

Capital is Back: Wealth-Income Ratios in Rich Countries 1870-2010

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How do aggregate health-income ratios evolve in the long run, and why?

In this paper we compile a new dataset of national balance sheets in order to address this question:

- **Result 1:** we find in every country a gradual rise of wealth-income ratios over 1970-2010 period, from about 200%-300% in 1970 to 400%-600% in 2010
- **Result 2:** in effect, today's ratios seem to be returning towards the high values observed in 19^c Europe (600%-700%)
- This can be accounted for by a combination of factors:
 - Politics: long run asset price recovery effect (itself driven by changes in capital policies since WWs)
 - Economics: slowdown of productivity and pop growth

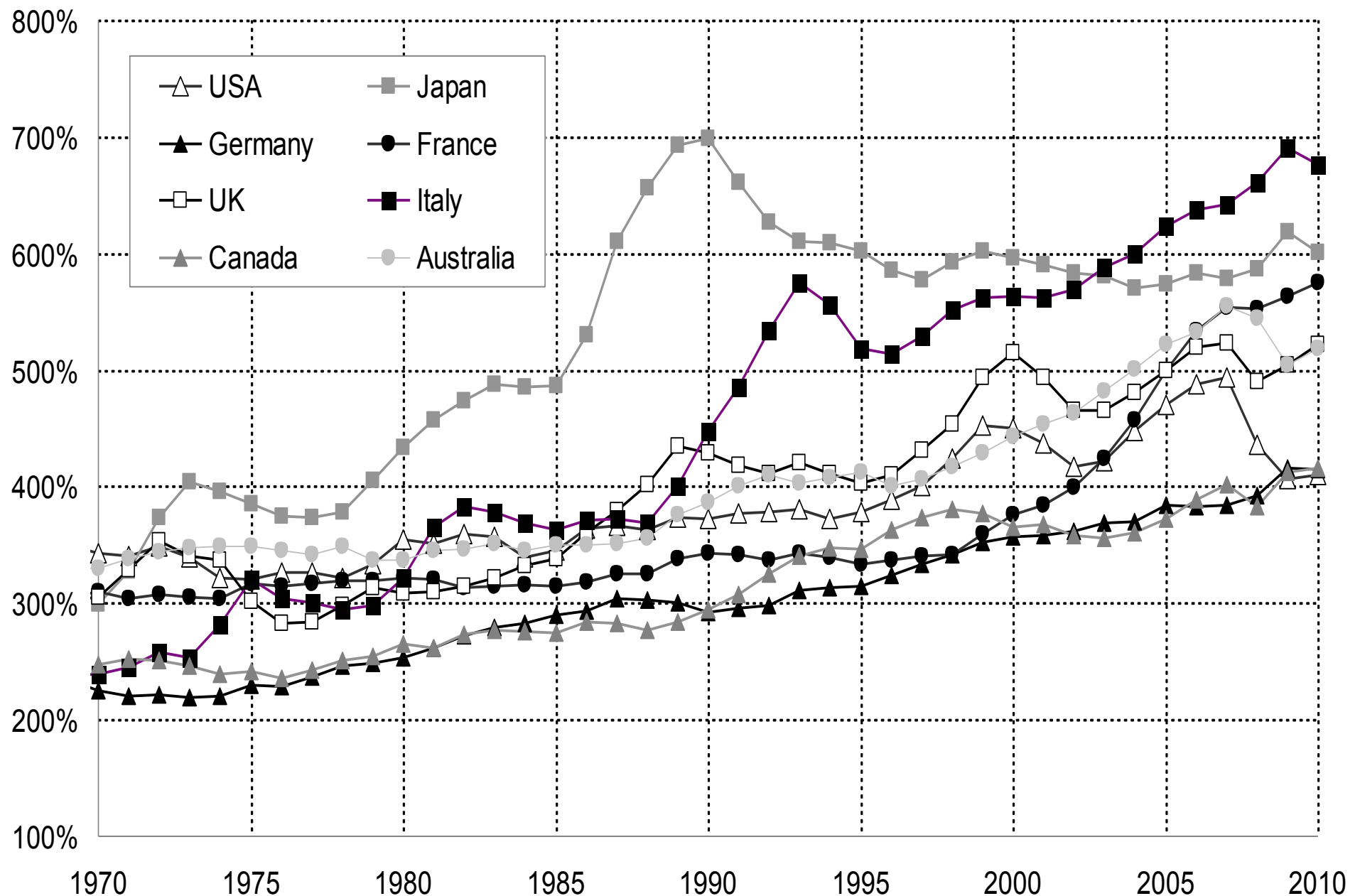
Harrod-Domar-Solow: wealth-income ratio $\beta = s/g$

If saving rate $s = 10\%$ & growth rate $g = 3\%$, then

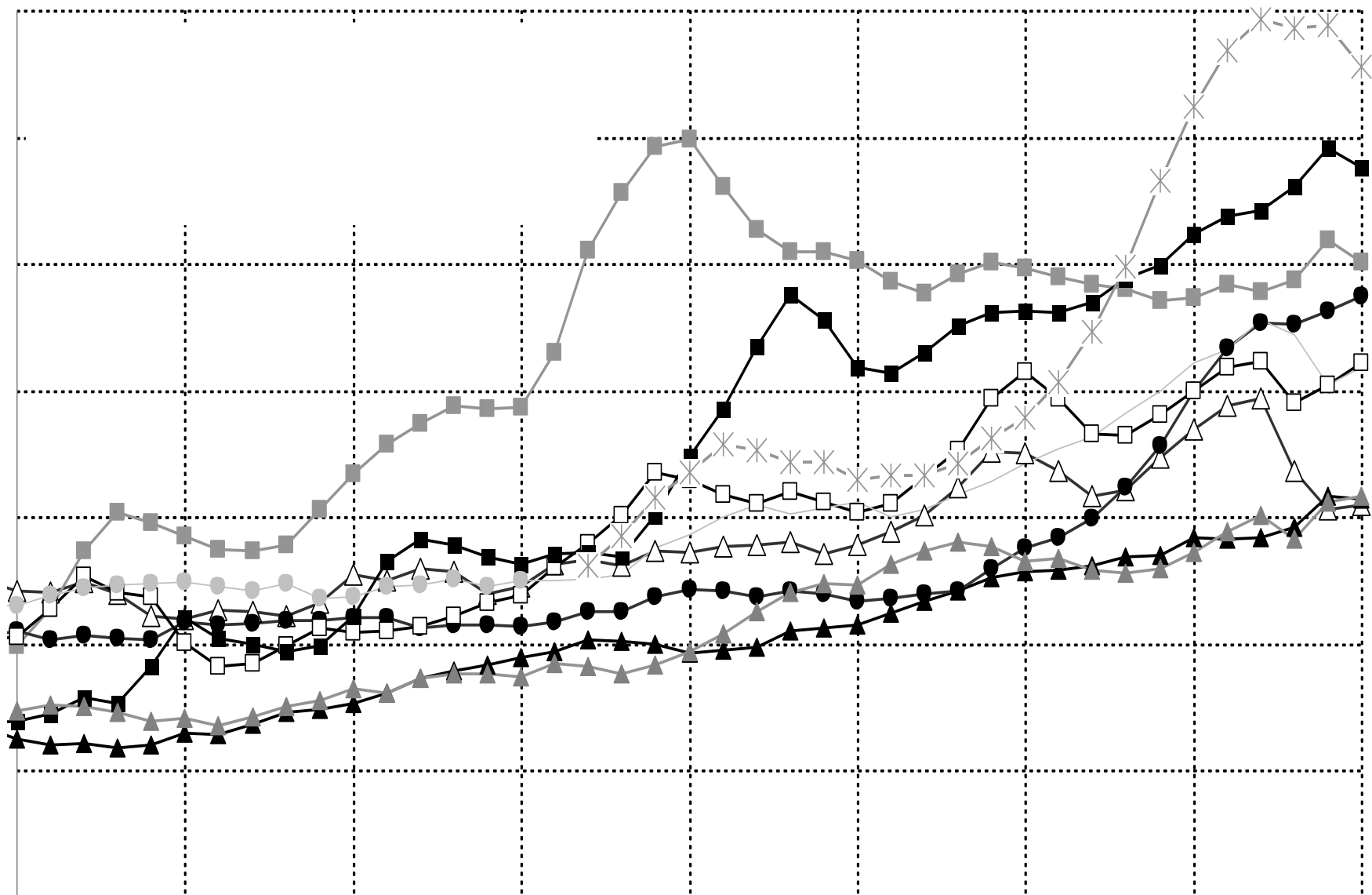
$\beta \approx 300\%$. But if $s = 10\%$ & $g = 1.5\%$, then $\beta \approx 600\%$.

Explains long run change & level diff Europe vs. US

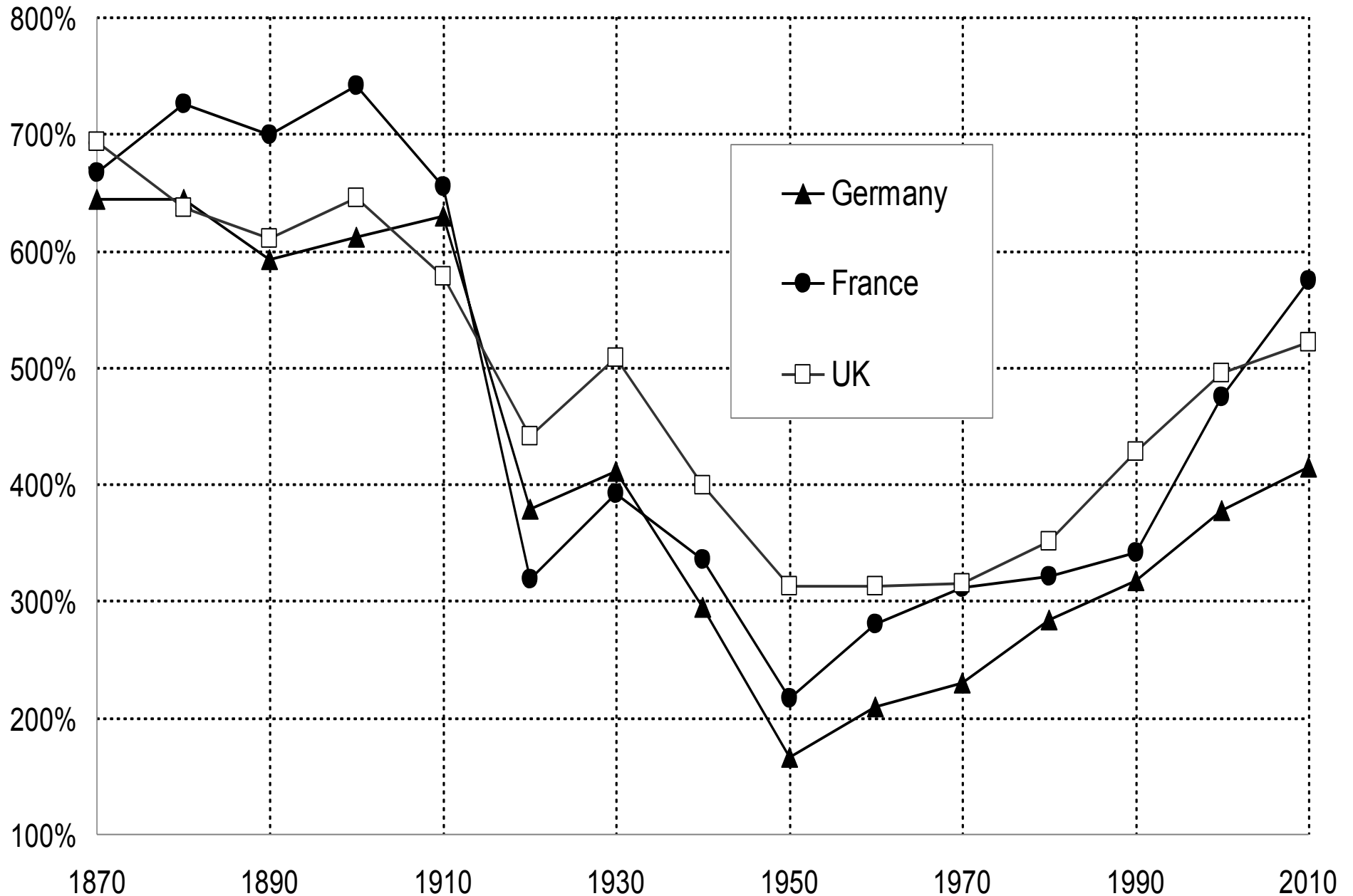
Private wealth / national income ratios, 1970-2010



Authors' computations using country national accounts. Private wealth = non-financial assets + financial assets - financial liabilities (household & non-profit sectors)

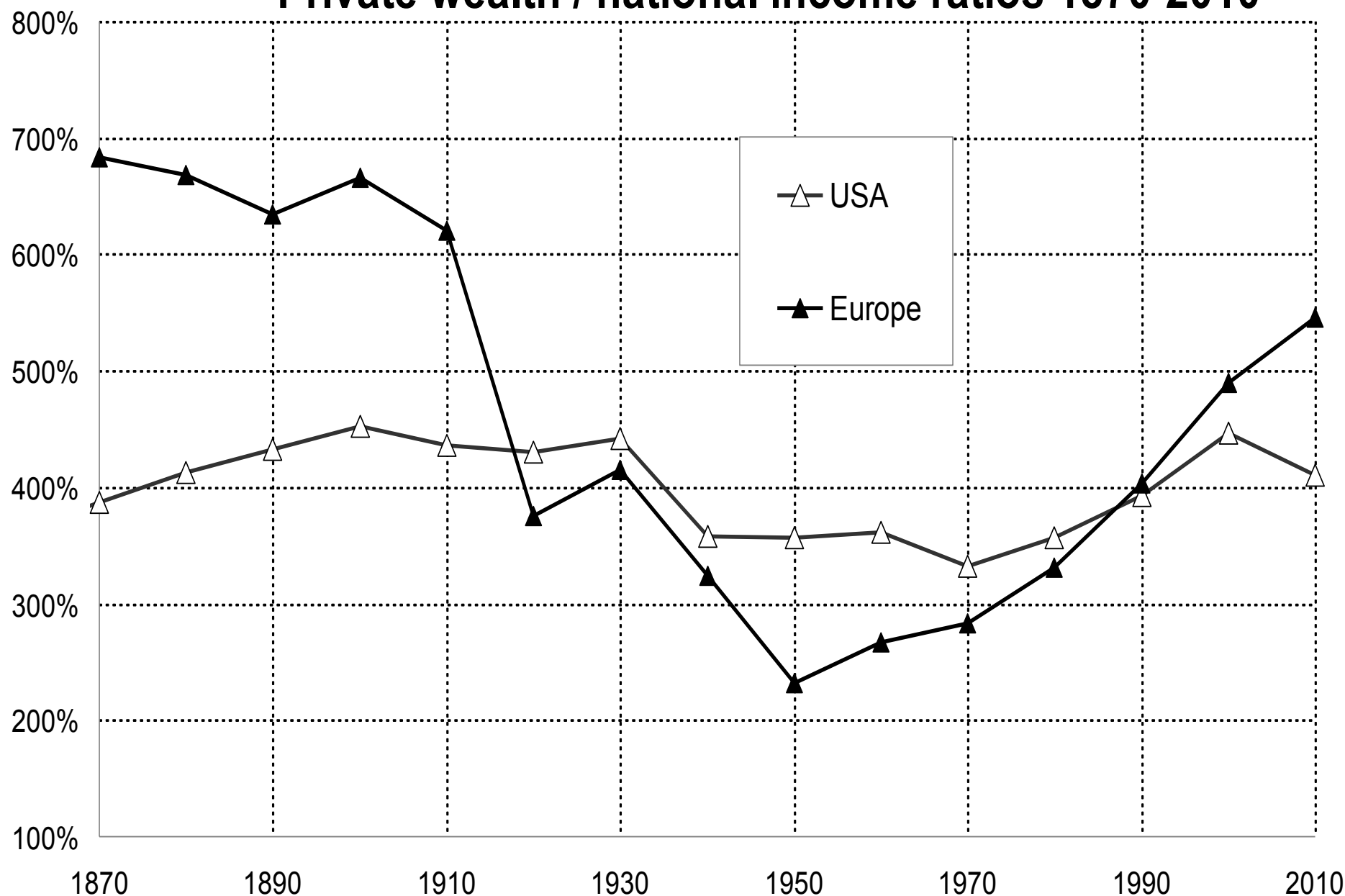


Private wealth / national income ratios in Europe, 1870-2010



Authors' computations using country national accounts. Private wealth = non-financial assets + financial assets - financial liabilities (household & non-profit sectors)

Private wealth / national income ratios 1870-2010



Authors' computations using country national accounts. Private wealth = non-financial assets + financial assets - financial liabilities (household & non-profit sectors)

- **Lesson 1:** one-good capital accumulation model with factor substitution works relatively well in the long run; but in short & medium run, volume effects (saving flows) can be vastly dominated by relative price effects (capital gains or losses)
- **Lesson 2:** long run wealth-income ratios $\beta = s/g$ can vary a lot btw countries: s and g determined by diff. forces; countries with low g and high s naturally have high β ; high β is not bad per se (capital is useful); but **high β raises new issues about capital regulation and taxation:**
- With integrated capital markets, this can generate large net foreign asset positions, even in the absence of income diff (or reverse to income diff); so far net positions are smaller than during colonial period; but some countries positions are rising fast (Japan, Germany,..)
- With limited capital mobility, and/or home portfolio bias, high β can lead to large domestic asset price bubbles: see Japan, UK, Italy, France, Spain.

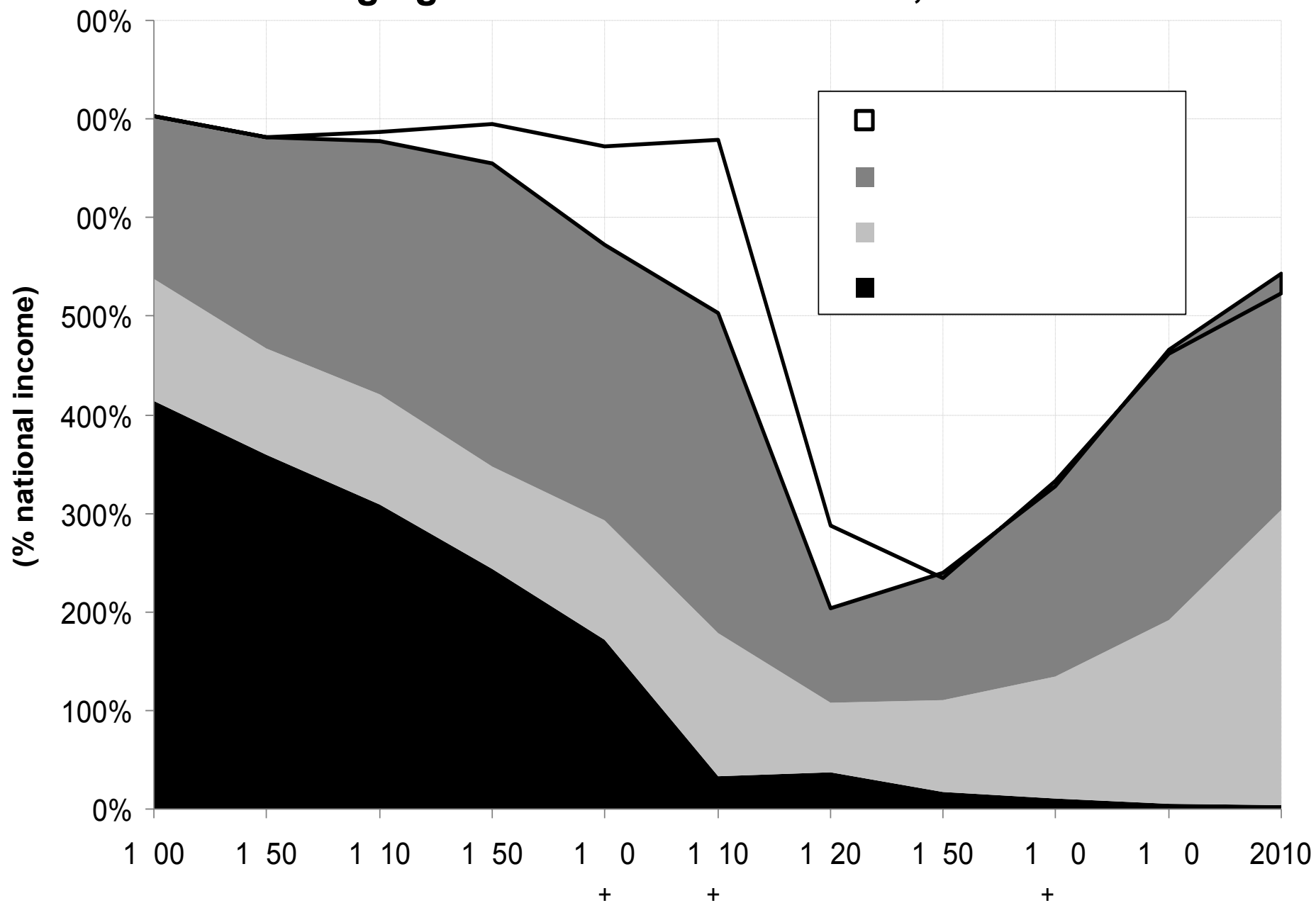
- **Lesson 3: wealth and technology in 21c : $\sigma > 1$**

Global rate of return r doesn't seem to decline as much as the rise in global β , i.e. global capital share $\alpha = r\beta \uparrow$ as $\beta \uparrow$ since 1970 \rightarrow long run K/L elasticity of substitution $\sigma > 1$, or rising market power for K, or both?

- **Lesson 4: wealth and technology in 18c : $\sigma < 1$**

- In the very long run, i.e. using national wealth estimates over 1700-2010 for UK & France, we find β stable around 600%-700%, in spite of huge changes in wealth composition, from agricultural land to manufacturing and housing
- In agrarian, very-low-growth societies, however, it is unclear which forces dominate: $\beta = s/g$ or $\beta = \alpha/r$? Probably $\beta = \alpha/r$
- I.e. with α = capital share = mostly land rent: determined by technology, politics, & land availability ($\alpha \approx 30\%$ - 40% in Europe, vs. 10% - 15% in land-rich New world, i.e. elast. subst. $\sigma < 1$), and r = rate of return = 4% - 5% = rate of time preference
 $\rightarrow \beta = 600\%$ - 700% in Europe, vs. 200% - 300% in New World
(simply bc. very abundant land is worthless; nothing to do with the $\beta = s/g$ mechanism, which bumped in later, with migration)

The changing nature of national wealth, UK 1700-2010



Concepts & methods

- National income $Y = \text{domestic output } Y_d + r NFA$
 - Private wealth $W = \text{non-financial assets} + \text{financial assets} - \text{financial liabilities}$ (household & non-profit sector)
 - $\beta = W/Y = \text{private wealth-national income ratio}$
 - Govt wealth $W_g = \text{non-fin} + \text{fin assets} - \text{fin liab}$ (govt sector)
 - National wealth $W_n = W + W_g = K + NFA$
- with $K = \text{domestic capital (= land + housing + other domestic k)}$
 $NFA = \text{net foreign assets}$
- $\beta_n = W_n/Y = \text{national wealth-national income ratio}$
 - Domestic output $Y_d = F(K, L)$ ($L = \text{labor input}$) (e.g. $K^\alpha L^{1-\alpha}$)
 - Capital share $\alpha = r \beta$ ($r = \text{average rate of return to wealth}$)

- **One-good capital accumulation model:** $W_{t+1} = W_t + s_t Y_t$

$$\rightarrow \beta_{t+1} = \beta_t (1+g_{wt})/(1+g_t)$$

With $1+g_{wt} = 1+s_t/\beta_t$ = saving-induced wealth growth rate)

$1+g_t = Y_{t+1}/Y_t$ = exogenous output growth rate (productiv.+pop)

- With fixed saving rate $s_t=s$ and growth rate $g_t=g$, then:
 $\beta_t \rightarrow \beta = s/g$ (Harrod-Domar-Solow steady-state formula)
- E.g. if $s=10\%$ & $g=2\%$, then $\beta = 500\%$

- **Pure accounting formula:** valid with any saving motive or utility function, i.e. wherever s comes from
- Wealth or bequest in the utility function: saving rate s set by $u()$ (intensity of wealth or bequest taste) and/or demographic structure; then $\beta = s/g$ follows
- Dynastic utility: rate of return r set by $u()$; if α set by technology, then $\beta = \alpha/r$ follows ($s = \alpha g/r$, so $\beta = \alpha/r = s/g$)
- With general utility functions, both s and r are jointly determined by $u()$ and technology

- **Two-good capital accumulation model:** one capital good, one consumption good
 - Define $1+q_t$ = real rate of capital gain (or capital loss)
= excess of asset price inflation over consumer price inflation
 - Then $\beta_{t+1} = \beta_t (1+g_{wt})(1+q_t)/(1+g_t)$
- With $1+g_{wt} = 1+s_t/\beta_t$ = saving-induced wealth growth rate
 $1+q_t$ = capital-gains-induced wealth growth rate

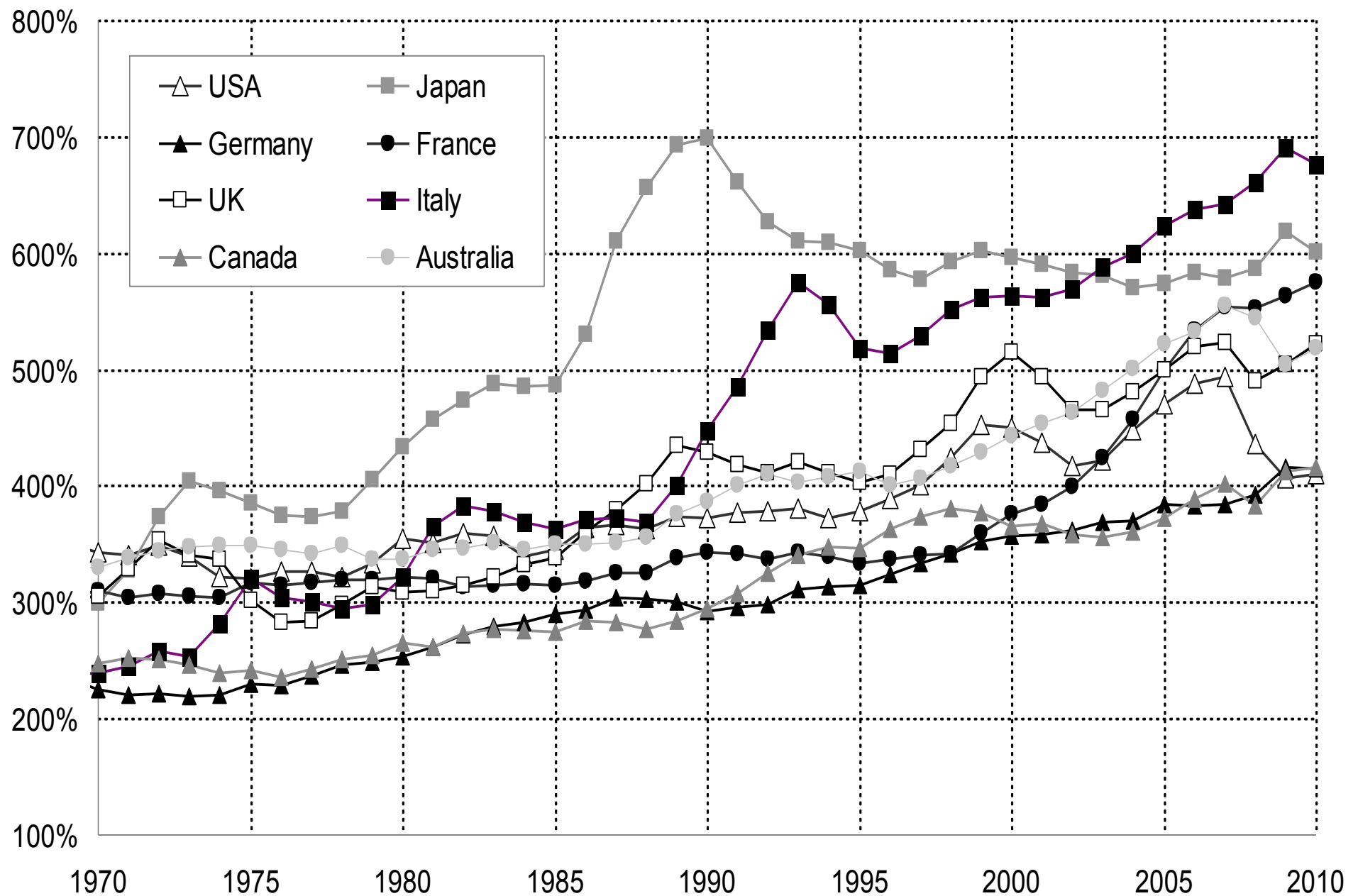
Our empirical strategy:

- we do not specify where q_t come from (maybe stochastic production functions to produce capital vs. consumption good, with diff. rates of technical progress);
- we observe $\beta_t, \dots, \beta_{t+n}, s_t, \dots, s_{t+n}, g_t, \dots, g_{t+n}$, and we decompose the wealth accumulation equation between years t and $t+n$ into volume (saving) vs. price effect (capital gain or loss)

Decomposition results: 1970-2010

- Annual series for top 8 rich countries, 1970-2010
 - Additive vs. multiplicative decomposition of wealth accumulation equation into volume vs. price effects
 - Private saving (personal + corporate) vs. personal
 - Private wealth vs. national wealth accumulation
 - Domestic capital vs. foreign wealth accumulation
 - **Main conclusion:** capital gains account for a small part of the aggregate level of 2010 wealth accumulation (10%-20%), but for a significant part of the rise in wealth-income ratios between 1970 and 2010 (30%-50%+)
- we need to put 1970-2010 period into longer perspective

Private wealth / national income ratios, 1970-2010

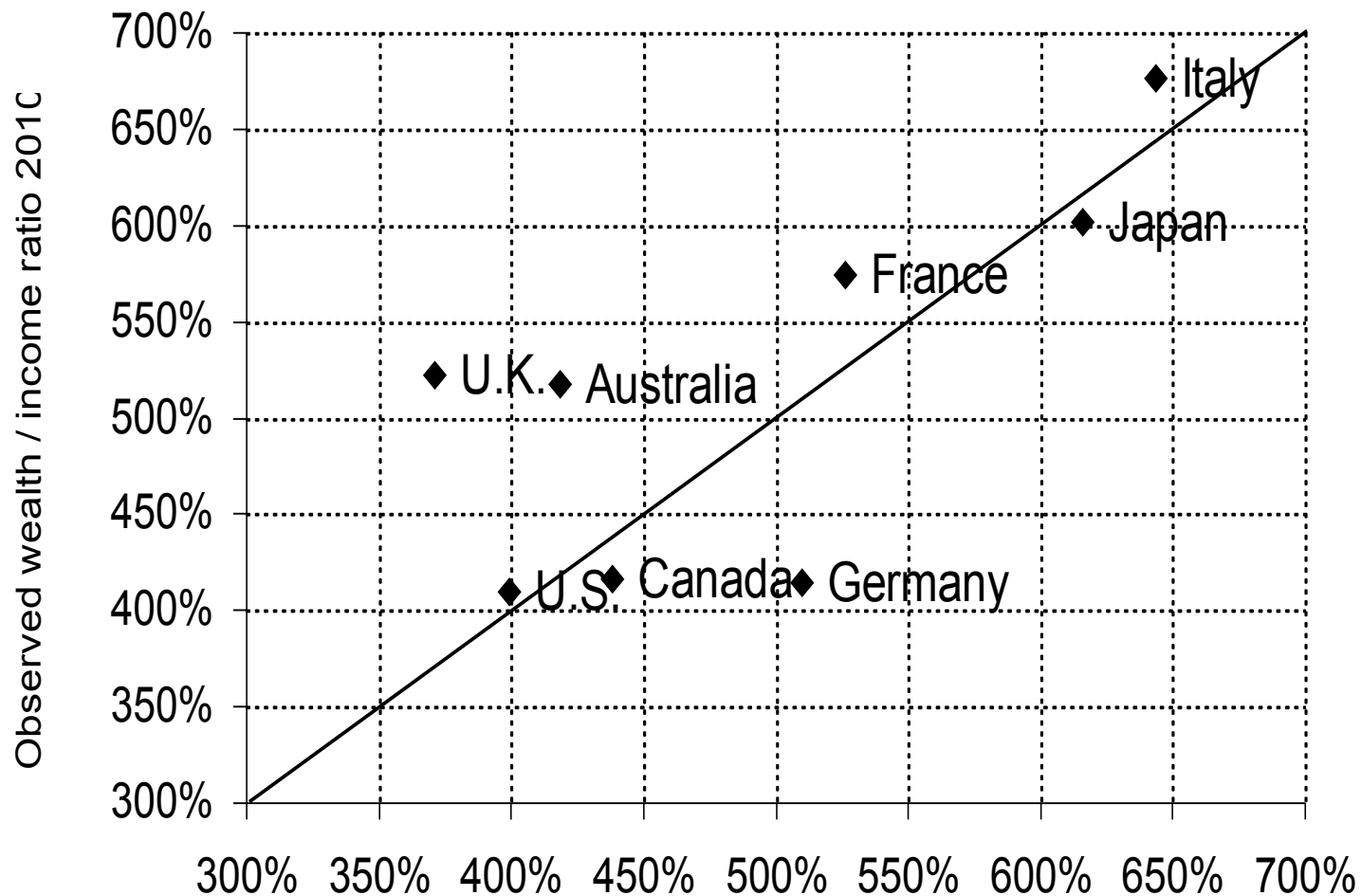


Authors' computations using country national accounts. Private wealth = non-financial assets + financial assets - financial liabilities (household & non-profit sectors)

Table 2: Growth rate vs private saving rate in rich countries, 1970-2010

	Real growth rate of national income	Population growth rate	Real growth rate of per capita national income	Net private saving rate (personal + corporate) (% national income)
U.S.	2.8%	1.0%	1.8%	7.7%
Japan	2.5%	0.5%	2.0%	14.6%
Germany	2.0%	0.2%	1.8%	12.2%
France	2.2%	0.5%	1.7%	11.1%
U.K.	2.2%	0.3%	1.9%	7.3%
Italy	1.9%	0.3%	1.6%	15.0%
Australia	3.2%	1.4%	1.7%	9.9%

Observed vs predicted private wealth / national income ratio (2010)



Predicted wealth / income ratio 2010 (on the basis of 1970 initial wealth and 1970-2010 cumulated saving flows) (additive decomposition, incl. R&D)

	$\beta(1,0)$		2010		
	$\beta(1,0)$	$\beta(2,10)$			
...	342%	410%	113% 2%	281% %	0% 1%
	2%	0%	110% 1%	41% %	31% %
	22%	41%	104% 2%	31% %	-4% -11%
	310%	%	130% 23%	341% %	% 1%
...	30%	22%	12% 2%	113% 3%	201% 3%
	23%	%	114% 1%	410% 1%	3% 12%
	24%	41%	0% 1%	30% 4%	2% %
	330%	1%	4% 1%	21% 3%	14% 2%
				65%	35%

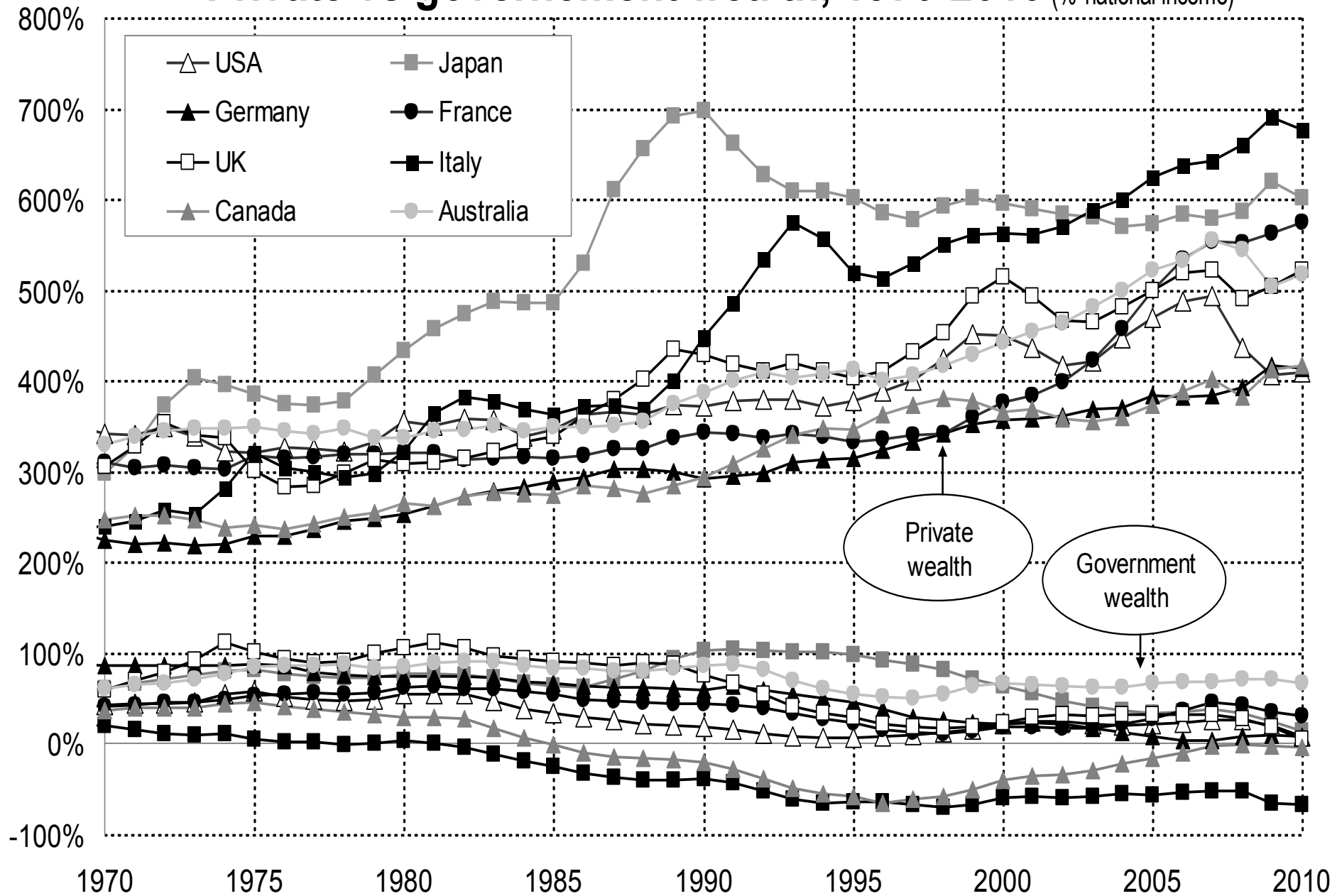
**Table 4: Accumulation of private wealth in rich countries, 1970-2010
(multiplicative decomposition)**

	Private wealth-national income ratios		Decomposition of 1970-2010 wealth growth rate		
	β (1970)	β (2010)	Real growth rate of private wealth g_w	Savings-induced wealth growth rate $g_{ws} = s/\beta$	Capital-gains-induced wealth growth rate q
U.S.	342%	410%	3.3%	2.9% 88%	0.4% 12%
Japan	299%	601%	4.3%	3.4% 78%	0.9% 22%
Germany	225%	415%	3.5%	4.3% 121%	-0.7% -21%
France	310%	575%	3.8%	3.4% 90%	0.4% 10%
U.K.	306%	522%	3.6%	1.9% 55%	1.6% 45%
Italy	239%	676%	4.6%	4.2% 92%	0.4% 8%
Canada	247%	416%	4.2%	4.3% 103%	-0.1% -3%
Australia	330%	518%	4.4%	3.4% 79%	0.9% 21%

Table 6: Private savings 1970-2010: personal vs corporate

<i>Average saving rates 1970-2010 (% national income)</i>	Net private savings (personal + corporate)	incl. personal savings	incl. corporate savings (retained earnings)
U.S.	7.7%	4.6% 60%	3.1% 40%
Japan	14.6%	6.8% 47%	7.8% 53%
Germany	12.2%	9.4% 76%	2.9% 24%
France	11.1%	9.0% 81%	2.1% 19%
U.K.	7.3%	2.8% 38%	4.6% 62%
Italy	15.0%	14.6% 97%	0.4% 3%
Canada	12.1%	7.2% 60%	4.9% 40%
Australia	9.9%	5.9% 60%	3.9% 40%

Private vs government wealth, 1970-2010 (% national income)



Authors' computations using country national accounts. Government wealth = non-financial assets + financial assets - financial liabilities (govt sector)

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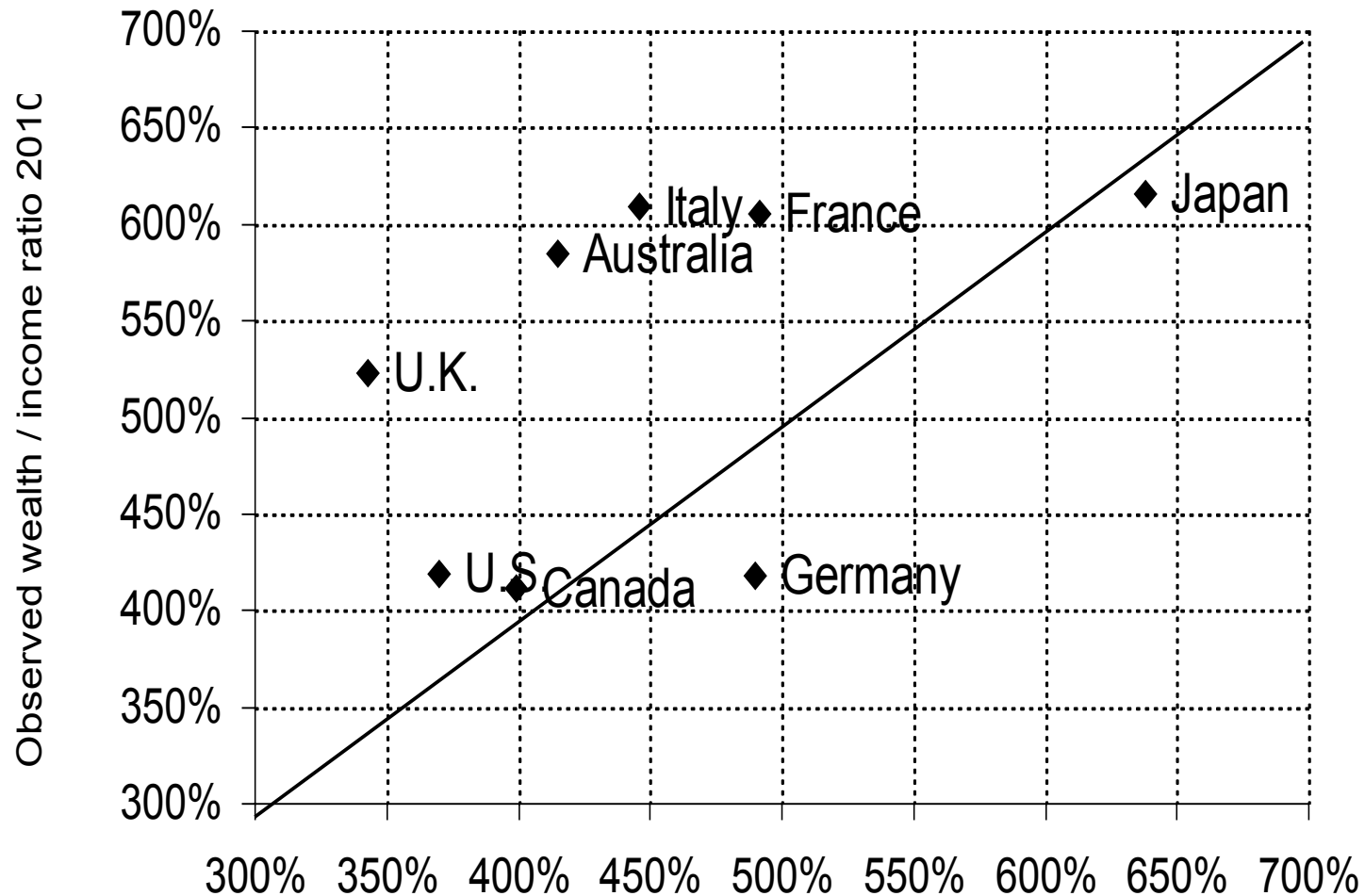
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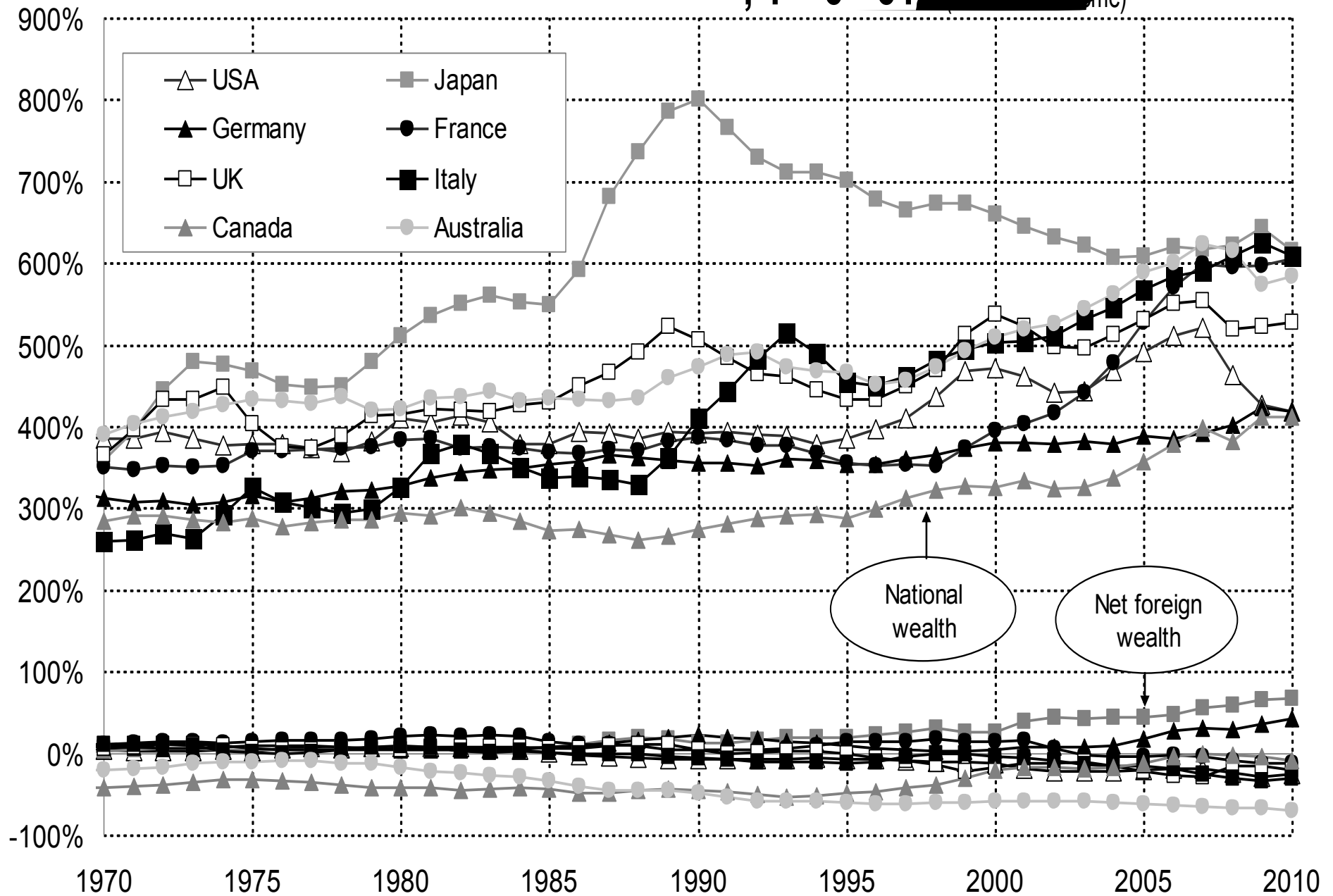
Observed vs predicted national wealth/national income ratio (2010)



Predicted wealth / income ratio 2010 (on the basis of 1970 initial wealth and 1970-2010 cumulated saving flows) (additive decomposition, incl. R&D)

Area 1970-2010 (% average)	Net national saving (private + government)	incl. private saving	incl. government saving
U.S.	5.2%	7.7%	-2.4%
Japan	14.6%	14.6%	0.0%
Germany	10.2%	12.2%	-2.1%
France	9.2%	11.1%	-1.9%
U.K.	5.3%	7.3%	-2.0%
Italy	8.5%	15.0%	-6.5%
Canada	10.1%	12.1%	-2.0%
Australia	8.9%	9.9%	-0.9%

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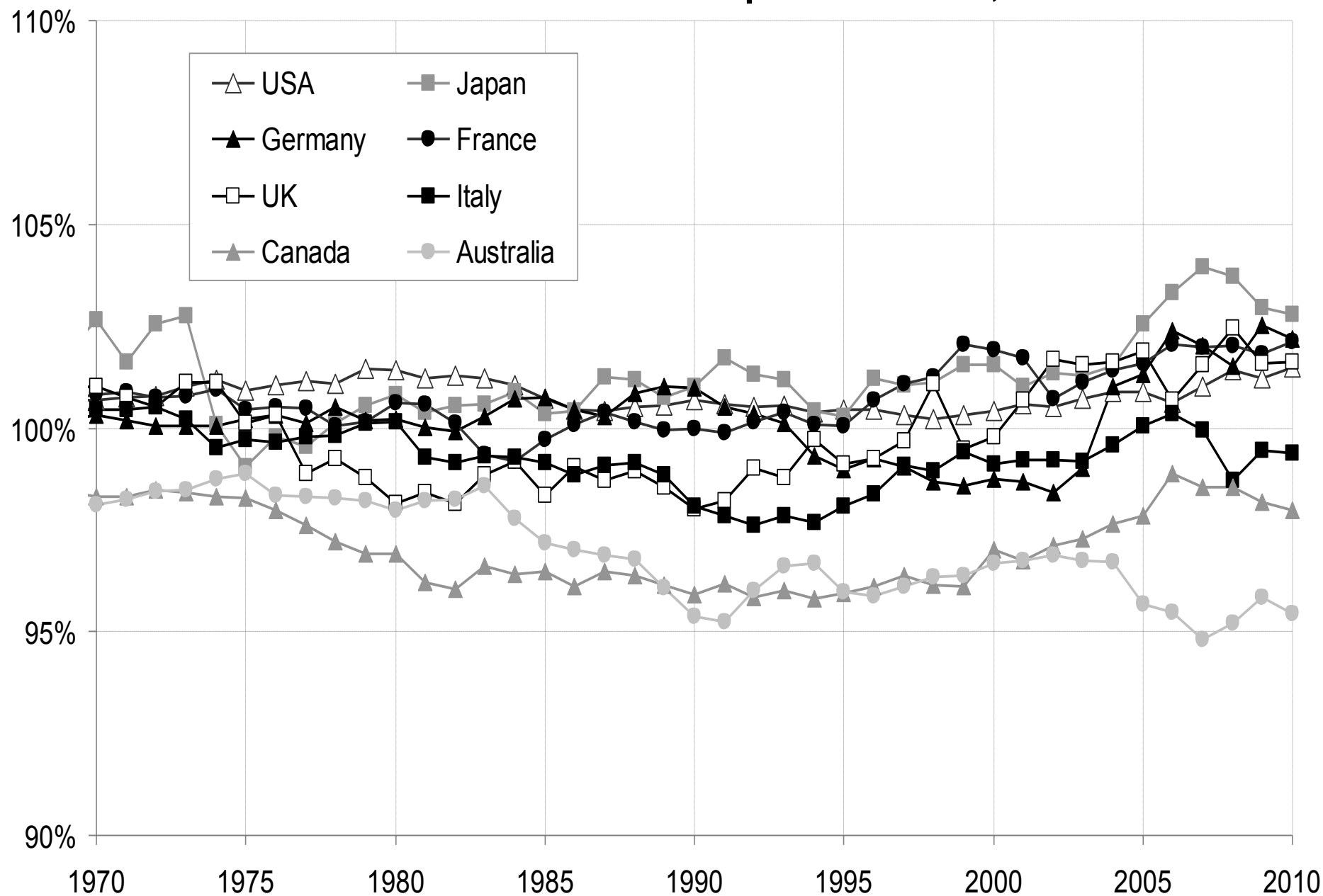


Authors' computations using country national accounts. Net foreign wealth = net foreign assets owned by country residents in rest of the world (all sectors)

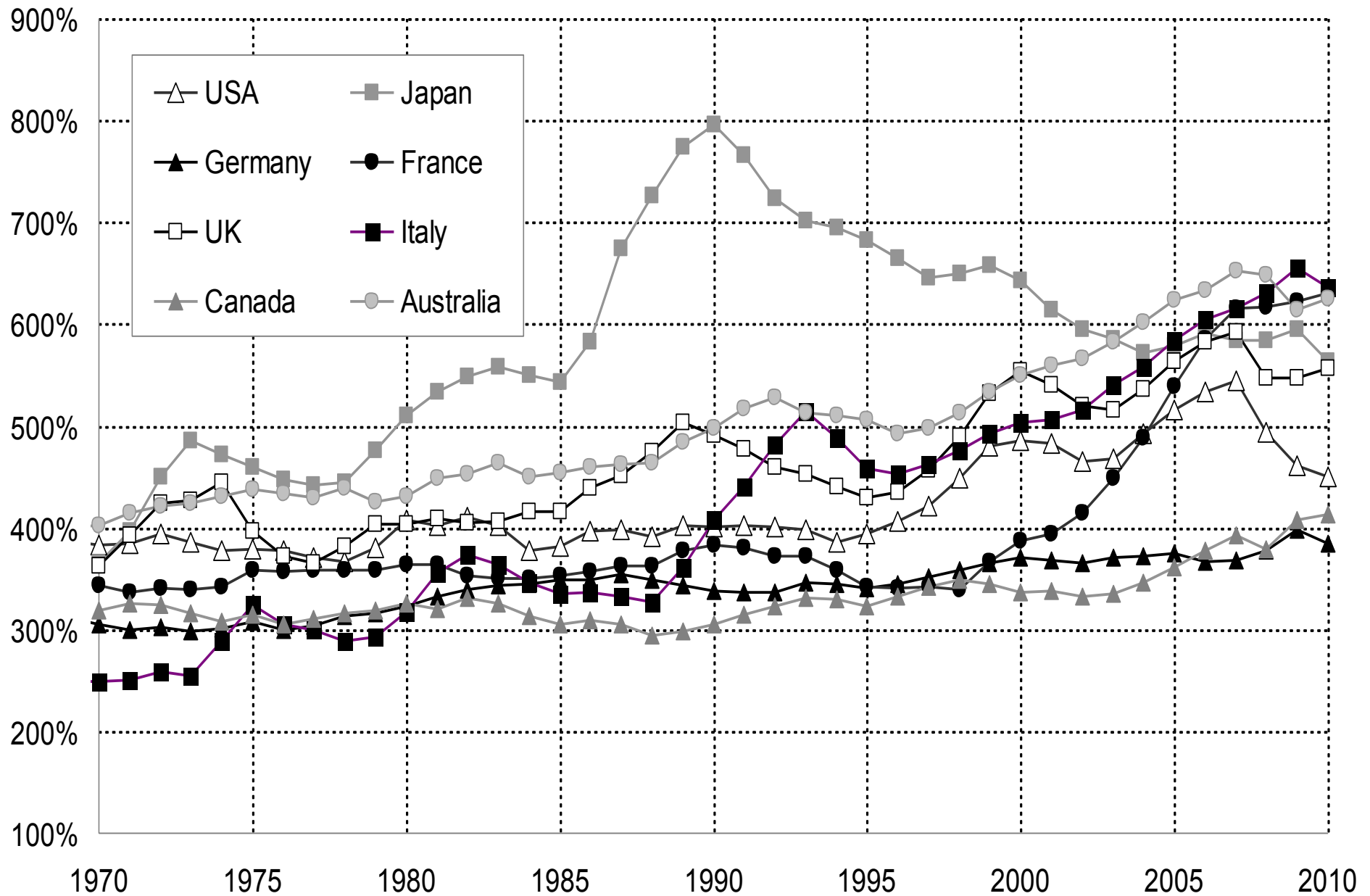
**Table 12: National wealth accumulation in rich countries, 1970-2010:
domestic capital vs foreign wealth**

	National wealth / national income ratio (1970)		National wealth / national income ratio (2010)		Rise in national wealth / national income ratio (1970-2010)	
	incl. Domestic capital	incl. Foreign wealth	incl. Domestic capital	incl. Foreign wealth	incl. Domestic capital	incl. Foreign wealth
U.S.	385% 381%	4%	419% 444%	-25%	33% 63%	-30%
Japan	359% 356%	3%	616% 548%	67%	256% 192%	64%
Germany	312% 304%	8%	418% 376%	42%	106% 72%	34%
France	351% 340%	11%	605% 618%	-13%	254% 278%	-24%
U.K.	365% 359%	6%	527% 548%	-20%	163% 189%	-26%
Italy	259% 247%	12%	609% 640%	-31%	350% 392%	-42%
Canada	284% 325%	-41%	412% 422%	-10%	128% 97%	31%
Australia	391% 410%	-20%	584% 655%	-70%	194% 244%	-50%

National income / domestic product ratios, 1970-2010



Domestic capital / output ratios, 1970-2010



Authors' computations using country national accounts. Domestic capital/output ratio = (national wealth - foreign wealth)/domestic product

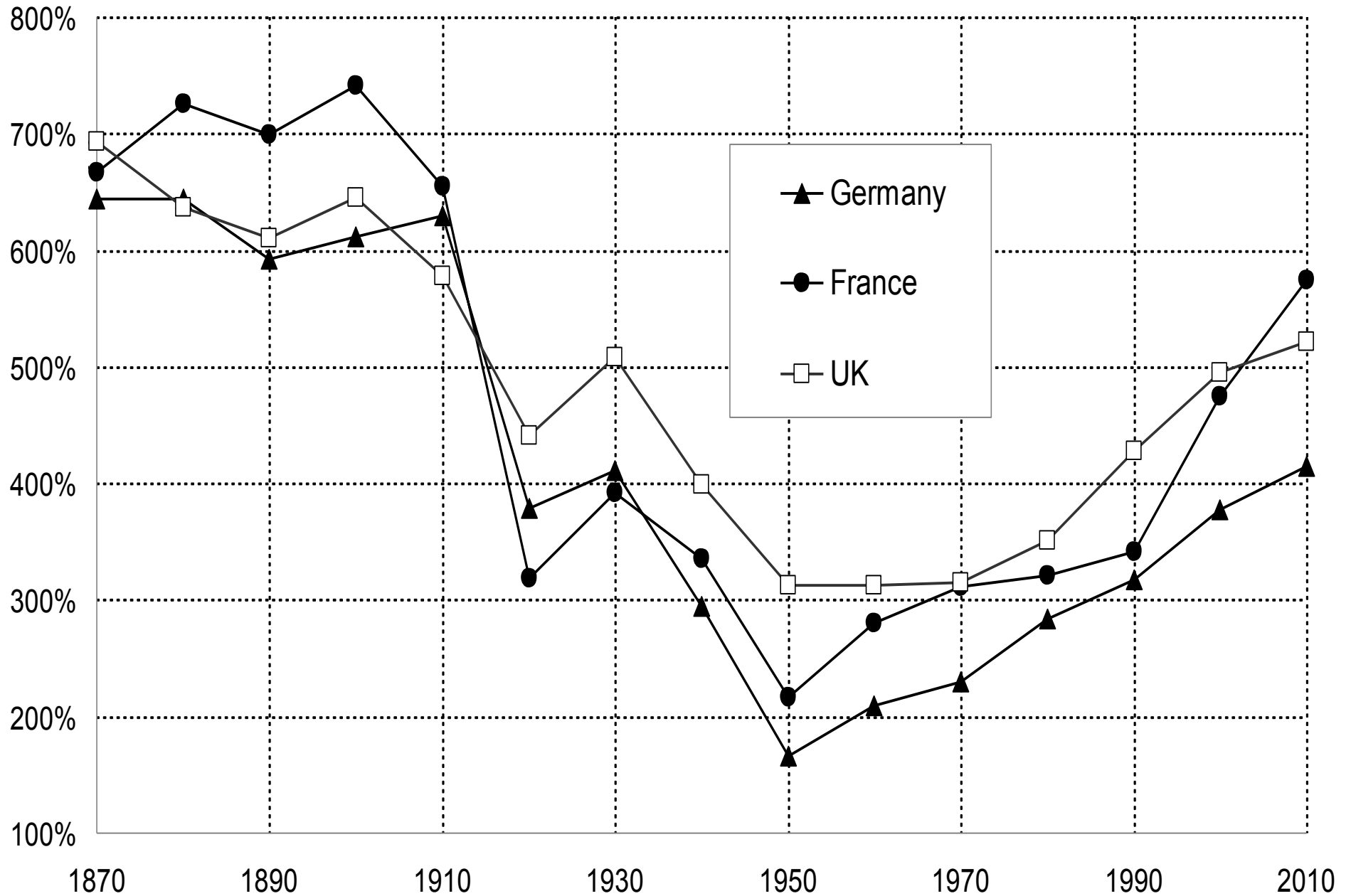
**Table 16: Domestic capital accumulation in rich countries, 1970-2010:
housing vs other domestic capital**

	Domestic capital /		Rise in domestic capital /		national income ratio	
					(1970-2010)	
	incl. Housing	incl. Other domestic capital	incl. Housing	incl. Other domestic capital	incl. Housing	incl. Other domestic capital
U.S.					63%	
	142%	239%	182%	262%	41%	23%
Japan	356%		548%		192%	
	131%	225%	220%	328%	89%	103%
Germany	304%		376%		72%	
	129%	175%	241%	135%	112%	-40%
France	340%				278%	
	104%	236%	371%	247%	267%	11%
U.K.	359%		548%		189%	
	98%	261%	300%	248%	202%	-13%
Italy	247%		640%		392%	
	107%	141%	386%	254%	279%	113%
Canada	325%		422%		97%	
	108%	217%	208%	213%	101%	-4%
Australia	410%		655%		244%	
	172%	239%	364%	291%	193%	52%

Decomposition results: 1870-2010

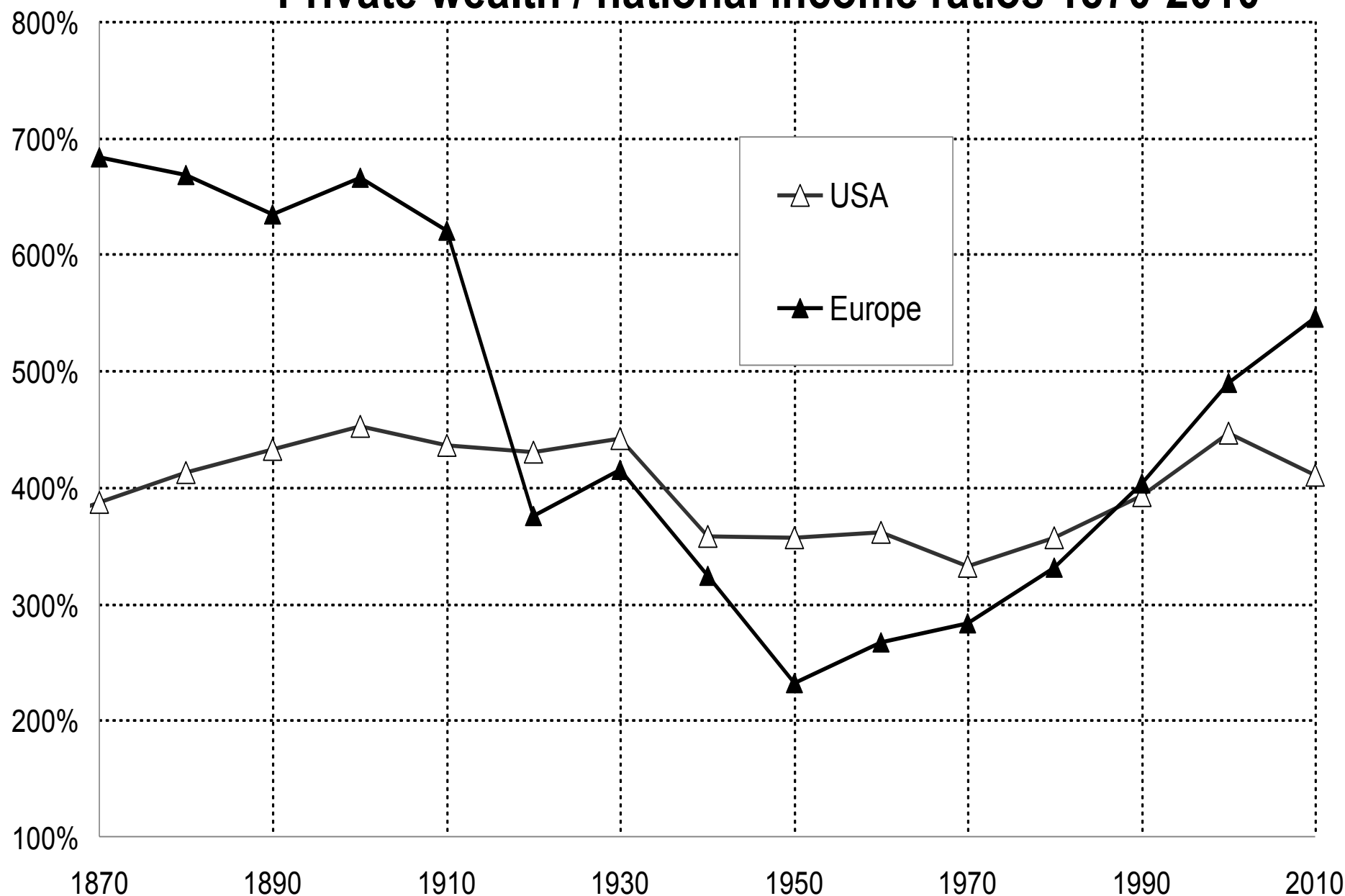
- Annual series for US, Germany, France, UK, 1870-2010
- Additive vs multiplicative decomposition of wealth accumulation equation into volume vs price effects
- Private saving (personal + corporate) vs personal
- Private wealth vs national wealth accumulation
- Domestic vs foreign wealth accumulation
- **Main conclusion:** over the entire 1910-2010 period, capital gains wash out; i.e. 1910-1950 fall in relative asset price compensated by 1950-2010 (except in Germany, where asset prices seem abnormally low: stakeholder effect?)
- In the long run (1870-2010 or 1910-2010), changes in wealth-income ratios are well accounted for by $\beta = s/g$

Private wealth / national income ratios in Europe, 1870-2010



Authors' computations using country national accounts. Private wealth = non-financial assets + financial assets - financial liabilities (household & non-profit sectors)

Private wealth / national income ratios 1870-2010



Authors' computations using country national accounts. Private wealth = non-financial assets + financial assets - financial liabilities (household & non-profit sectors)

Table 20: Growth rate vs private saving rate in rich countries, 1870-2010

	Real growth rate of national income	Population growth rate	Real growth rate of per capita national income	Net private saving rate (personal + corporate) (%) national income)
U.S.	3.4%	1.5%	1.9%	8.3%
Germany	2.3%	0.5%	1.7%	12.1%
France	2.1%	0.4%	1.7%	10.6%
U.K.	1.9%	0.5%	1.4%	6.7%

Accumulation of private wealth in France, 1870-2010 (multiplicative decomposition)

	Private wealth-national income ratios		Real growth rate of private wealth	Savings-induced wealth growth rate (incl. war destructions)	Capital-gains-induced wealth growth rate
	β_t	β_{t+n}	g_w	$g_{ws} = s/\beta$	q
1870-2010	667%	575%	2.0%	2.4% 121%	-0.4% -21%
1870-1910	667%	766%	1.5%	1.2% 81%	0.3% 19%
1910-2010	766%	575%	2.2%	2.9% 132%	-0.7% -32%
1910-1950	766%	192%	-2.0%	0.9% -47%	-2.9% 147%
1950-1980	192%	321%	6.3%	5.4% 86%	0.9% 14%
1980-2010	321%	575%	3.8%	3.0% 81%	0.7% 19%

Accumulation of private wealth in the U.K., 1870-2010 (multiplicative decomposition)

	Private wealth-national income ratios		Real growth rate of private wealth	Savings-induced wealth growth	Capital-gains-induced wealth
	β_t	β_{t+n}	g_w	$g_{ws} = s/\beta$	q
1870-2010	690%	522%	1.7%	1.5% 85%	0.3% 15%
1870-1910	690%	678%	1.8%	1.6% 85%	0.3% 15%
1910-2010	678%	522%	1.7%	1.4% 85%	0.3% 15%
1910-1950	678%	355%	-0.2%	0.6% -314%	-0.8% 414%
1950-1980	355%	309%	1.6%	2.2% 134%	-0.6% -34%
1980-2010	309%	522%	4.4%	1.7% 40%	2.6% 60%

Accumulation of private wealth in the U.S. 1870-2010 (multiplicative decomposition)

	Capital gains induced wealth growth rate $g_{ws} = s/\beta$	Induced wealth growth rate q
%	2.9% 84%	0.6% 16%
%	2.9% 67%	1.4% 33%
%	2.9% 93%	0.2% 7%
%	2.6% 95%	0.1% 5%
%	3.8% 110%	-0.4% -10%
%	2.3% 72%	0.9% 28%

	Private wealth ratio income ratios	Pool growth β_{t+n}	Savings rate of private wealth g_w
	β_t	β_{t+n}	
1870-2010	386%	410%	3.4%
1870-1910	386%	446%	4.3%
1910-2010	446%	410%	3.1%
1910-1950	446%	365%	2.7%
1950-1980	365%	355%	3.4%
1980-2010	355%	410%	3.3%

Accumulation of private wealth in Germany, 1870-2010 (multiplicative decomposition)

	Private wealth accumulation β	Real estate accumulation β_+	Real estate return ea	Savings rate $\frac{S}{Y}$	Capital accumulation $\frac{C}{Y}$
1870-2010	704%	415%	2.1%	3.5% 163%	-1.3% -63%
1870-1910	704%	608%	2.1%	2.3% 109%	-0.2% -9%
1910-2010	608%	415%	2.1%	3.9% 184%	-1.8% -84%
1910-1950	608%	181%	-1.8%	1.4% -79%	-3.2% 179%
1950-1980	181%	253%	6.1%	7.7% 123%	-1.5% -23%
1980-2010	253%	415%	3.4%	3.7% 107%	-0.2% -7%

Accumulation of national wealth in Germany, 1870-2010 (multiplicative decomposition)

	Market-value national wealth-national income ratios		Real growth rate of national wealth	Savings-induced wealth growth rate (incl. war destructions)	Capital-gains-induced wealth growth rate
	A_t	A_{t+n}	g_w	$g_{ws} = s/A$	q
1870-2010	759%	418%	2.0%	2.2% 110%	-0.2% -10%
1870-1910	759%	638%	2.1%	2.2% 108%	-0.2% -8%
1910-2010	638%	418%	2.0%	2.3% 111%	-0.2% -11%
1910-1950	638%	236%	-1.3%	-1.2% 95%	-0.1% 5%
1950-1980	236%	328%	6.1%	6.8% 111%	-0.7% -11%
1980-2010	328%	418%	2.6%	2.5% 99%	0.0% 1%

Very long run (1700-2010)

F UK F (1700-1870) (1870-2010)

T (1700-1870) (1870-2010)

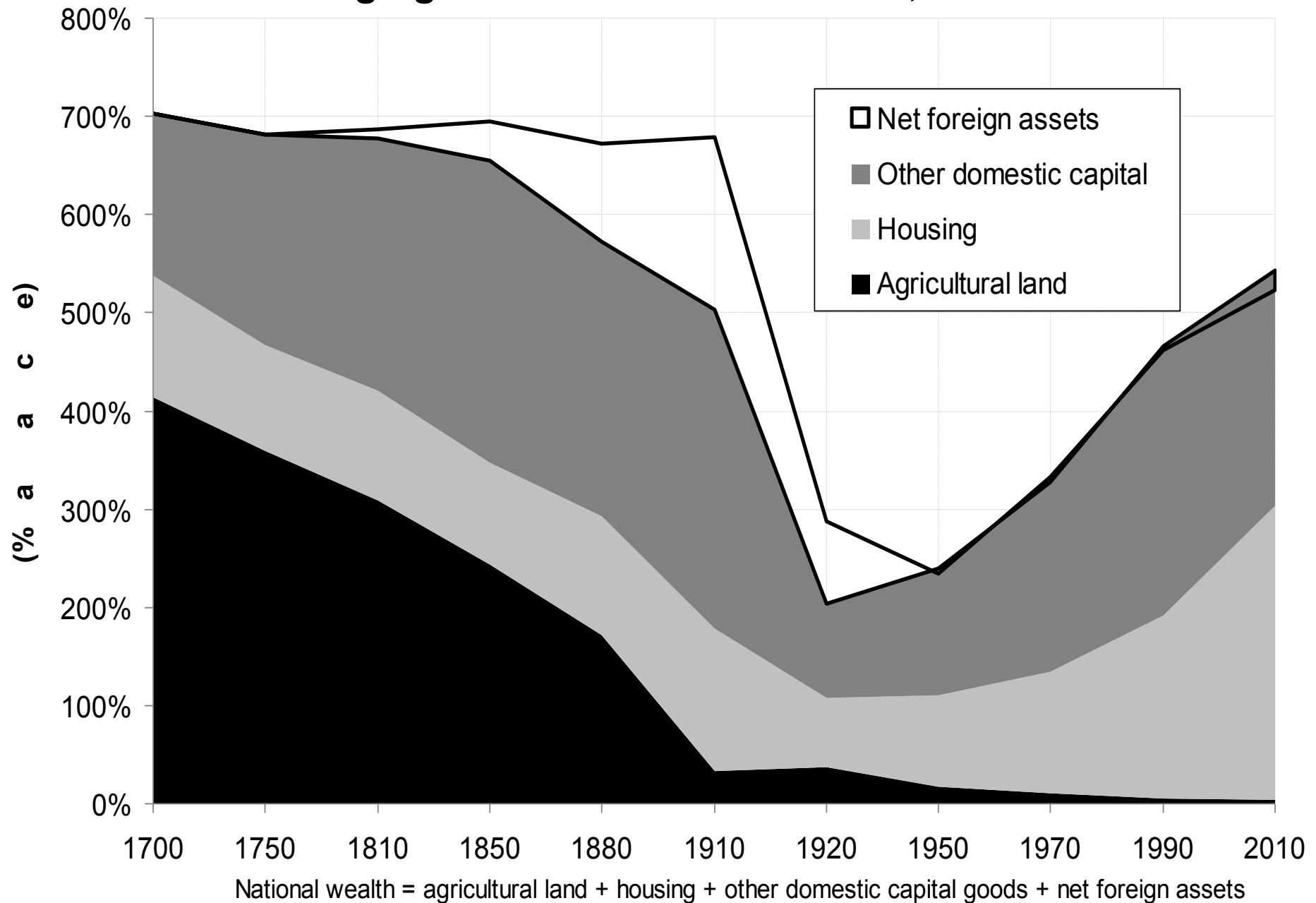
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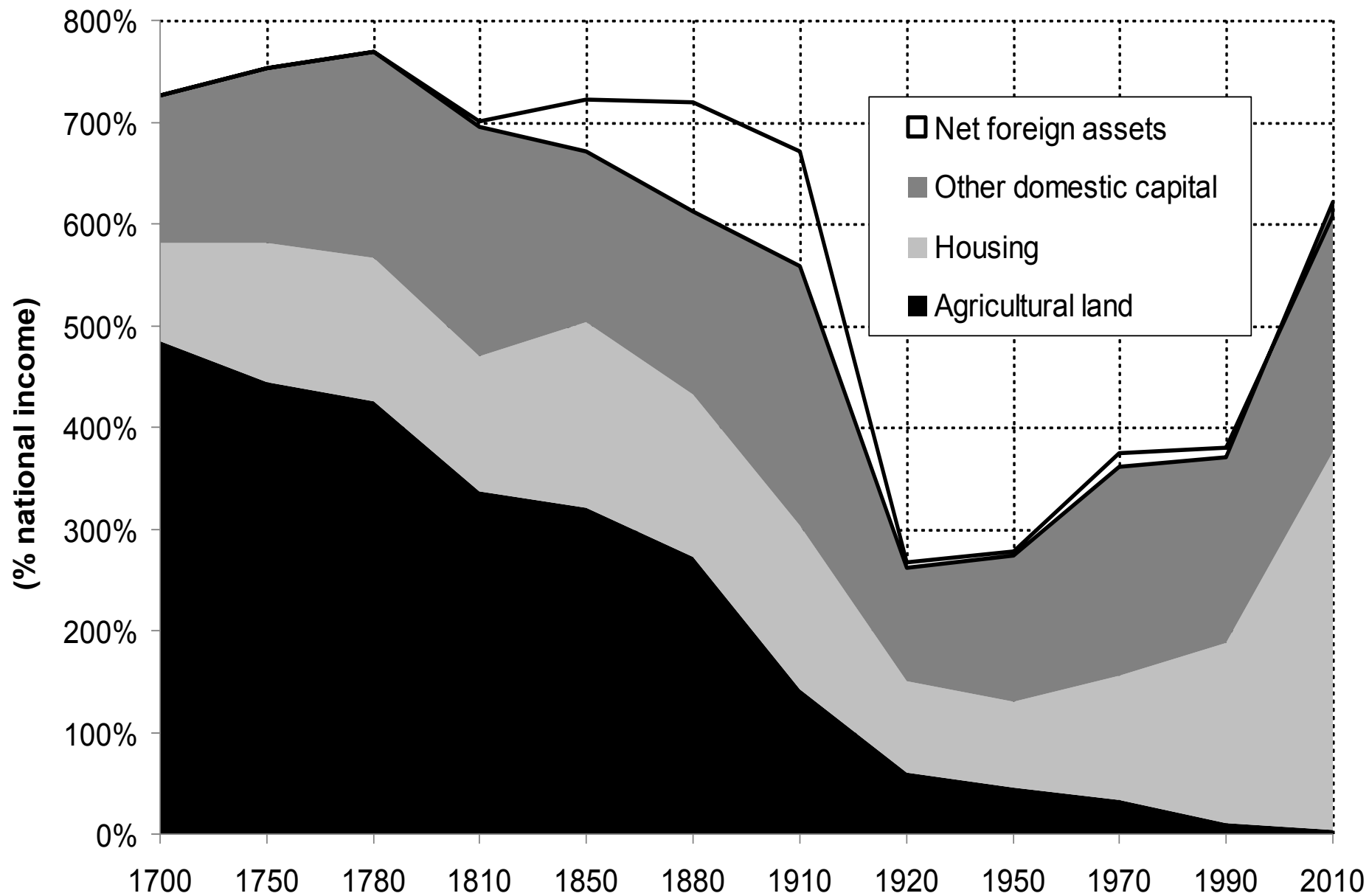
Main conclusion: β

600%-700% UK & F

The changing wealth of the nation, UK 1700-2010

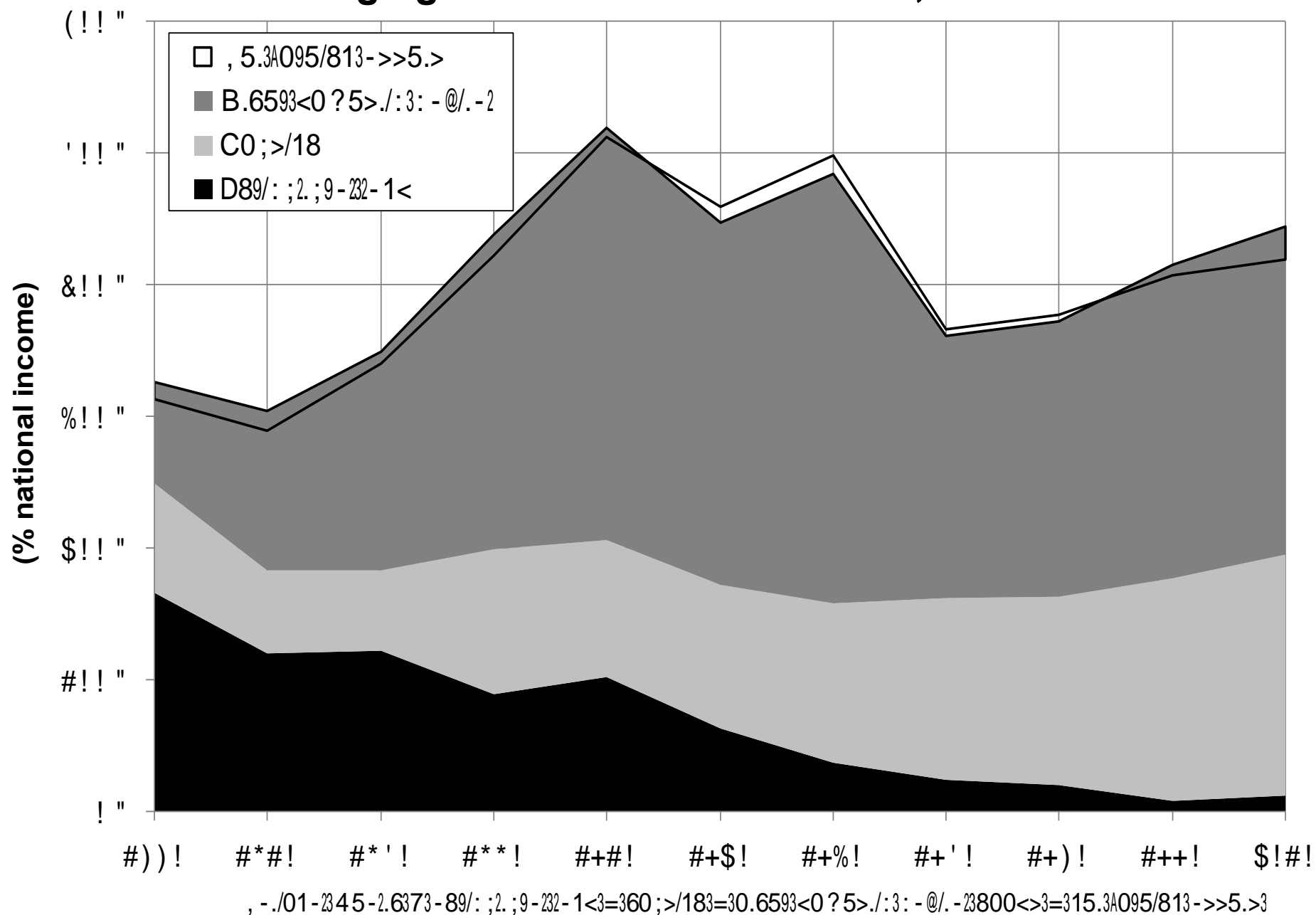


The changing nature of national wealth, France 1700-2010

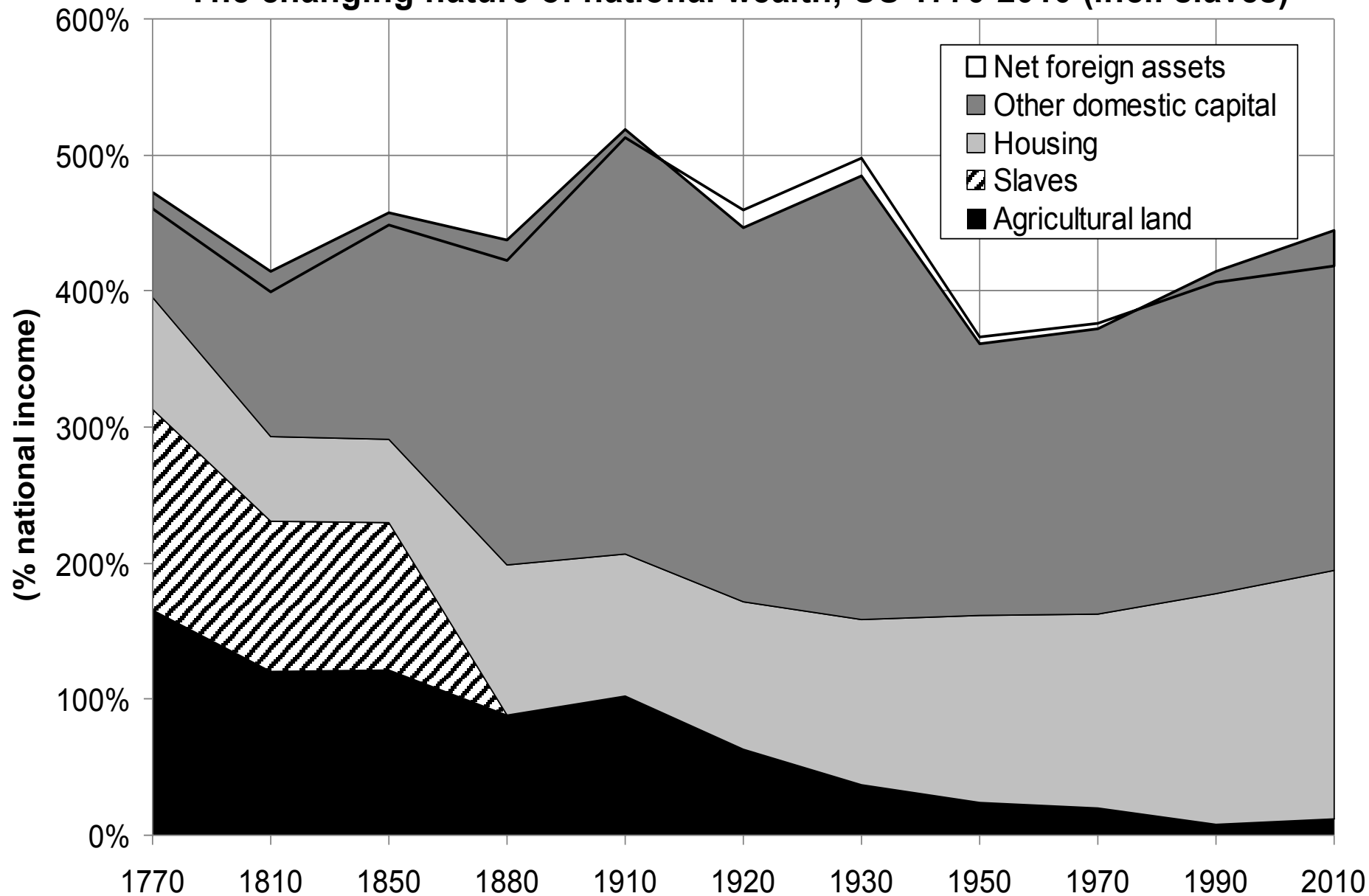


National wealth = agricultural land + housing + other domestic capital goods + net foreign assets

The changing nature of national wealth, US 1770-2010

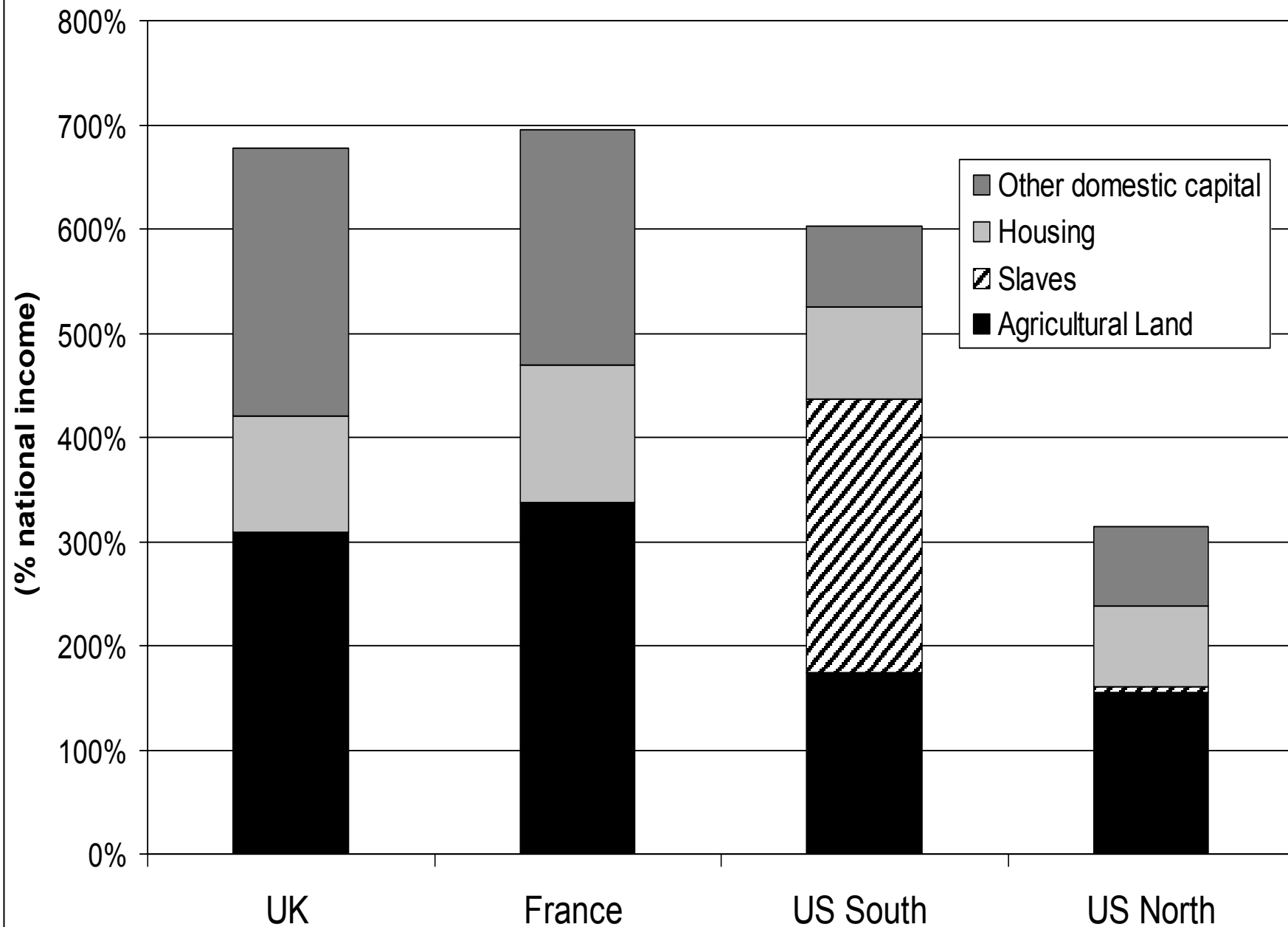


The changing nature of national wealth, US 1770-2010 (incl. slaves)

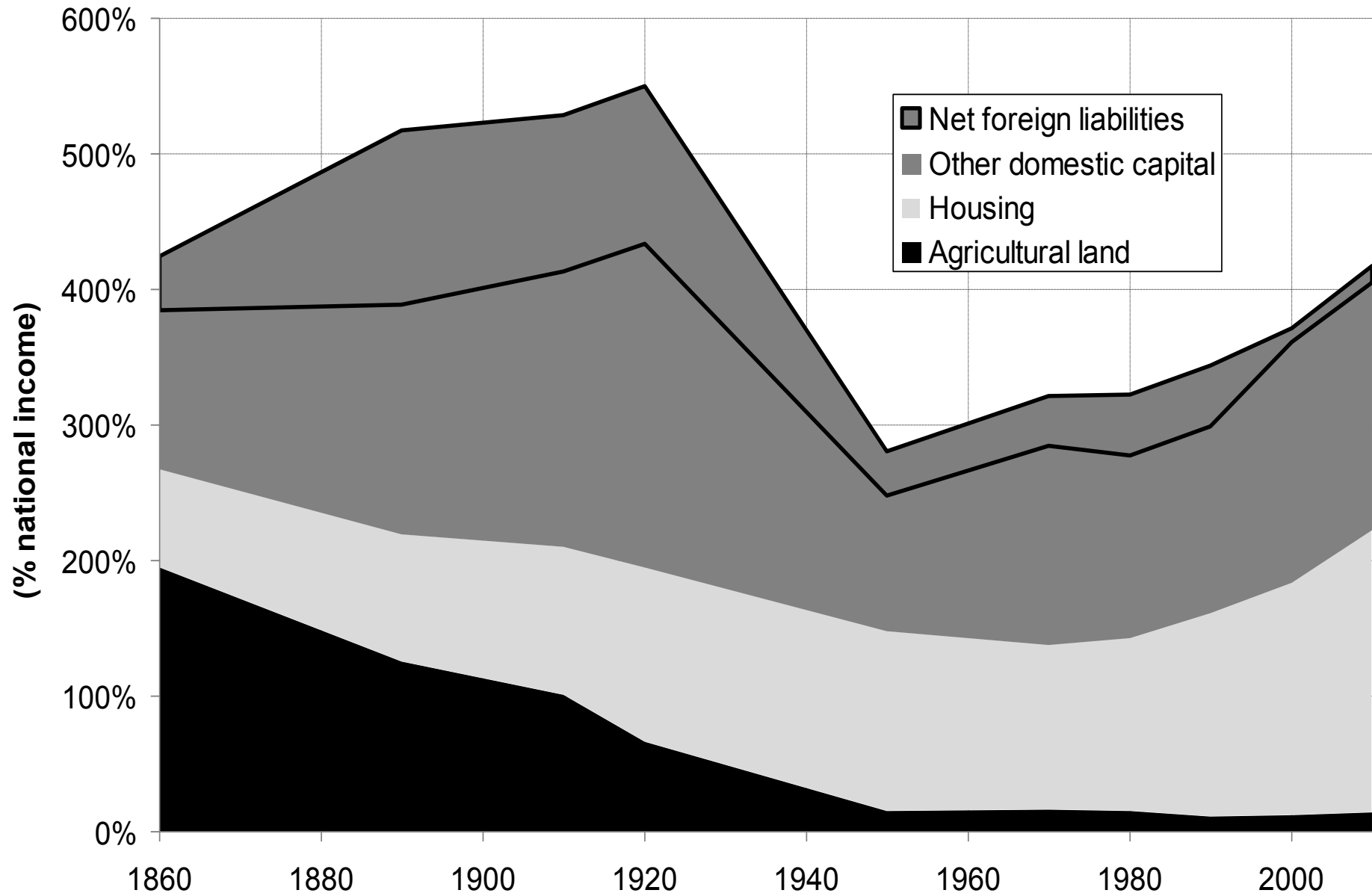


National wealth = agricultural land + housing + other domestic capital goods + net foreign assets

National wealth in 1770-1810: Old vs New world



The changing nature of national wealth, Canada 1860-2010



National wealth = agricultural land + housing + other domestic capital - net foreign liabilities

- β stable around 600%-700% in the very long run in UK & France?
- In agrarian, very-low-growth societies, it is unclear which forces dominate: $\beta = s/g$ or $\beta = \alpha/r$? Probably $\beta = \alpha/r$
- I.e. with α = capital share = mostly land rent: determined by technology, politics, & land availability ($\alpha \approx 30\%-40\%$ in Europe, vs. 10%-15% in land-rich New world, i.e. elasticity of substitution $\sigma < 1$), and r = rate of return = 4%-5% = rate of time preference
 → $\beta = 600\%-700\%$ in Europe, vs. 200%-300% in New World

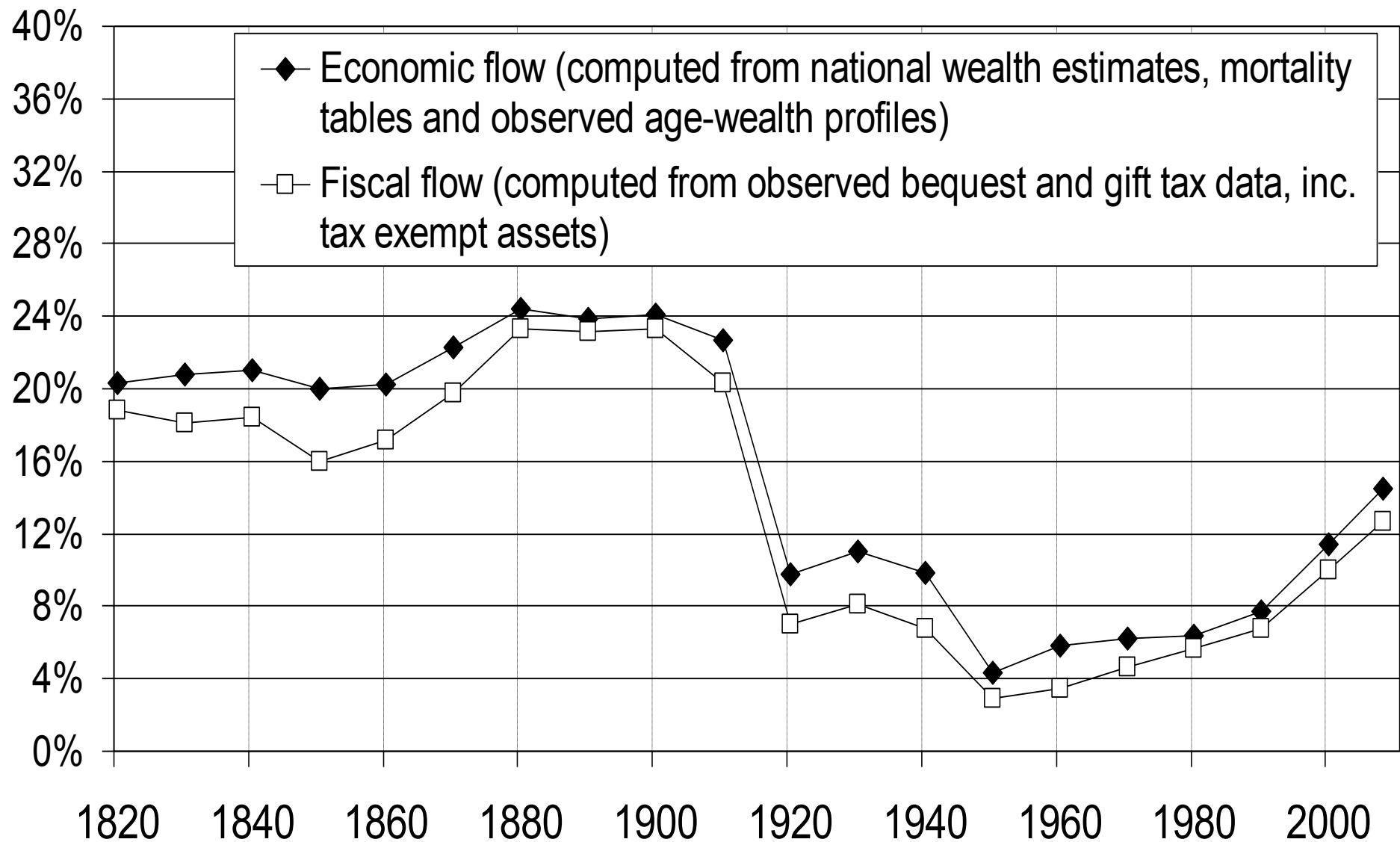
(simply because very abundant land is worthless: new world had more land in volume, but less land in value)

(nothing to do with the $\beta = s/g$ mechanism, which bumped in later, with migration)

Conclusions & perspectives

- **Capital is back:** the low wealth-income ratios observed in Europe in 1950s-1970s (200%-300%) were an anomaly; with low growth, long run wealth-income ratios are naturally very large (600%-700%); key is $\beta = s/g$
- There's nothing bad about the return of capital: k is useful; but it raises new issues about k regulation & taxation
- National accounts used to be mostly about flows; we now need to focus on stocks
- Next steps: **Dynamics of world distribution of wealth:** Will China or global billionaires own the world? Both divergence can occur, but 2nd one more likely, esp. if $r > g$
- **Inherited vs. self-made wealth:** long-run U-shaped pattern in France; on-going work on UK, Germany & US

Annual inheritance flow as a fraction of national income, France 1820-2008



Source: T. Piketty, "On the long-run evolution of inheritance", QJE 2011

Supplementary slides

- **Harrod-Domar-Solow formula $\beta = s/g$ is a pure accounting formula and is valid with any saving motive and utility function**
- **Wealth in the utility function:** $\text{Max } U(c_t, \Delta w_t = w_{t+1} - w_t)$
 → if $U(c, \Delta) = c^{1-s} \Delta^s$, then fixed saving rate $s_t = s$
- **Dynastic utility:**
 $\text{Max } \sum U(c_t) / (1 + \delta)^t$, with $U(c) = c^{1-1/\xi} / (1 - 1/\xi)$
 → unique long rate rate of return $r_t \rightarrow r = \delta + \xi g > g$
 → long run saving rate $s_t \rightarrow s = \alpha g / r$, $\beta_t \rightarrow \beta = \alpha / r = s / g$

Table 5: Private saving 1970-2010: gross vs net

Average 1970-2010 (% average) country	Gross private saving (personal + corporate)	Minus: Capital depreciation	Equal: Net private saving (personal + corporate)
U.S.	18.8%	11.1%	7.7%
Japan	33.4%	18.9%	14.6%
Germany	28.5%	16.2%	12.2%
France	22.0%	10.9%	11.1%
U.K.	19.7%	12.3%	7.3%
Italy	30.1%	15.1%	15.0%
Canada	24.5%	12.4%	12.1%
Australia	25.1%	15.2%	9.9%

	β (1970)	β (2010)			
U.S.	385%	419%	127% 30%	193% 46% 66%	98% 24% 34%
Japan	359%	616%	132% 21%	456% 74% 94%	27% 4% 6%
Germany	312%	418%	144% 34%	296% 71% 108%	-22% -5% -8%
France	351%	605%	147% 24%	294% 49% 64%	164% 27% 36%
U.K.	365%	527%	153% 29%	140% 27% 37%	235% 44% 63%
Italy	259%	609%	123% 20%	273% 45% 56%	213% 35% 44%
Canada	284%	412%	92% 22%	257% 62% 80%	63% 15% 20%
Australia	391%	584%	111% 19%	253% 43% 54%	220% 38% 46%

**Table 8: Accumulation of (market-value) national wealth in rich countries, 1970-2010
(multiplicative decomposition)**

	National wealth-national income ratios		Decomposition of 1970-2010 wealth growth rate		
	β (1970)	β (2010)	Real growth rate of national wealth g_w	Savings-induced wealth growth rate $g_{ws} = s/\beta$	Capital-gains-induced wealth growth rate g
U.S.	385%	419%	3.0%	2.2% 74%	0.8% 26%
Japan	359%	616%	3.9%	3.1% 78%	0.8% 22%
Germany	312%	418%	2.7%	3.1% 113%	-0.4% -13%
France	351%	605%	3.6%	2.7% 75%	0.9% 25%
U.K.	314%	523%	3.5%	1.5% 42%	2.0% 58%
Italy	259%	609%	4.1%	2.6% 63%	1.5% 37%
Canada	284%	412%	3.8%	3.4% 89%	0.4% 11%
Australia	391%	584%	4.2%	2.5% 61%	1.6% 39%

Table 11: Accumulation of government wealth in rich countries, 1970-2010 (additive decomposition)

	Government wealth-national income ratios		Decomposition of 2010 government wealth-national income ratio			
			Initial wealth effect	Cumulated new savings & other vol. changes	<i>incl. net interest payments</i>	Capital gains or losses
	β (1970)	β (2010)				
U.S.	43%	9%	14%	-44%	-68%	38%
Japan	61%	14%	22%	0%	-38%	-8%
Germany	87%	3%	40%	-60%	-55%	23%
France	41%	31%	17%	-52%	-46%	66%
	50%	6%	25%	52%	50%	24%

130%

34%

70%

Italy	20%	-68%	9%	-207%	-231%
Canada	37%	-4%	12%	-51%	-75%
Australia	61%	67%	17%	-21%	-23%

Table 13: Foreign saving 1970-2010: trade vs investment balance

Area 1970-2010 (% average change)	Net foreign saving	incl. government & private	incl. foreign incomes
U.S.	-2.8%	-3.6%	0.7%
Japan	2.8%	1.4%	1.4%
Germany	2.0%	1.7%	0.2%
France	-0.3%	-1.1%	0.8%
U.K.	-1.5%	-1.6%	0.1%
Italy	-0.3%	0.5%	-0.8%
Canada	-0.1%	2.9%	-3.0%
Asia	-4.7%	-1.3%	-3.5%

	Foreign wealth-national income ratios		Decomposition of 2010 foreign wealth-national income ratio				
	β (1970)	β (2010)	Initial wealth effect	Cumulated saving & other volume changes	<i>incl. net exports & transfers</i>	<i>incl. net investment income</i>	Capital gains or losses
U.S.	4%	-25%	1%	-60%	-90%	19%	33%
Japan	3%	67%	1%	84%	43%	41%	-18%
Germany	8%	42%	4%	57%	51%	6%	-19%
France	11%	-13%	5%	-2%	-33%	23%	-15%
U.K.	6%	-20%	3%	-41%	-42%	2%	18%
Italy	12%	-31%	5%	-9%	17%	-26%	-27%
Canada	-41%	-10%	-13%	-4%	74%	-77%	7%
Australia	-20%	-70%	-6%	-106%	-28%	-78%	41%

**Table 15: Accumulation of national wealth in rich countries:
domestic vs. foreign capital gains**

	1970-2010 capital gains on national wealth (% of national income)	Decomposition of 1970-2010 capital gains	
		Domestic wealth	Foreign wealth
U.S.	98%	66% 67%	33% 33%
Japan	27%	45% 164%	-18% -64%
Germany	-22%	-3% 14%	-19% 86%
France	164%	179% 109%	-15% -9%
U.K.	235%	217% 92%	18% 8%
Italy	213%	240% 113%	-27% -13%
Canada	63%	55% 88%	7% 12%
Australia	220%	178% 81%	41% 19%

