r minus g, Savings Glut

Intermediate Macroeconomics - UCLA - Econ 102

François Geerolf

UCLA

November 2, 2020

Section 1

Context

Negative yielding debt

Bond	Dec 7
Switzerland 2M	-0.89%
Switzerland Overnight	-0.84%
Germany 3Y	-0.8%
Germany 4Y	-0.8%
Switzerland 3M	-0.8%
Switzerland 1W	-0.79%

Negative yielding debt

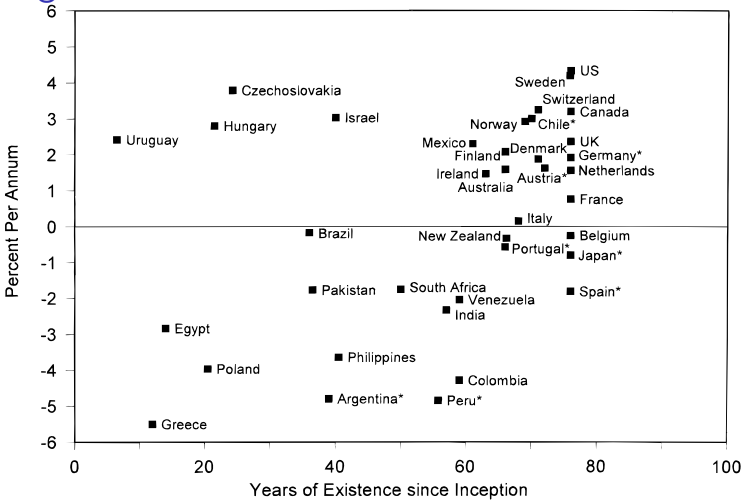


Figure 1. Real returns on global stock markets. The figure displays average real returns for 39 markets over the period 1921 to 1996. Markets are sorted by years of existence. The graph shows that markets with long histories typically have higher returns. An asterisk indi-

Section 2

$r > g$ or $r < g$?

Return on equities: Jorion and Goetzmann (1999)

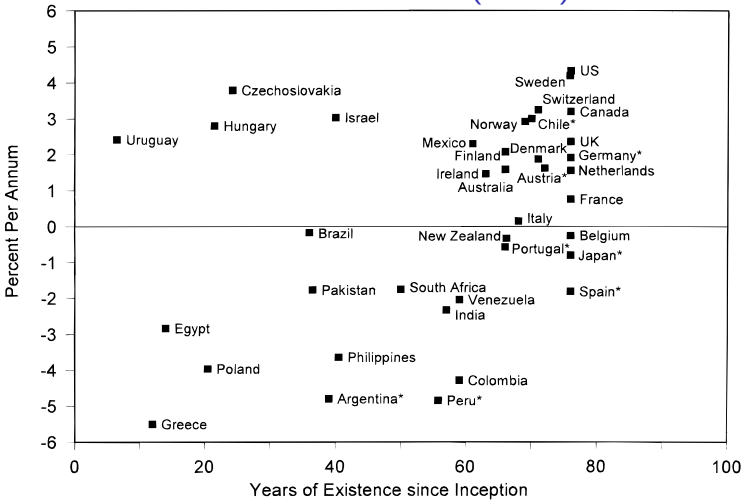
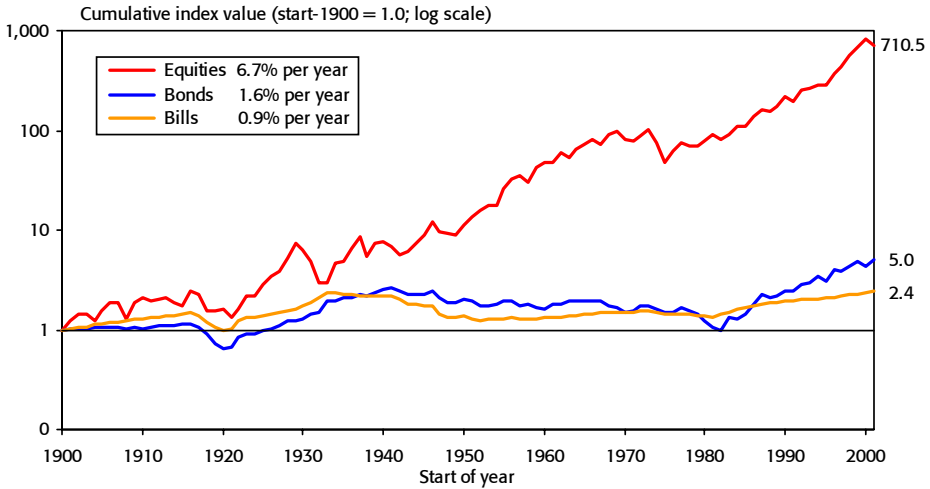


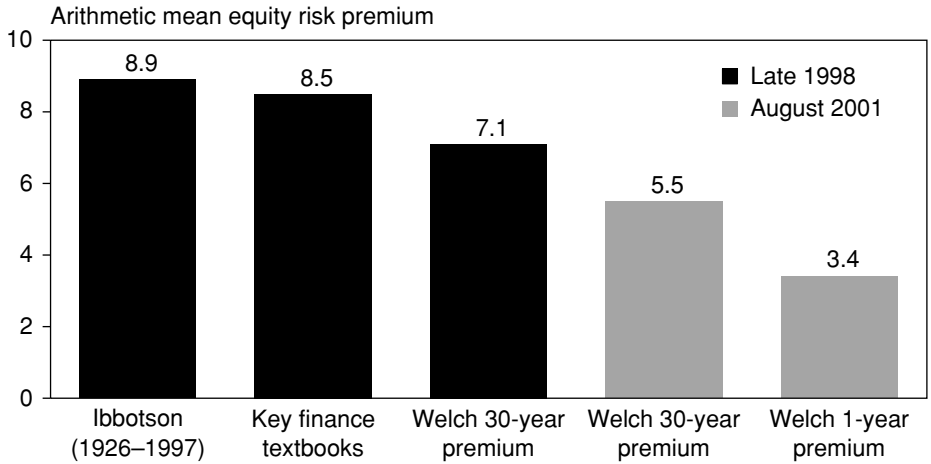
Figure 1. Real returns on global stock markets. The figure displays average real returns for 39 markets over the period 1921 to 1996. Markets are sorted by years of existence. The graph shows that markets with long histories typically have higher returns. An asterisk indi-

Triumph of the Optimists - Dimson, Marsh, and Staunton (2009)

Figure 4-2: Cumulative returns on US asset classes in real terms, 1900–2000



Triumph of the Optimists



Triumph of the Optimists

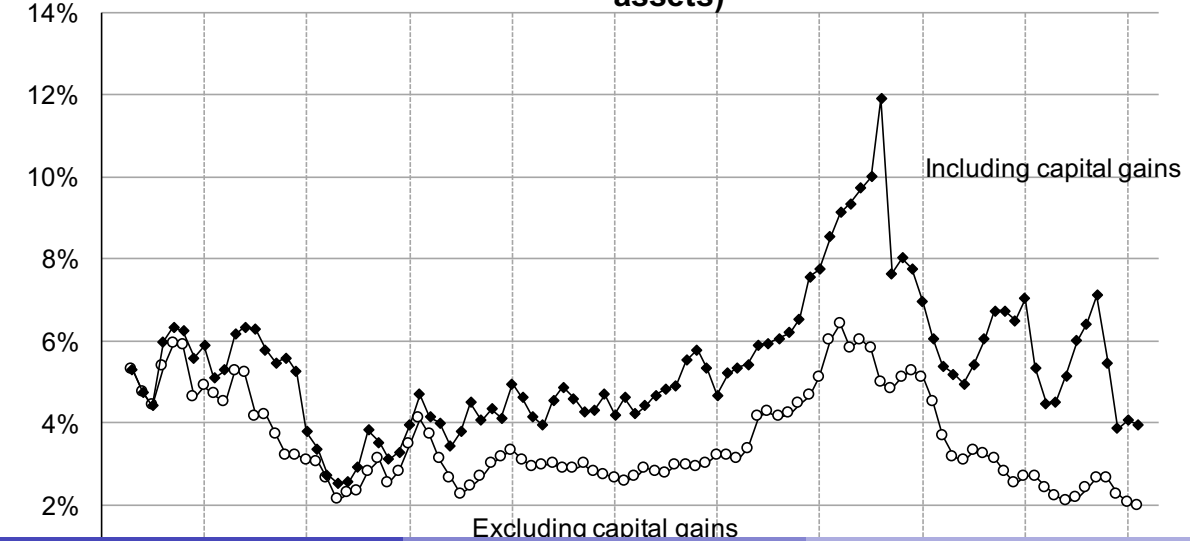
	Historical equity premium (percent) relative to bills				Historical equity premium (percent) relative to bonds			
Country	Geometric mean	Arithmetic mean	Standard error	Standard deviation	Geometric mean	Arithmetic mean	Standard error	Standard deviation
Australia	7.08	8.49	1.65	17.00	6.22	7.81	1.83	18.80
Belgium	2.80	4.99	2.24	23.06	2.57	4.37	1.95	20.10
Canada	4.54	5.88	1.62	16.71	4.15	5.67	1.74	17.95
Denmark	2.87	4.51	1.93	19.85	2.07	3.27	1.57	16.18
France	6.79	9.27	2.35	24.19	3.86	6.03	2.16	22.29
Germany	3.83	9.07	3.28	33.49	5.28	8.35	2.69	27.41
Ireland	4.09	5.98	1.97	20.33	3.62	5.18	1.78	18.37
Italy	6.55	10.46	3.12	32.09	4.30	7.68	2.89	29.73
Japan	6.67	9.84	2.70	27.82	5.91	9.98	3.21	33.06
Netherlands	4.55	6.61	2.17	22.36	3.86	5.95	2.10	21.63
Norway	3.07	5.70	2.52	25.90	2.55	5.26	2.66	27.43
South Africa	6.20	8.25	2.15	22.09	5.35	7.03	1.88	19.32
Spain	3.40	5.46	2.08	21.45	2.32	4.21	1.96	20.20
Sweden	5.73	7.98	2.15	22.09	5.21	7.51	2.17	22.34
Switzerland	3.63	5.29	1.82	18.79	1.80	3.28	1.70	17.52
U.K.	4.43	6.14	1.93	19.84	4.06	5.29	1.61	16.60
U.S.	5.51	7.41	1.91	19.64	4.52	6.49	1.96	20.16

Triumph of the Optimists

Country	Real dividend growth rate	*plus** Expansion in the P/D ratio	*plus* Geometric mean dividend yield	*plus* Change in real exchange rate	*minus* U.S. real interest rate	*equals* Equity premium for U.S. investors
Australia	1.30	0.46	5.83	−0.24	0.96	6.42
Belgium	−1.57	0.08	3.95	0.62	0.96	2.05
Canada	0.72	0.98	4.46	−0.04	0.96	5.18
Denmark	−0.87	1.43	4.68	0.47	0.96	4.74
France	−0.74	0.42	3.93	−0.14	0.96	2.47
Germany	−1.54	0.97	3.69	0.23	0.96	2.35
Ireland	−0.25	0.38	4.66	0.25	0.96	4.05
Italy	−1.46	−0.08	4.05	0.10	0.96	1.58
Japan	−2.39	1.59	5.39	0.32	0.96	3.85
Netherlands	−0.16	0.41	5.00	0.27	0.96	4.54
Norway	−0.25	0.50	4.02	0.25	0.96	3.54
South Africa	0.91	0.31	5.95	−0.80	0.96	5.38
Spain	−0.62	0.24	4.13	0.00	0.96	2.75
Sweden	2.88	0.67	4.09	−0.05	0.96	6.72
Switzerland	0.32	0.60	3.52	0.72	0.96	4.22
U.K.	0.61	0.18	4.68	−0.03	0.96	4.46
U.S.	1.32	0.75	4.36	0.00	0.96	5.51

Saez and Zucman (2016) - Average return on capital

Figure A18: Average return on capital (excl. business assets)



Returns to capital

Table C. Rates of Return for Domestic Nonfinancial Corporations and Nonfinancial Industries, 2001–2016

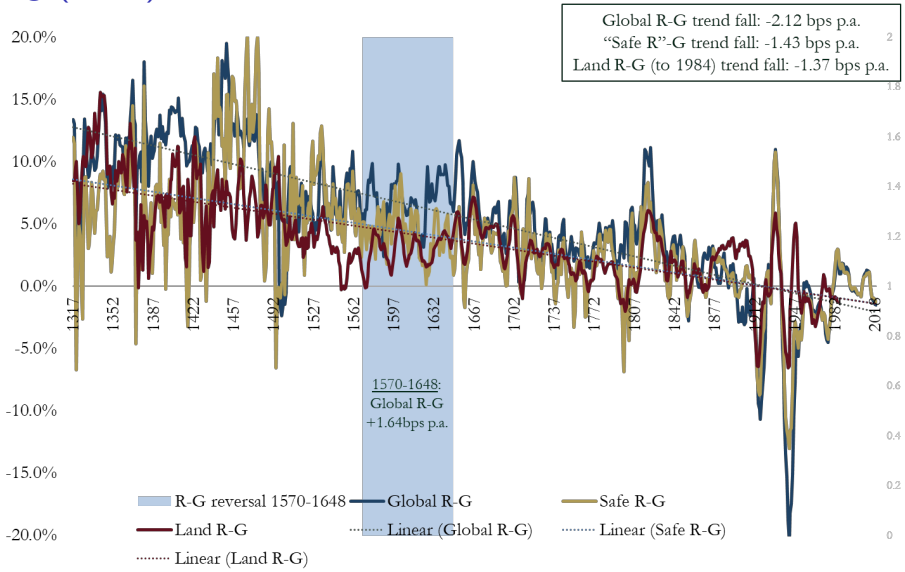
[Percent]

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Nonfinancial corporations—after tax	**5.7**	**6.3**	**6.7**	**7.2**	**7.2**	**7.6**	**6.9**	**6.6**	**6.2**	**7.9**	**8.0**	**8.3**	**8.2**	**8.3**	**8.2**	**7.6**
Nonfinancial corporations—before tax	**6.9**	**7.3**	**8.0**	**9.0**	**9.6**	**10.0**	**9.1**	**8.2**	**7.5**	**9.4**	**9.5**	**10.1**	**10.0**	**10.1**	**9.8**	**9.2**
Total nonfinancial industries	**11.7**	**12.1**	**13.2**	**14.1**	**14.1**	**13.6**	**13.2**	**12.6**	**11.7**	**13.3**	**13.3**	**13.3**	**13.6**	**13.3**	**12.8**	**12.8**
Agriculture, forestry, fishing, and hunting	12.2	8.9	12.9	15.6	13.5	10.5	10.7	11.7	9.1	12.3	15.9	13.7	15.7	11.6	9.0	7.8
Mining	3.5	1.1	3.7	4.8	6.6	6.3	7.1	10.5	5.5	8.0	10.5	9.5	10.3	9.8	2.4	0.4
Utilities	5.1	3.7	4.0	4.3	3.4	4.3	3.7	3.1	3.5	4.0	3.6	2.9	2.8	2.9	2.7	2.5
Construction	71.4	70.4	78.6	90.3	96.0	90.1	82.6	59.7	57.6	58.1	59.4	65.5	69.1	72.5	78.6	81.8
Manufacturing	9.9	10.7	12.5	14.0	14.8	15.7	15.1	12.8	12.5	14.7	14.9	15.3	15.2	15.2	15.5	14.8
Durable-goods manufacturing	3.8	5.4	7.6	8.5	9.7	9.9	9.4	7.1	4.7	8.7	8.8	9.3	10.0	10.0	10.5	10.4
Nondurable-goods manufacturing	18.1	17.5	18.7	20.7	21.0	22.7	21.8	19.5	21.4	21.5	21.5	21.8	20.8	20.8	20.8	19.5
Wholesale trade	15.4	15.2	16.8	19.0	19.6	19.6	20.1	20.3	19.6	22.3	20.6	21.4	21.8	22.8	23.3	22.6
Retail trade	11.1	11.1	11.3	10.3	10.1	9.3	7.4	6.3	7.9	8.8	8.3	9.1	9.2	9.3	10.0	10.6
Transportation and warehousing	3.7	2.9	4.7	6.0	6.7	8.4	6.3	7.0	6.1	8.3	8.2	7.8	8.2	8.4	8.2	7.7
Information	6.2	10.9	11.6	14.6	14.5	13.0	14.3	15.3	13.9	14.9	12.9	12.3	13.7	12.0	14.1	14.8
Real estate and rental and leasing [1]	19.8	20.6	21.3	19.2	19.8	16.3	18.9	17.2	15.6	18.1	19.3	20.6	21.6	21.2	20.4	20.9
Professional and business services [2]	39.1	43.0	43.7	43.5	41.0	37.8	38.8	43.4	38.4	39.5	39.0	38.3	35.9	36.0	36.0	37.1
Educational services, health care, and social assistance	5.6	5.5	5.2	4.9	4.0	3.8	3.0	3.9	4.5	4.5	4.1	3.9	3.2	2.9	2.7	2.9
Arts, entertainment, recreation, accommodation, and food services	12.9	14.4	14.0	14.2	13.1	12.9	11.3	9.5	9.3	10.7	11.2	12.0	12.4	12.5	13.1	13.8
Other services, except government	16.6	17.4	13.9	13.3	13.6	12.8	10.2	7.9	8.4	9.7	9.1	9.7	9.5	9.5	9.6	10.0

1. The housing component of Real estate and rental and leasing is excluded from these estimates to allow for better comparison with nonfinancial corporate returns.

2. To preserve the nonfinancial focus of this article management of companies and enterprises is excluded from this sector.

Schmelzing (2020)



Section 3

Jordà et al. (2019)

THE RATE OF RETURN ON EVERYTHING, 1870–2015*

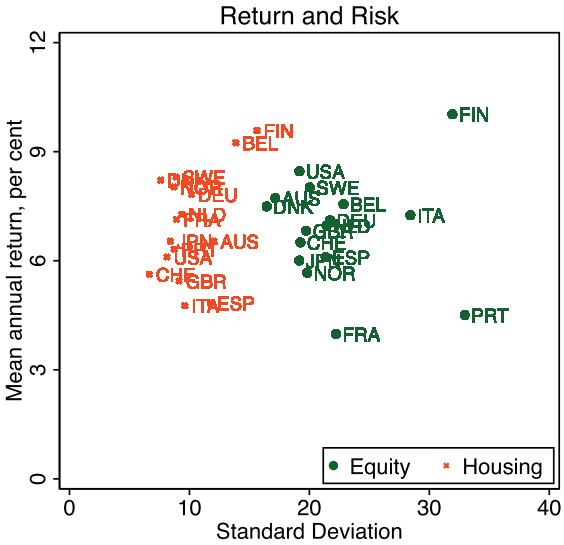
Òscar Jordà
Katharina Knoll
Dmitry Kuvshinov
Moritz Schularick
Alan M. Taylor

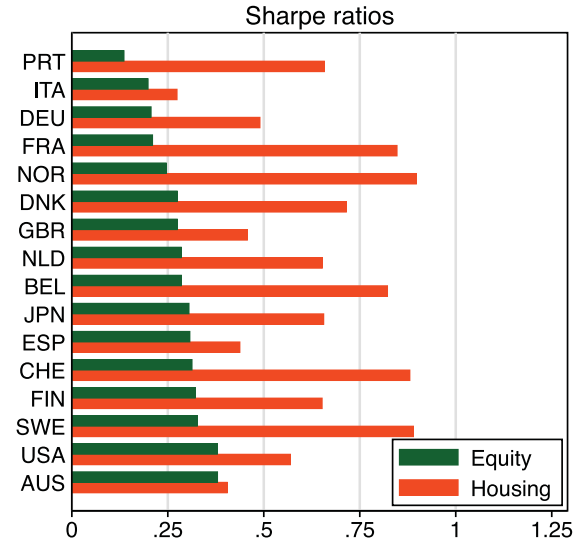
What is the aggregate real rate of return in the economy? Is it higher than the growth rate of the economy and, if so, by how much? Is there a tendency for returns to fall in the long run? Which particular assets have the highest long-run returns? We answer these questions on the basis of a new and comprehensive data set for all major asset classes, including housing. The annual data on total returns for equity, housing, bonds, and bills cover 16 advanced economies from 1870 to 2015, and our new evidence reveals many new findings and puzzles. *JEL* Codes:

Results

- Most interesting result: **housing has a much higher sharpe ratio than equities.**
- Return is roughly similar, but it's much less risky.
- To me it's another "blow" to the CAPM, which as we now know does not work at all to explain the cross-section of assets.
- We are back to one fundamental question: why do bonds have such low returns compared to housing / stocks?
- Question: is the preformance we measure one that was to be expected or not?

Housing and Equity





Main result

	Real returns				Nominal returns			
	Bills	Bonds	Equity	Housing	Bills	Bonds	Equity	Housing
Panel A: Full sample								
Mean return p.a.	1.03	2.53	6.88	7.06	4.58	6.06	10.65	11.00
Standard deviation	6.00	10.69	21.79	9.93	3.32	8.88	22.55	10.64
Geometric mean	0.83	1.97	4.66	6.62	4.53	5.71	8.49	10.53
Mean excess return p.a.		1.51	5.85	6.03				
Standard deviation		8.36	21.27	9.80				
Geometric mean		1.18	3.77	5.60				
Observations	1,767	1,767	1,767	1,767	1,767	1,767	1,767	1,767
Panel B: Post-1950								
Mean return p.a.	0.88	2.79	8.30	7.42	5.39	7.30	12.97	12.27
Standard deviation	3.42	9.94	24.21	8.87	4.03	9.81	25.03	10.14
Geometric mean	0.82	2.32	5.56	7.08	5.31	6.88	10.26	11.85
Mean excess return p.a.		1.91	7.42	6.54				
Standard deviation		9.21	23.78	9.17				

Equity VS Housing

Table A.5: *Real returns on equity and housing, including and excluding world wars*

Country	Full Sample		Excluding wars	
	Equity	Housing	Equity	Housing
Australia	7.79	6.37	8.47	6.95
Belgium	6.23	7.89	7.47	8.73
Denmark	7.49	8.22	7.87	8.08
Finland	10.03	9.58	11.73	11.31
France	3.21	6.39	4.75	7.76
Germany	7.11	7.82	7.28	8.13
Italy	7.25	4.77	6.60	4.51
Japan	6.00	6.54	6.75	6.79
Netherlands	6.96	7.28	7.39	7.22
Norway	5.67	8.03	6.56	8.85
Portugal	4.51	6.31	4.51	6.31
Spain	5.83	5.21	6.92	6.41
Sweden	8.02	8.30	9.51	8.98
Switzerland	6.51	5.63	8.01	6.44
UK	6.83	5.44	7.82	5.69
USA	8.46	6.10	9.28	6.22

Dividends VS Capital gains

	Equity			Housing		
	Real capital gain	Dividend income	Real total return	Real capital gain	Rental income	Real total return
Full sample						
Mean return p.a.	2.78	4.17	6.82	1.61	5.50	6.92
Standard deviation	21.37	1.74	21.89	9.87	2.05	10.40
Geometric mean	0.57	4.16	4.58	1.15	5.48	6.43
Observations	1,707	1,707	1,707	1,707	1,707	1,707
Post-1950						
Mean return p.a.	4.73	3.80	8.36	2.39	5.22	7.38
Standard deviation	23.70	1.81	24.24	8.59	1.93	8.95
Geometric mean	2.03	3.79	5.62	2.06	5.21	7.04
Observations	995	995	995	995	995	995

TABLE XII

THE RETURN ON WEALTH AND GDP GROWTH ACROSS COUNTRIES AND TIME

	Full sample		Post-1950		Post-1980	
Country	Return on wealth	GDP growth	Return on wealth	GDP growth	Return on wealth	GDP growth
Australia	5.91	3.51	7.39	3.73	7.53	3.19
Belgium	6.38	2.32	7.29	2.68	6.90	2.17
Denmark	7.37	2.70	7.21	2.51	6.62	1.60
Finland	9.76	3.49	11.92	3.16	11.81	2.16
France	4.92	2.55	7.76	3.17	6.29	1.92
Germany	7.07	2.81	5.26	2.80	4.72	2.40
Italy	5.08	3.82	5.07	3.30	5.01	1.37
Japan	5.59	4.18	6.35	4.20	4.23	2.09
Netherlands	5.33	3.16	6.67	3.21	6.71	2.29
Norway	6.86	3.06	7.67	3.45	9.35	2.80

Section 4

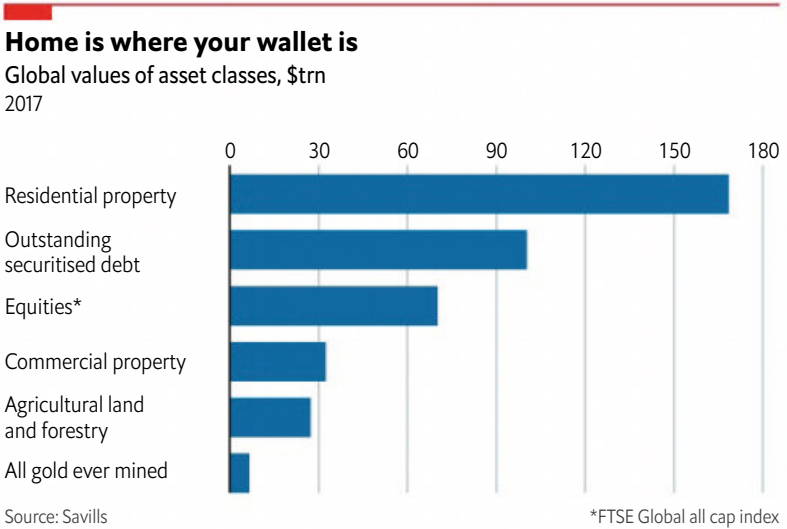
Stores of Value

List

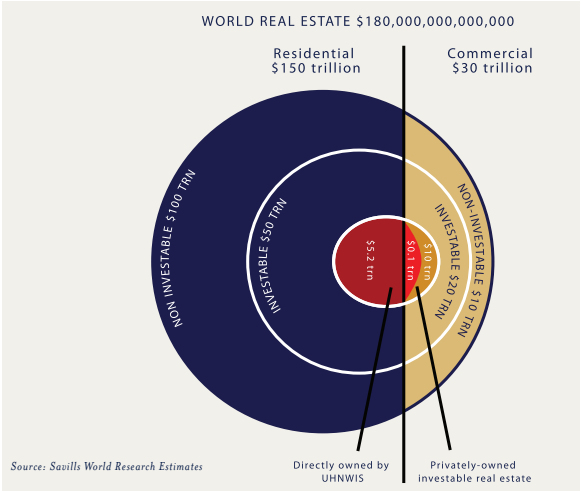
If one wants to transfer resources into the future, how can one do this? Here's the list:

- Gold.
- Oil.
- Residential property.

Global Asset Classes

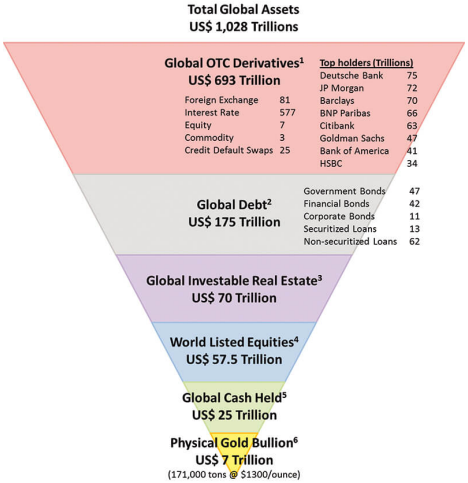


World Real Estate: $180 Tn



World Asset Classes

https://global-precious-metals.com/the-case-for-gold-in-one-chart/



Ultra High Net Worth Individuals (UHNWIs)

and corporate real estate before. Most direct real estate holdings owned by the world's 200,000 private, ultra-high-net-worth individuals (UHNWIs) are in residential property, while commercial properties tend to be held non-directly, in corporate or other investing entities. Accounting for just 0.003% of the world's population, the real estate holdings of these UHNWIs together total over US$5 trillion, or around 3% of all the world's real estate value. This report examines how privately wealthy individuals

Crude Oil reserves in Billion Barrels

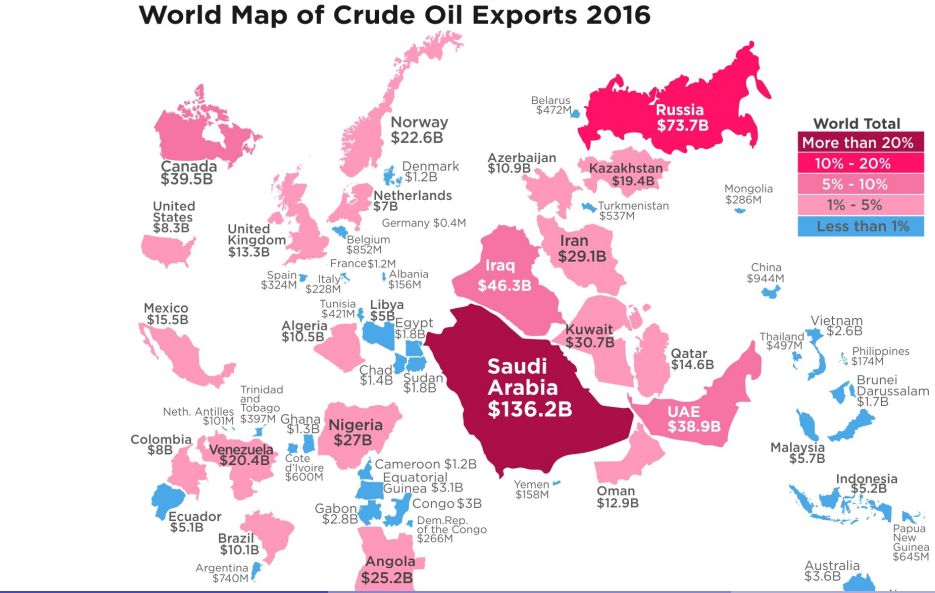
Note: For visualization purposes we are showing only countries with 100,000,000 bbl (0.1 Gbbl) of crude oil reserves or more.

How to read this map: Countries appear bigger as their crude oil reserves are bigger. e.g. Venezuela. Conversely, countries that have smaller reserves of crude oil appear smaller. e.g. Côte d'Ivoire

Article & Sources:
https://howmuch.net/articles/worlds-biggest-crude-oil-reserves-by-country

howmuch.net

Crude Oil reserves in Billion Barrels



Crude Oil Reseres: Orders of magnitude

- 1.73 trillion barrels in soil.
- World uses 95 million barrels per day = 34 billion barrels per year.
- Enough to last another 50 years.
- Say value is \$65/Barrel:

$$\boxed{\text{Proven Oil Reserves} = 112 \text{ Tn Dollars}}$$

.

Barro, Misra: Return on Gold

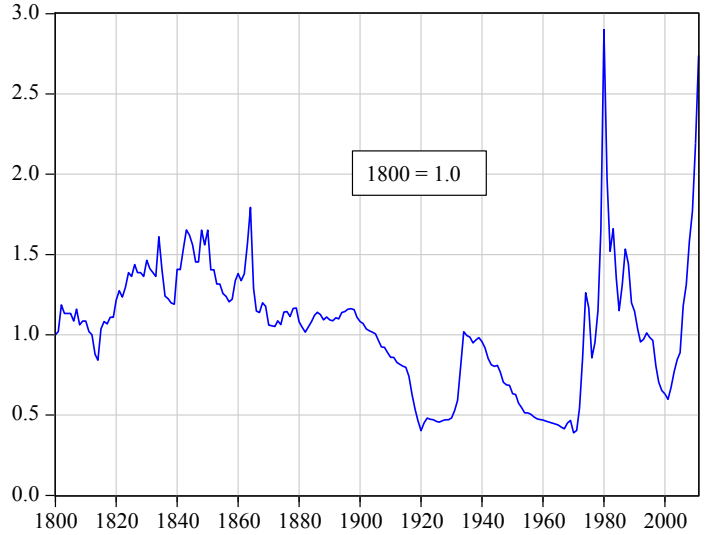


Fig. 4. *Real Gold Price, Annual Average, 1800–2011 US Dollar Price, Divided by US CPI*
Note: See the notes to Table 1 for the sources of data on annual average US dollar gold prices and

Section 5

Bibliography

Dimson, Elroy, Paul Marsh, and Mike Staunton. 2009. *Triumph of the Optimists: 101 Years of Global Investment Returns*. Princeton University Press.

Jordà, Òscar, Katharina Knoll, Dmitry Kuvshinov, Moritz Schularick, and Alan M. Taylor. 2019. "The Rate of Return on Everything, 18702015." *The Quarterly Journal of Economics* 134 (3): 1225–98. https://doi.org/10.1093/qje/qjz012.

Jorion, Philippe, and William N. Goetzmann. 1999. "Global Stock Markets in the Twentieth Century." *The Journal of Finance* 54 (3): 953–80. https://doi.org/10.1111/0022-1082.00133.

Saez, Emmanuel, and Gabriel Zucman. 2016. "Wealth Inequality in the United States Since 1913: Evidence from Capitalized Income Tax Data." *The Quarterly Journal of Economics* 131 (2): 519–78. https://doi.org/10.1093/qje/qjw004.