	-14.48
Net Debt Liabilities	(n.)	7.54	0.17	55.09	55.09
(% of output)	(d.)		0.28	86.33	86.33

Conclusion

- Three stylized facts:
 - World Banker
 - 'Exorbitant privilege'
 - 'Exorbitant duty'
- Our simple model accounts broadly for these facts. Interprets the US as provider of insurance against global shocks. Model emphasizes the role of:
 - greater risk appetite in US (capacity to handle risk)
 - disaster risk (important for wealth transfers)
 - fiscal capacity (important for risk free debt return)
- Model does **not** account for large net borrower position of the US in good times.
 - One interesting possibility: the role of pecuniary externalities in incomplete market models: foreign countries accumulate too much reserves, and the US accumulates too much debt;
 - Suggests that the US may face a Triffin-like problem as the demand for insurance may eventually exceed it's fiscal capacity.