Wealth in Spain, 1900-2014. A Country of Two Lands

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Outline

Motivation

- Wealth is gaining increasing attention:
  - Wild swings in asset prices
  - Increasing importance of cross border position
  - Global rise in inequalities

- Piketty and Zucman (2014) have placed wealth back into the center of economic analysis
  - Using modern SNA concepts, they track the evolution of wealth-income ratios in a large set of rich countries
  - Main result: generalized rise in wealth-income ratios since the 1970s ; U-shaped evolution over the 20th century (most prominently in Europe)

- Surge in wealth estimates in other countries: Sweden (Waldenström (2016)), Greece (Charalampidis (2016)), South Africa (Orthofer (2015)), China (Piketty et al. (2017))

- In Spain, some historical and recent attempts to estimate wealth, but not systematic (i.e. missing assets, conceptual/methodological problems)

Motivation: wealth is intensely debated

- Intense debate since Piketty-Zucman (2014). In what pertains macro-wealth (not inequality), the debate is mostly about two aspects:
  - National wealth concept: book-value vs market-value definitions (McGrattan (2015)) –> Tobin's Q and corporate wealth (and measurement problems too)
  - Housing as the main driver of the recent rise in wealth-income ratios (Rognlie (2014), Bonnet et al. (2014), Stiglitz (2015), Grossman and Steger (2017), Knoll et al. (2017))
- Besides the interest in analysing a non-core European country, Spain is a useful case to shed light on these debates

This paper: main contributions

- Complete database on the evolution of wealth in Spain for the period 1900-2014, dividing wealth by:
  - Type of ownership (public vs private, domestic vs foreign)
  - Type of assets (housing, agricultural land, different types of financial assets, etc.)
- First study analyzing the joint evolution of market-value and book-value national wealth for more than a century
- First estimate of offshore assets in Spain based on administrative records
- New asset-specific decomposition of long-run movements in the value of wealth into a volume effect (through saving) and a price effect (capital gains or losses): housing vs other types of capital vs foreign wealth

This paper: main findings

- National wealth-to-income ratio followed a J-shaped evolution over the last century, contrary to the U-shaped trend observed in other rich economies
- Particularly fast transition from high agricultural land value to high urban land value
- Important role of offshore assets, reducing Spain's international indebtedness by approximately one quarter since the 2000s
- Contrary to other countries, capital gains are a fundamental determinant of the long-term evolution of wealth
  - Importantly, housing accounts for 83% of total capital gains in the period 1950-2010

Outline

Concepts and methodology

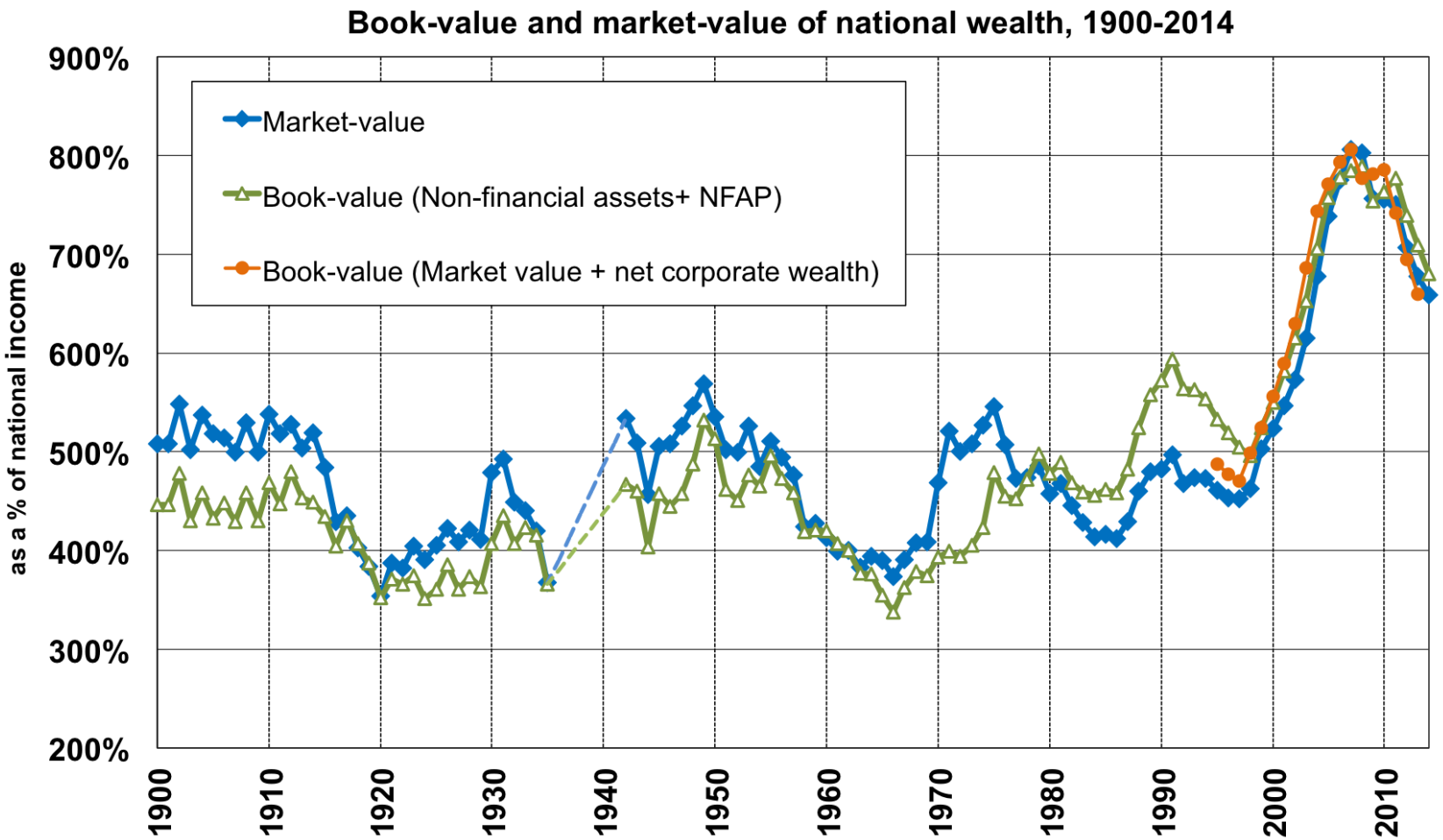
- Use of national income and wealth concepts from the System of National Accounts (1993, 2008)
  - **National income = GDP - Depreciation + Net foreign income**
  - **Wealth = non-financial assets + financial assets - liabilities**

- At the country level, two definitions of national wealth: market-value and book-value:
  - **Market-value national wealth = Personal wealth (households) + Public wealth**
  - **Book-value national wealth = Non-financial assets + NFAP**

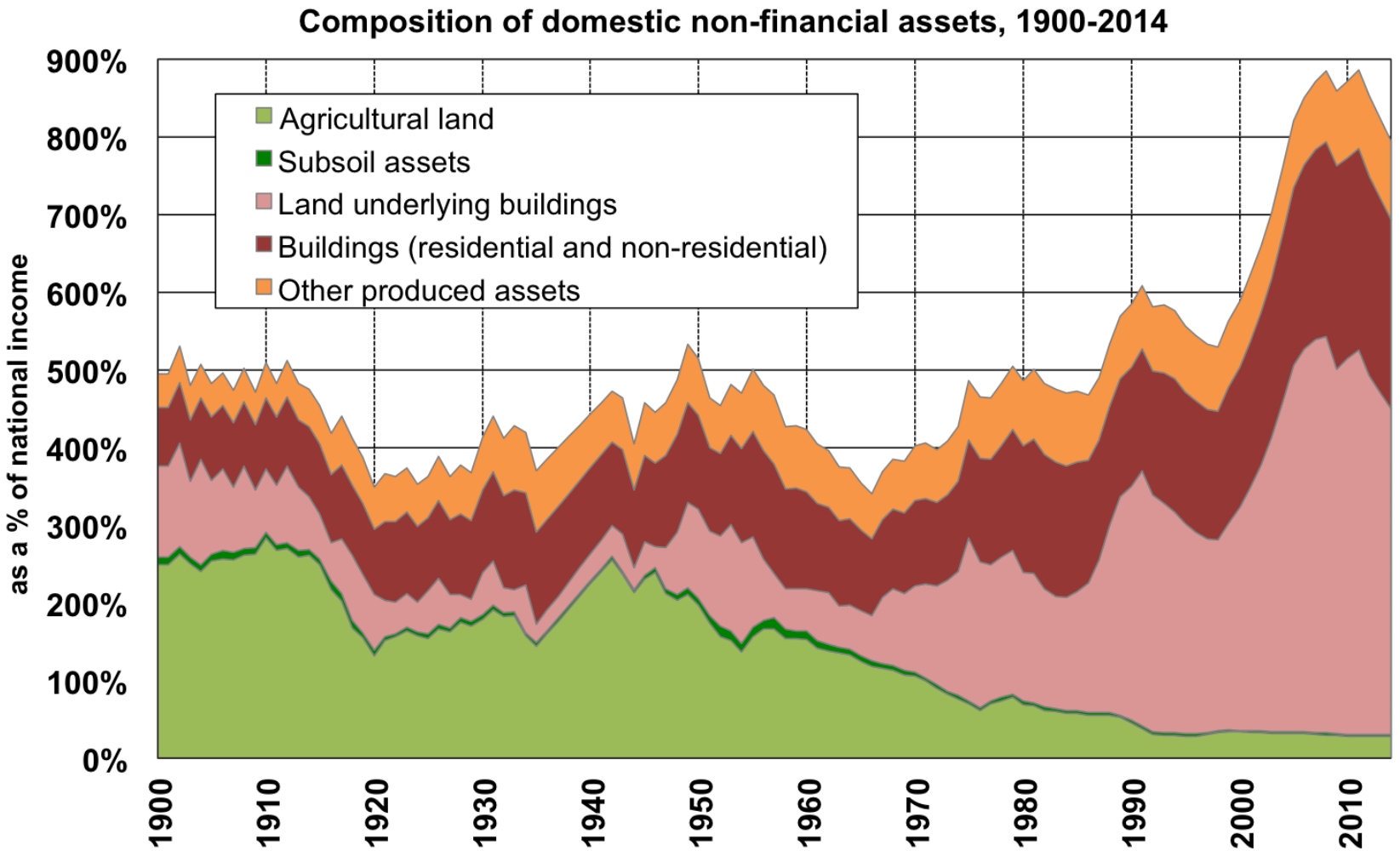
  - Both definitions converge when Tobin's Q equals 1 or, alternatively, when corporate wealth equals 0

- Methodology. In most cases (financial assets, housing, agricultural land): census-like method. Some produced assets (i.e. machinery and equipment): Perpetual Inventory Method. Building vs land decomposition: Residual approach (detailed explanation here)

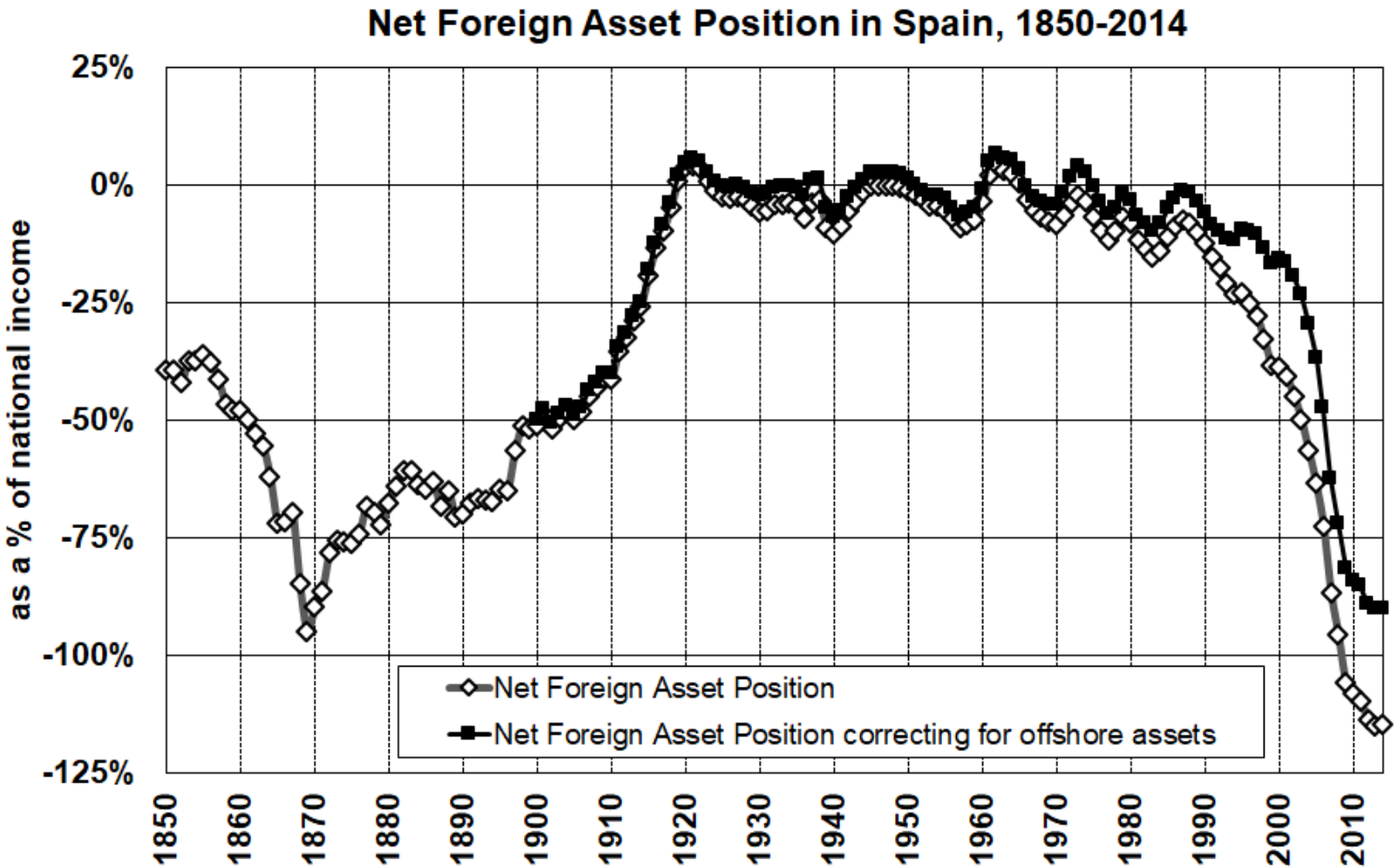
Results: National wealth



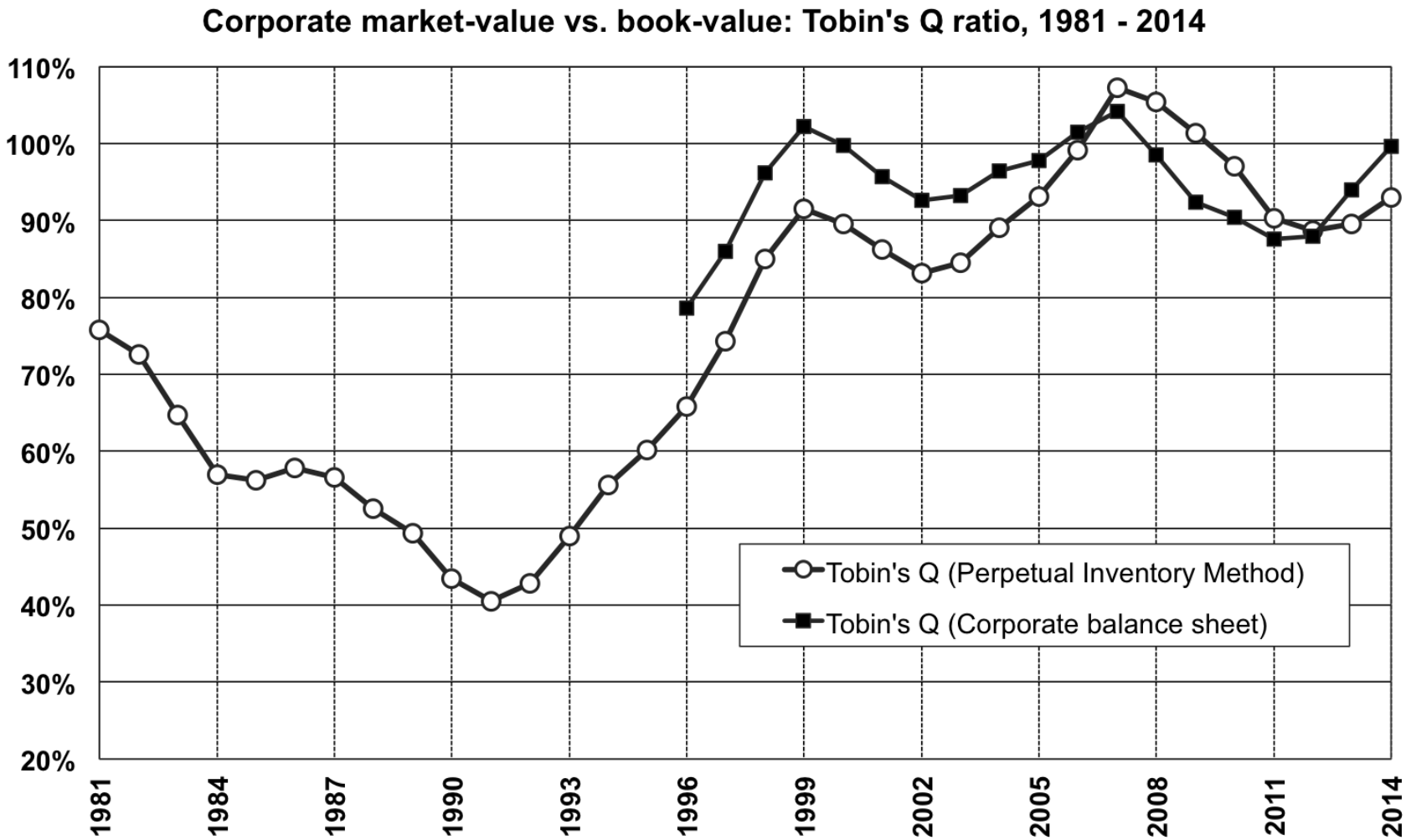
Results: National wealth



Results: Foreign wealth



Results: Corporate wealth



Outline

Asset-specific accumulation equations

- Piketty-Zucman (2014) decompose the long-run accumulation of national wealth between a volume effect (savings) and a price effect (capital gains/losses)

- Two approaches: Multiplicative and additive methods
  - Intuition: Relate national wealth (W_n) with the accumulation of national savings (S_n) and find capital gains as a residual

- We go beyond and present a similar decomposition for different components of national wealth: housing and non-housing (other domestic capital and foreign wealth)
  - Intuition: Map each component of National wealth with its counterpart in national saving
  - $W_n = A^{NF} + NFW \implies W_n = A^H + A^{NH} + NFW$
  - $S_n = I + S_F \implies S_n = I^H + I^{NH} + S_F$

Asset-specific accumulation equations

- **Multiplicative approach**

$$W_{t+1} = (W_t + S_t)(1 + q_t), \tag{1}$$

  - where W_t and W_{t+1} are national wealth at time t and $t+1$, S_t is the net-of-depreciation national saving over year t, and $(1 + q_t)$ is the residual component

- **Additive approach**

$$W_{t+1} = W_t + S_{t,t+1} + KG_{t,t+1}, \tag{2}$$

  - where W_t and W_{t+1} are national wealth at time t and $t+1$, $S_{t,t+1}$ is the total saving flow between year t and $t+1$, and $KG_{t,t+1}$ are the total capital gains or losses between year t and $t+1$

Detailed explanation here

Results: Wealth accumulation decomposition

Accumulation of national wealth in Spain, 1900-2010 (Multiplicative decomposition)

	Market-value national wealth-income ratios (%)		Decomposition of national wealth growth rate (%)			Decomposition of housing wealth growth rate (%)			Decomposition of non-housing wealth growth rate (%)		
			Real growth rate of national wealth	Savings-induced wealth growth rate	Capital gains-induced wealth growth rate	Real growth rate of housing wealth	Savings-induced wealth growth rate	Capital gains-induced wealth growth rate	Real growth rate of non-housing wealth	Savings-induced wealth growth rate	Capital gains-induced wealth growth rate
	βt	βt+n	gw	gws=s/β	q	gw	gws=s/β	q	gw	gws=s/β	q
1900-2010	508%	756%	3,1%	1,6%	1,5%	4,1%	1,9%	2,2%	2,3%	1,5%	0,8%
				51	49		46	54		66	34
1900-1950	508%	536%	1,0%	0,8%	0,1%	1,2%	1,0%	0,2%	1,0%	0,7%	0,3%
				86	14		82	18		74	26
1950-2010	536%	756%	4,8%	2,1%	2,6%	6,3%	2,4%	3,8%	3,2%	2,0%	1,2%
				45	55		39	61		63	37
1950-1980	536%	457%	5,1%	2,5%	2,5%	6,9%	3,3%	3,5%	3,9%	2,1%	1,7%
				49	51		48	52		55	45
1980-2010	457%	756%	4,5%	1,7%	2,7%	5,7%	1,5%	4,1%	2,5%	1,9%	0,6%
				40	60		27	73		75	25

- Modest average growth rate of national wealth in the 1900-1950 period (1%), impressive subsequent growth in the years 1950-2010 (4.8%)
- Capital gains have a limited role in the first period (14%), but explain a large part in the second one (55%)

Results: Wealth accumulation decomposition

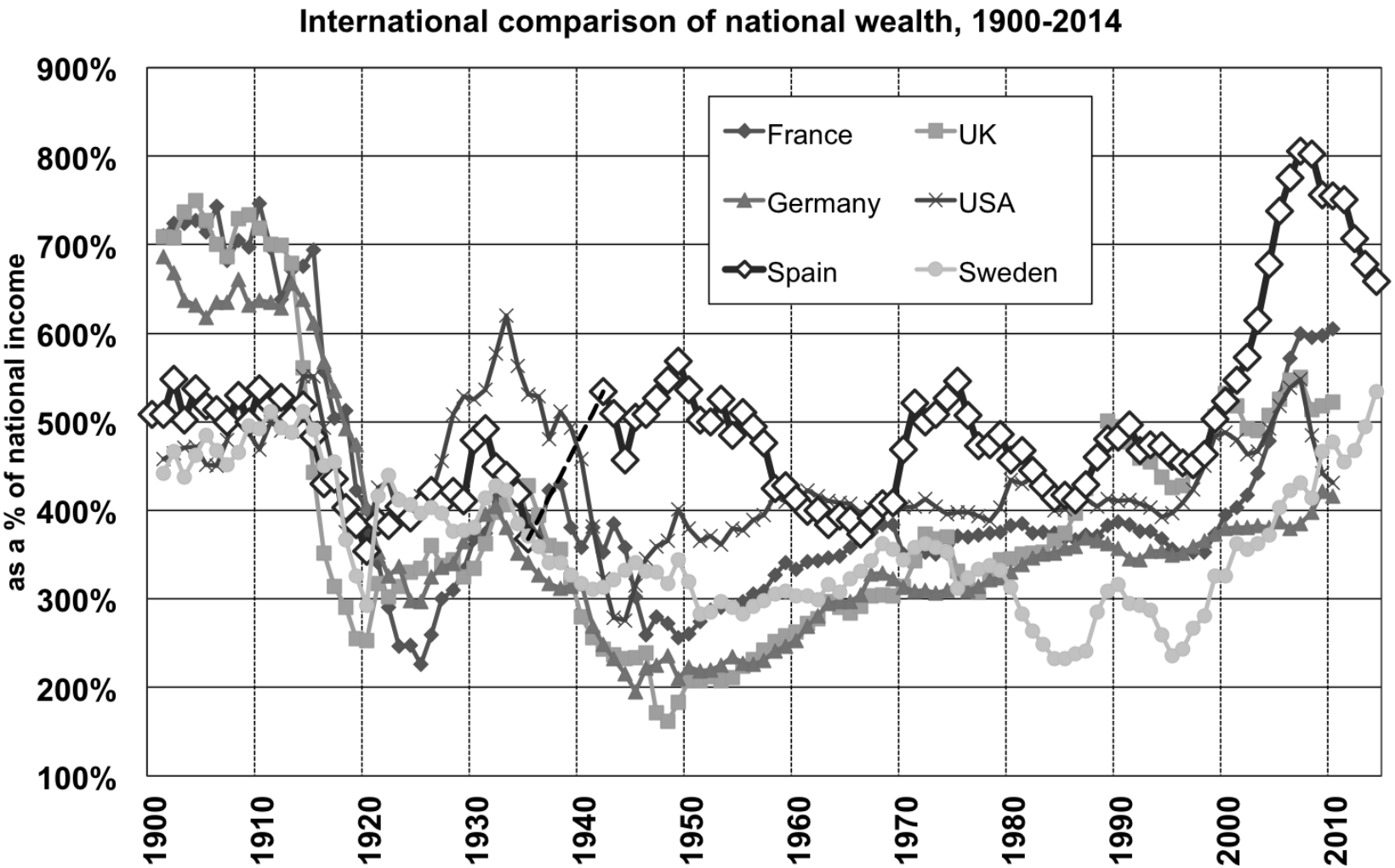
Accumulation of national wealth in Spain, 1900-2010 (Additive decomposition)

	Savings (% of total cumulated net savings)			Capital gains (% of total capital gains)		
	Housing	Other types of capital	Foreign	Housing	Other types of capital	Foreign
1900-1950	32%	66%	2%	38%	-1%	63%
1950-2010	59%	83%	-42%	83%	16%	1%
1950-1980	42%	93%	-35%	70%	-1%	31%
1980-2010	67%	79%	-46%	85%	20%	-5%

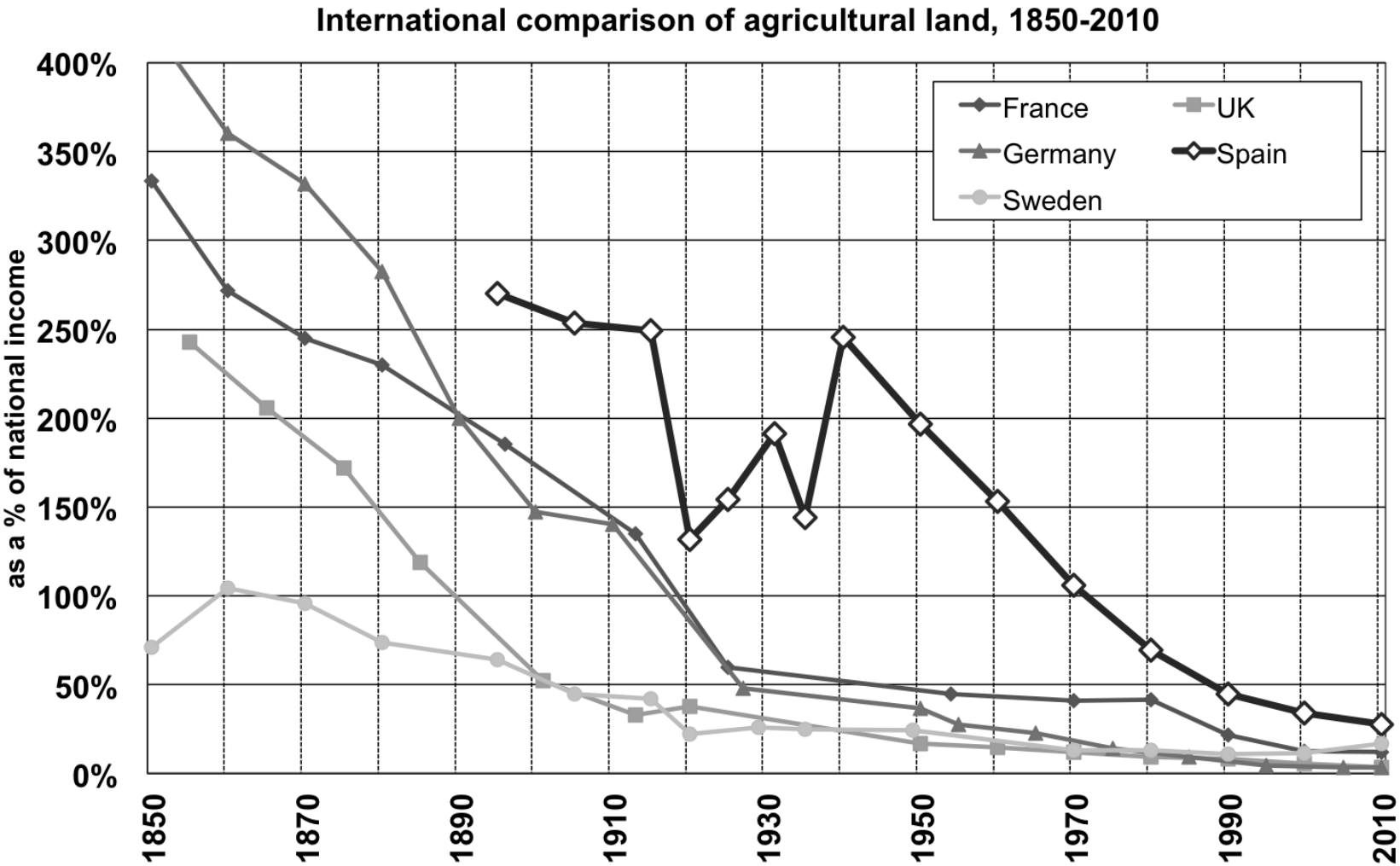
- Housing explains 83% of total capital gains during the period 1950-2010
- Directly related to the increasing role played by urban land in total national wealth

Outline

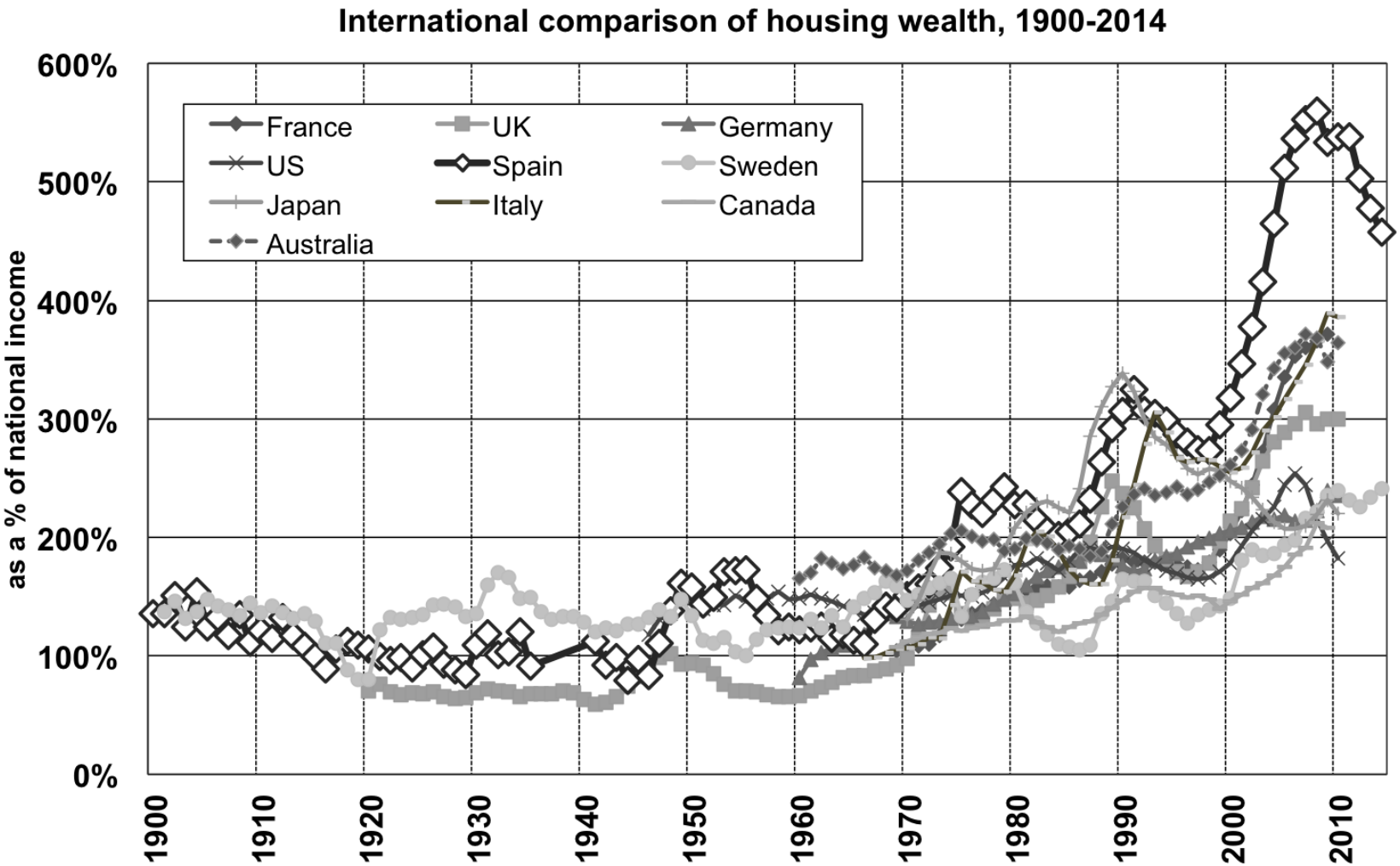
International comparison



International comparison



International comparison



International comparison

Accumulation of national wealth in Spain, United States, United Kingdom, Germany, France and Sweden, 1900-2010

	Decomposition of wealth growth rate (%)								
	1900-2010			1900-1950			1950-2010		
	Real growth rate of national wealth	Savings-induced wealth growth rate	Capital gains-induced wealth growth rate	Real growth rate of national wealth	Savings-induced wealth growth rate	Capital gains-induced wealth growth rate	Real growth rate of national wealth	Savings-induced wealth growth rate	Capital gains-induced wealth growth rate
	gw	gws=s/β	q	gw	gws=s/β	q	gw	gws=s/β	q
Spain	3,1%	1,6% 51	1,5% 49	1,0%	0,8% 86	0,1% 14	4,8%	2,1% 45	2,6% 55
United States	3,5%	2,7% 79	0,7% 21	3,7%	2,9% 81	0,7% 19	3,3%	2,6% 79	0,7% 21
United Kingdom	1,6%	1,4% 88	0,2% 13	-0,8%	0,7% -88	-1,5% 188	3,7%	2,0% 54	1,7% 46
Germany	2,0%	2,8% 133	-0,7% -33	-0,8%	0,5% -63	-1,3% 163	4,4%	4,7% 106	-0,3% -6
France	2,1%	2,0% 91	0,2% 9	-0,8%	0,3% -43	-1,0% 143	4,6%	3,4% 75	1,2% 25
Sweden	3,1%	3,1% 102	-0,1% -2	4,2%	1,8% 74	0,6% 26	3,6%	4,3% 117	-0,6% -17

What can explain the relative more importance of capital gains in Spain vs. ROW?

- Mismeasured investment
- Pure valuation effects in the agricultural and housing sectors
  - Demographic changes
  - Agglomeration effects
  - High taste for home ownership
  - Openness to capital markets following European integration

$\rightarrow$ **Further research is needed to understand the role played by the different potential drivers**

Outline

Conclusion

- This paper reconstructs the national balance sheet of Spain since 1900 under the book-value and the market-value definitions
- We present a new asset-specific decomposition of the long-run movements in the value of wealth
- We provide long-run series of NFAP that consider the growing importance of offshore assets
- Overall, national wealth followed in Spain a J-shaped evolution, contrary to other European countries
- Capital gains have constituted a fundamental driver in wealth accumulation
- Further research and better statistics are needed to quantify the importance of offshore assets and of non-produced assets (mainly urban land), as they are key elements in the evolution of national wealth

Thank you!

Literature Review: the Spanish case

- Some tentative estimates at the beginning of the 20th century (Barthe(1917), Banco Urquijo (1924), Vandellós(1925)), but plagued with inaccuracies and methodological errors (Velarde (1968))
- 1965 study of Spain's non-financial assets (University of Deusto (1968))
- Several studies measuring the stock of produced assets (Myró(1983), Cubel Montesinos and Palafox (1997), Prados de la Escosura and Rosés (2010), Dabán Sanchez et al. (2002), Mas Ivars et al. (2015))
- Since the mid-80s, Financial Accounts of the Spanish Economy (Bank of Spain)
- Naredo et al (2008): first national balance sheet (financial and non-financial accounts) for 1995-2007 (but some assets substantially overvalued)

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Methodology: Book-value national wealth, 1900-2014

- **Agricultural land**: (hectares by type of crop * prices)
- **Subsoil assets**: (capitalization of subsoil industries value added)
- **Produced assets**: (dwellings, non-residential buildings, machinery and equipment) with the PIM
- **Housing**: (structure + land underlying) at market prices (number of dwellings * average prices per province/m2)
  - **Land underlying dwellings**: obtained as a residual (following Davis and Heathcote (2008))
  - **Land underlying non-residential buildings**: imputed (based on cadastral data)
- **Net Foreign Assets Position**: 1850-1970 by accumulating current accounts; 1970-2014 direct estimate from Bank of Spain
  - Offshore assets are not included in our benchmark series

Back to presentation here.

Methodology: Market-value national wealth, 1900-2014

- **Households non-financial assets**: A proportion of total housing and agricultural land + business assets
- **Households financial assets**: Cash, deposits, shares, bonds, etc. Separately, we estimate the value of offshore assets
- **Households liabilities**: mainly mortgage loans

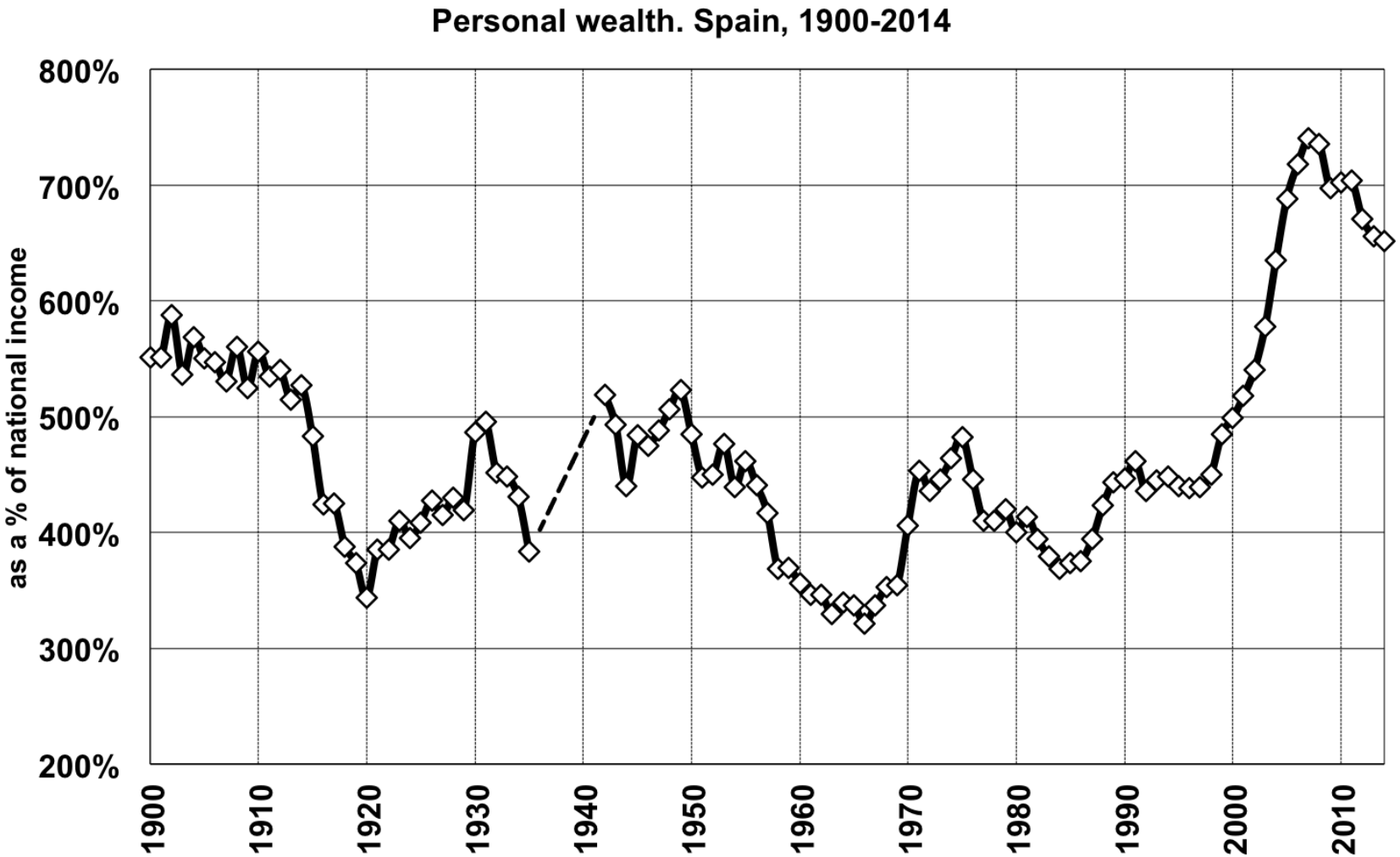
- **Public assets**: Produced assets from Mas et al. (2015), public forests, land underlying buildings plus equity holdings (INI, RENFE, etc.)
- **Public liabilities**: Debt from the State and of local authorities

- **Note:** Since 1970 all financial assets and liabilities (except offshore) are available at Bank of Spain's Financial Accounts of the Spanish Economy

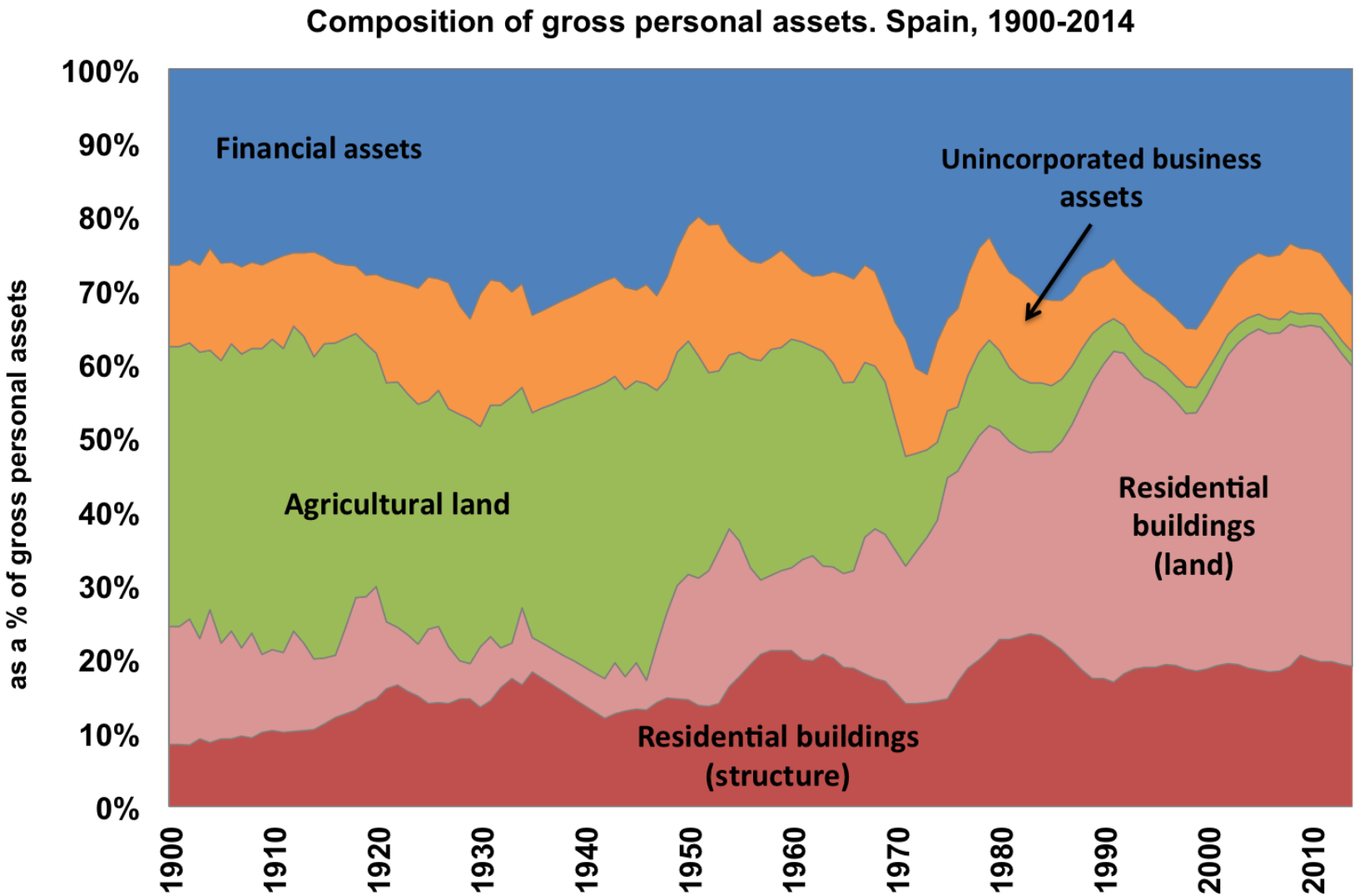
Methodology: Book-value national wealth II, 1995-2014

- **Households non-financial assets**: idem before
- **Public non-financial assets**: idem before
- **Corporate non-financial assets**: Bank of Spain's Central de Balances
- **Net Foreign Assets Position**: idem before

Results: Personal sector



Results: Personal sector



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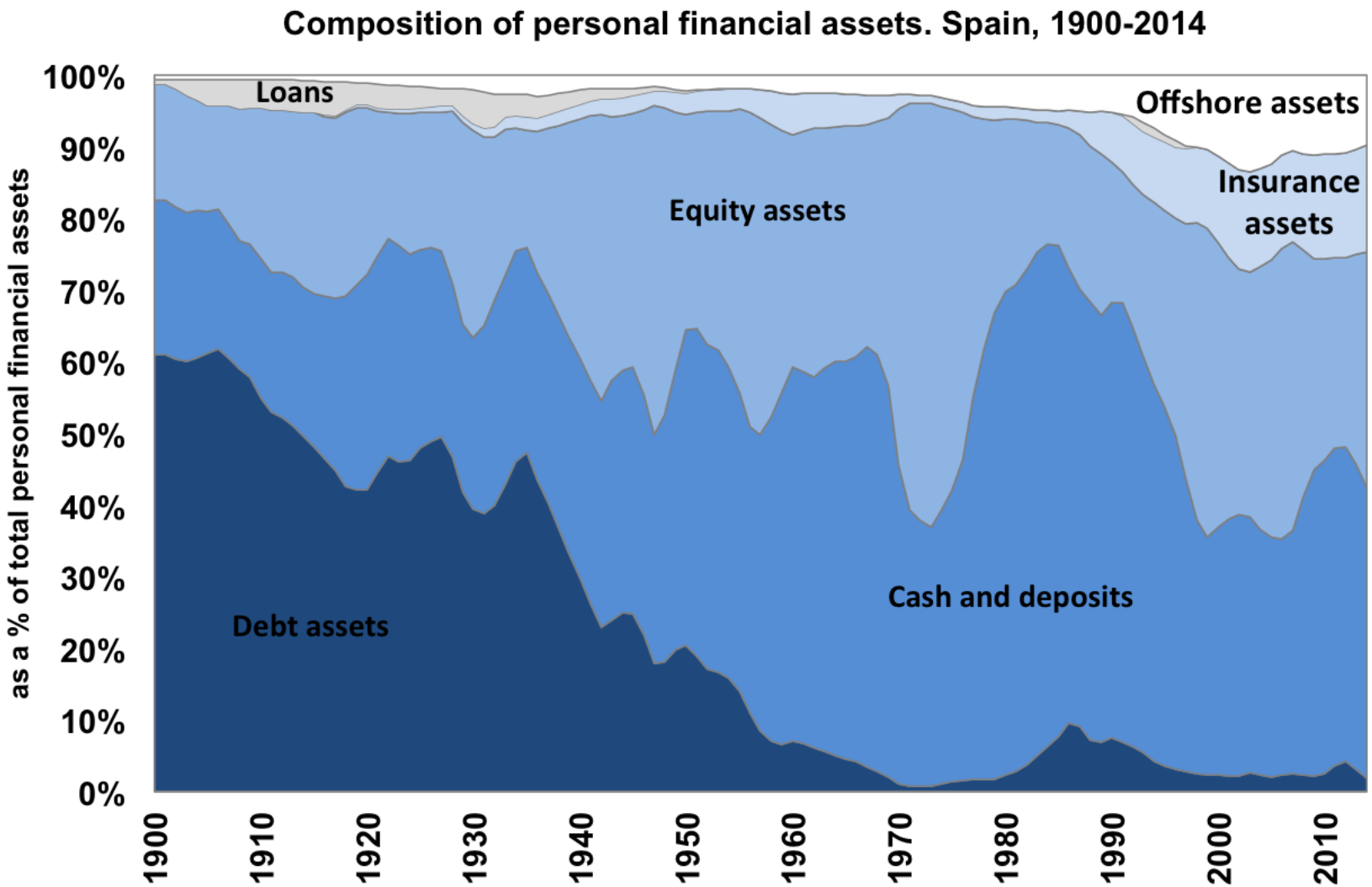

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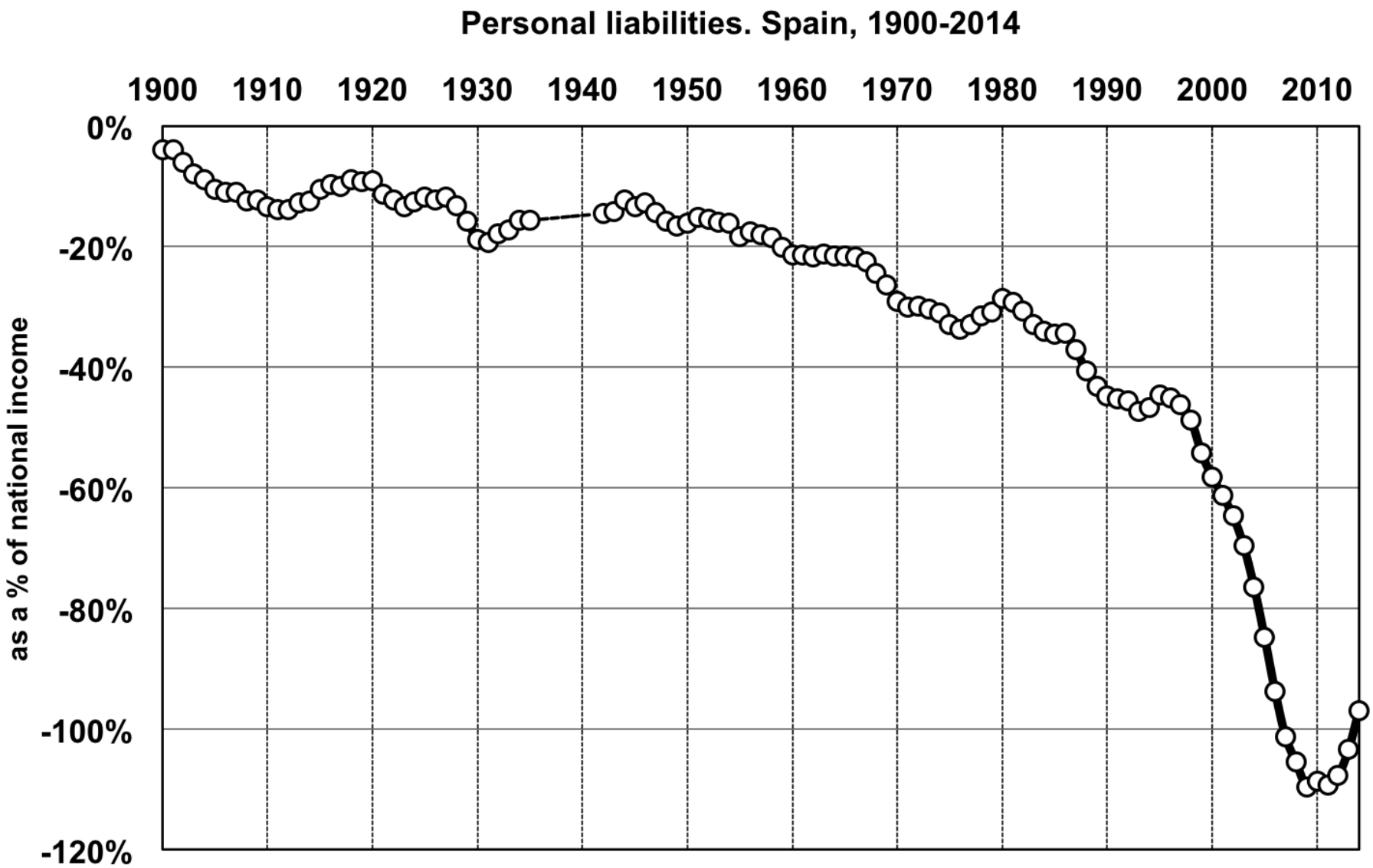
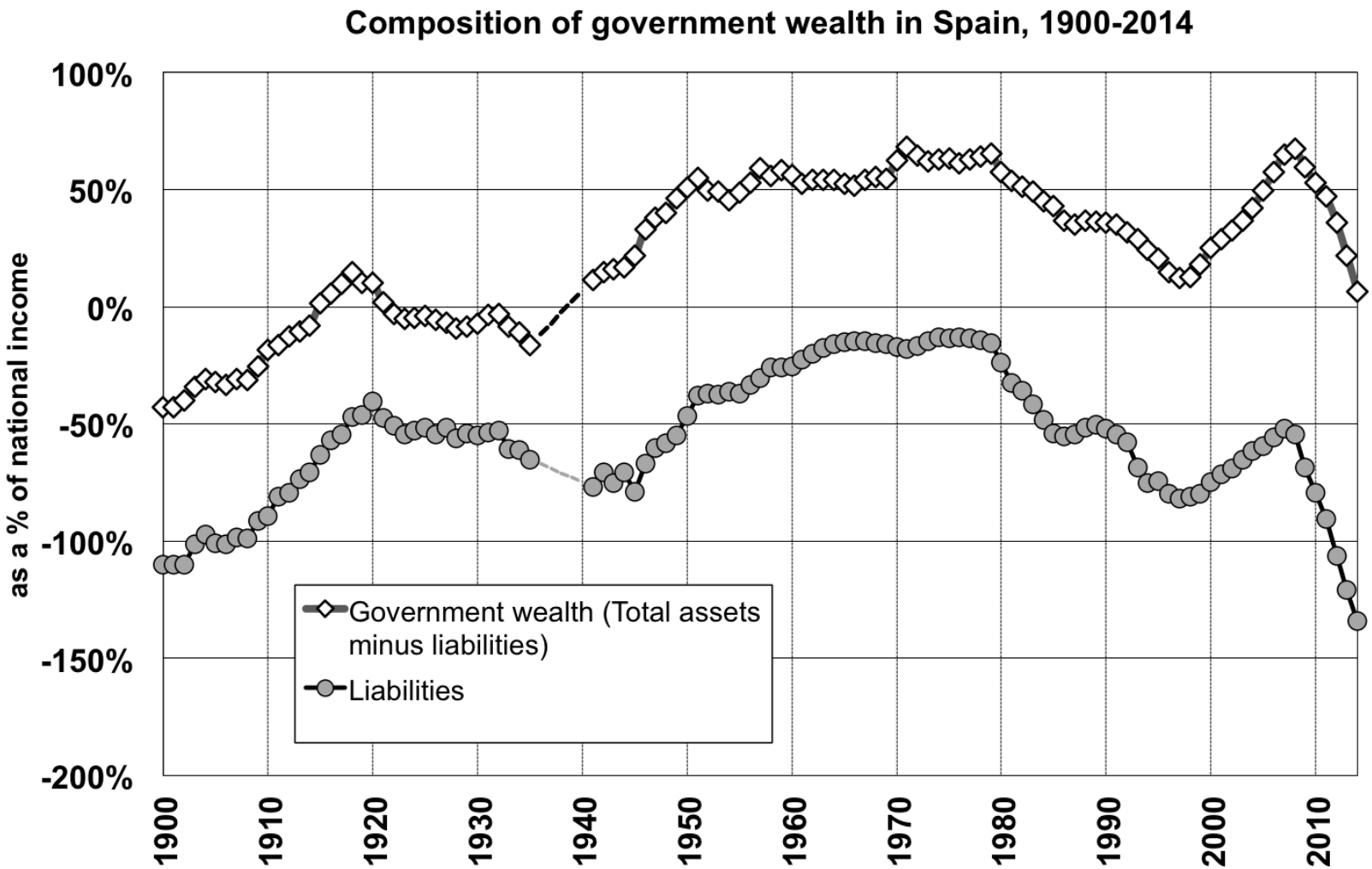


Results: General government



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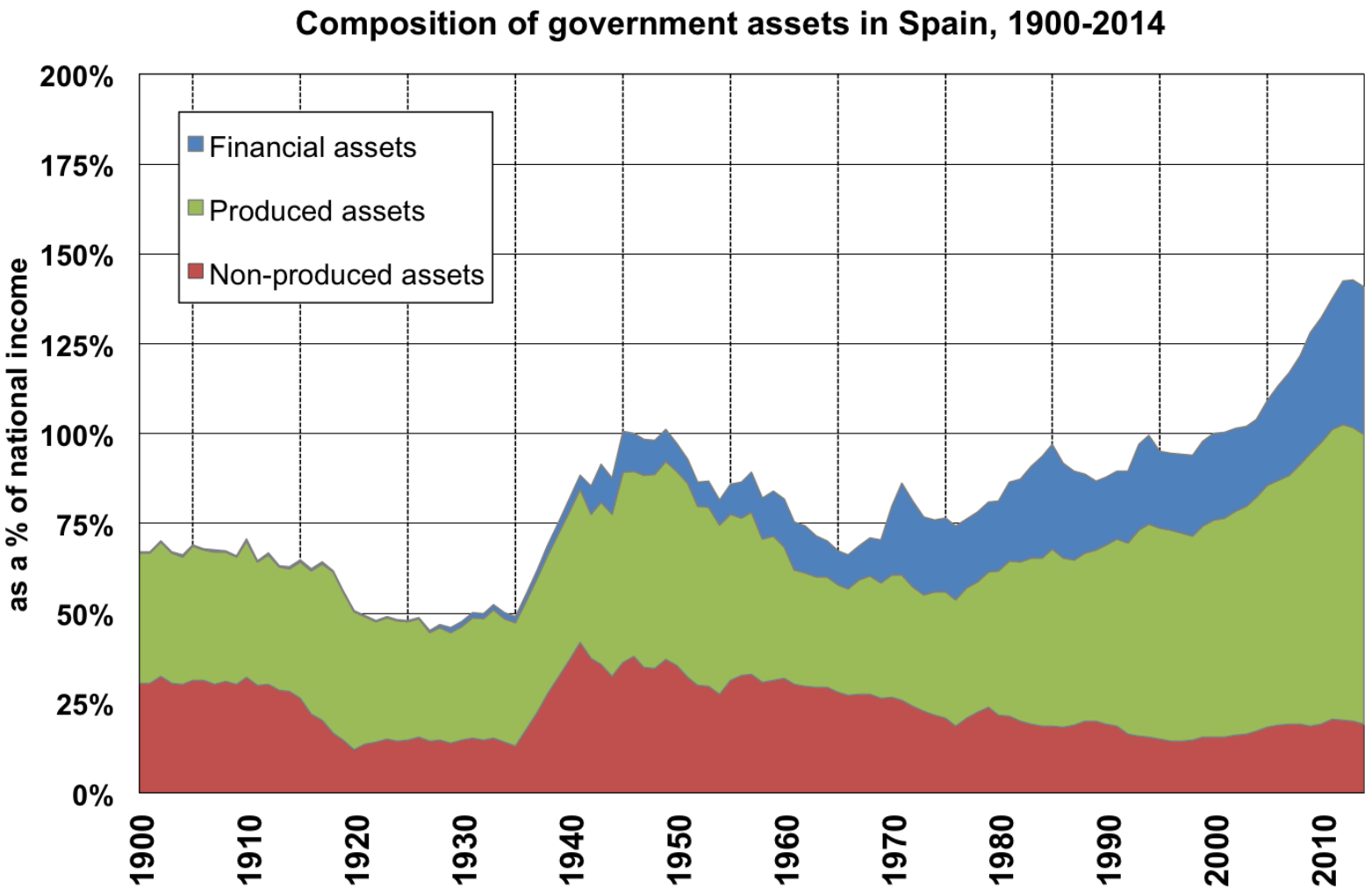


Asset-specific accumulation equations

- **Multiplicative approach**

$$W_{t+1} = (W_t + S_t)(1 + q_t), \tag{3}$$

  - where W_t and W_{t+1} are national wealth at time t and $t+1$, S_t is the net-of-depreciation national saving over year t, and $(1 + q_t)$ is the residual component

$$\beta_{t+1} = \beta_t \frac{(1 + q_t)(1 + g_{wt})}{1 + g_t}, \tag{4}$$

  - where $\beta = \frac{W}{Y}$, $1 + g_t = \frac{Y_{t+1}}{Y_t}$, $1 + g_{wt} = 1 + \frac{s_t}{\beta_t}$ and s_t stands for the net-of-depreciation saving rate of Y_t in year t

- Running equations (1) and (2) for specific assets i:

$$\beta_{i,t+1} = \beta_{i,t} \frac{(1 + q_{i,t})(1 + g_{wi,t})}{1 + g_{i,t}} \tag{5}$$

Asset-specific accumulation equations

- **Additive approach**

$$W_{t+1} = W_t + S_{t,t+1} + KG_{t,t+1}, \tag{6}$$

  - where W_t and W_{t+1} are national wealth at time t and $t+1$, $S_{t,t+1}$ is the total saving flow between year t and $t+1$, and $KG_{t,t+1}$ are the total capital gains or losses between year t and $t+1$

$$\beta_{t+1} = \beta_{ini} + \beta_{sav} + \beta_{kg} \tag{7}$$

  - where $\beta_{ini} = \frac{W_t}{Y_{t+1}}$ is the component coming from initial wealth and $\beta_{sav} = \frac{S_{t,t+1}}{Y_{t+1}}$ and $\beta_{kg} = \frac{KG_{t,t+1}}{Y_{t+1}}$ the components coming from saving flows and capital gains or losses, respectively

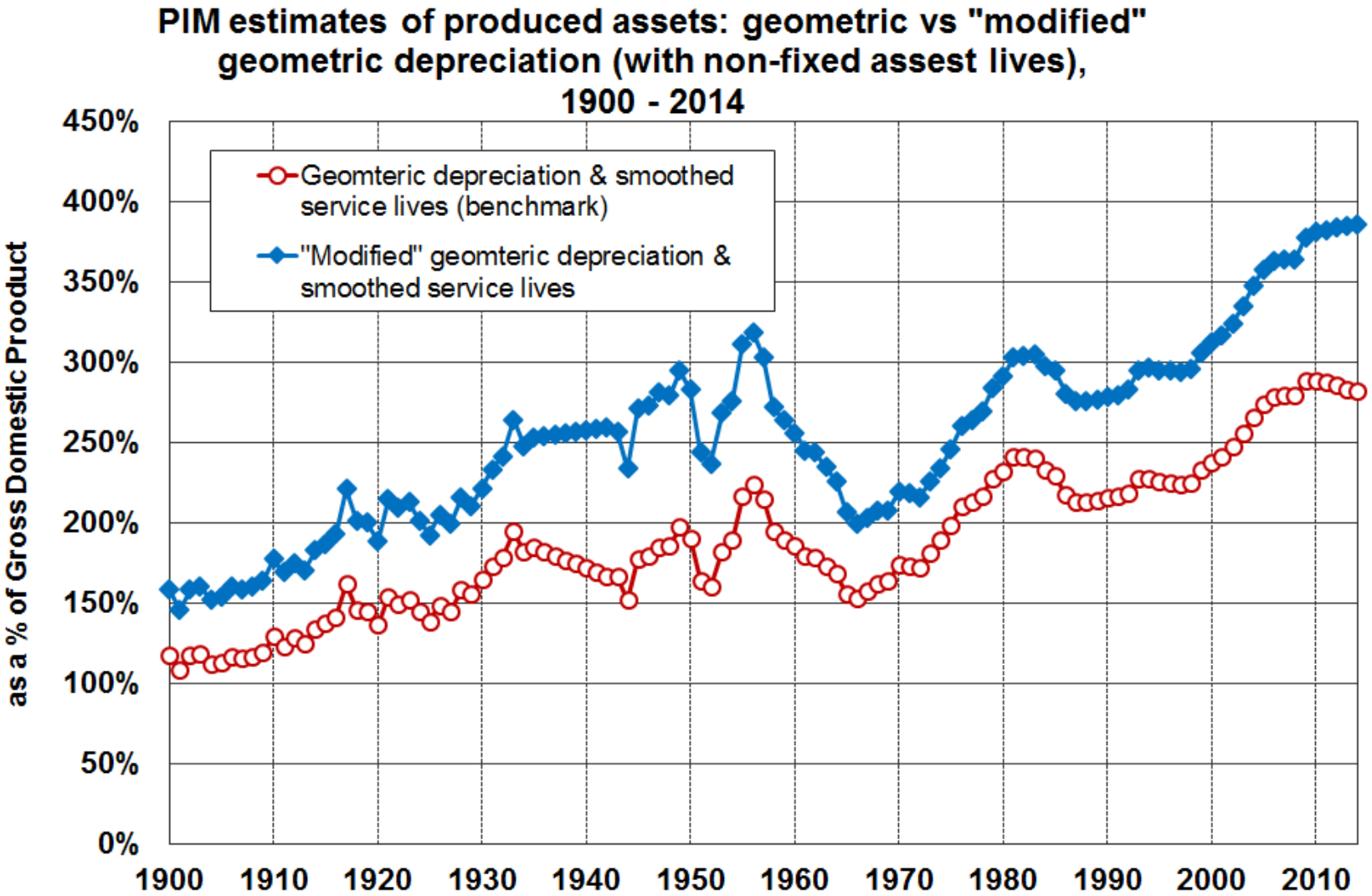
- Running equations (4) and (5) for specific assets i:

$$\beta_{i,t+1} = \beta_{i,ini} + \beta_{i,sav} + \beta_{i,kg} \tag{8}$$

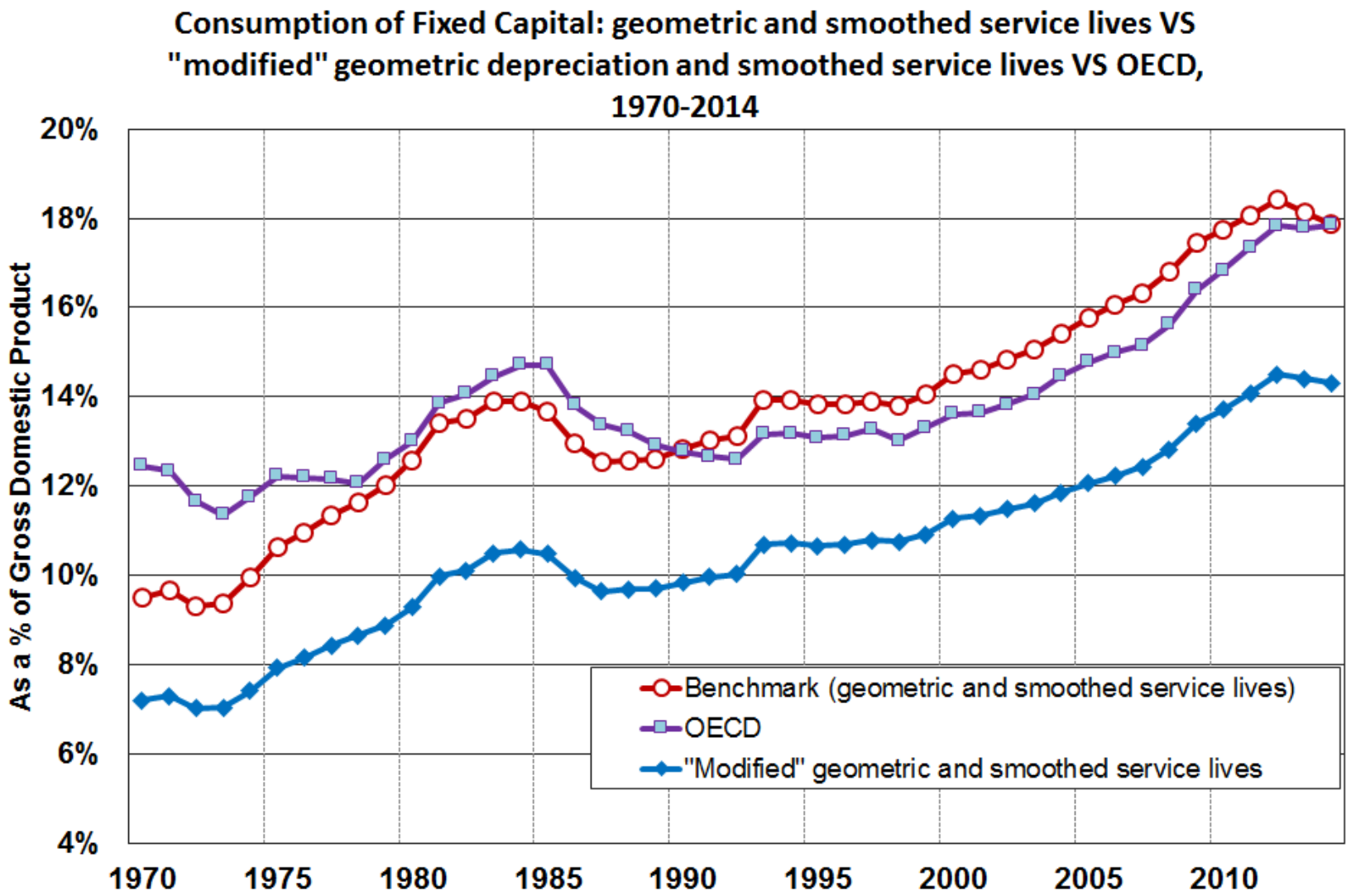
  - where i stands for housing, other types of capital or foreign wealth.

- Back to presentation here.

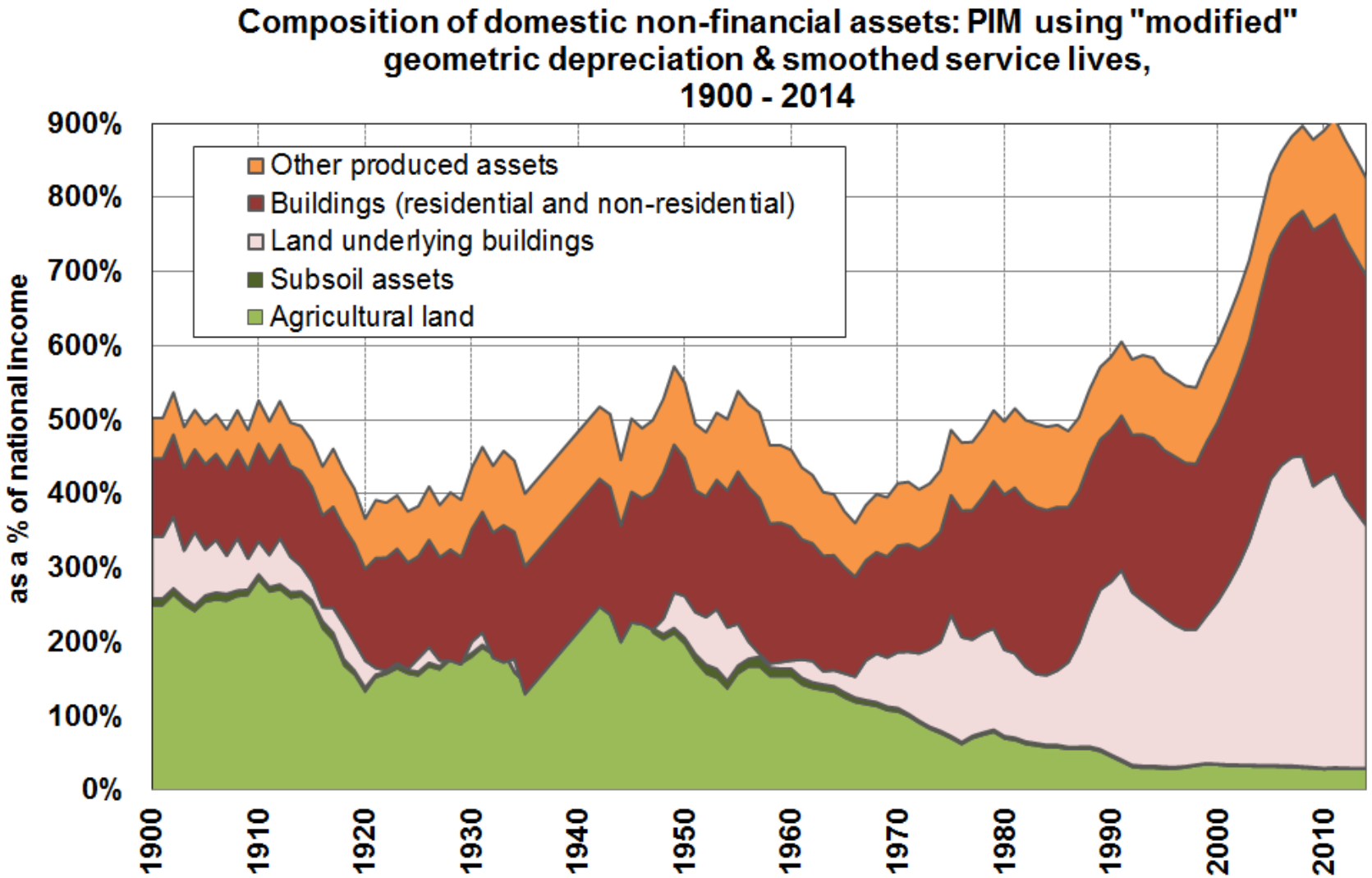
PIM: alternative specification



Consumption of fixed capital: Alternative specification

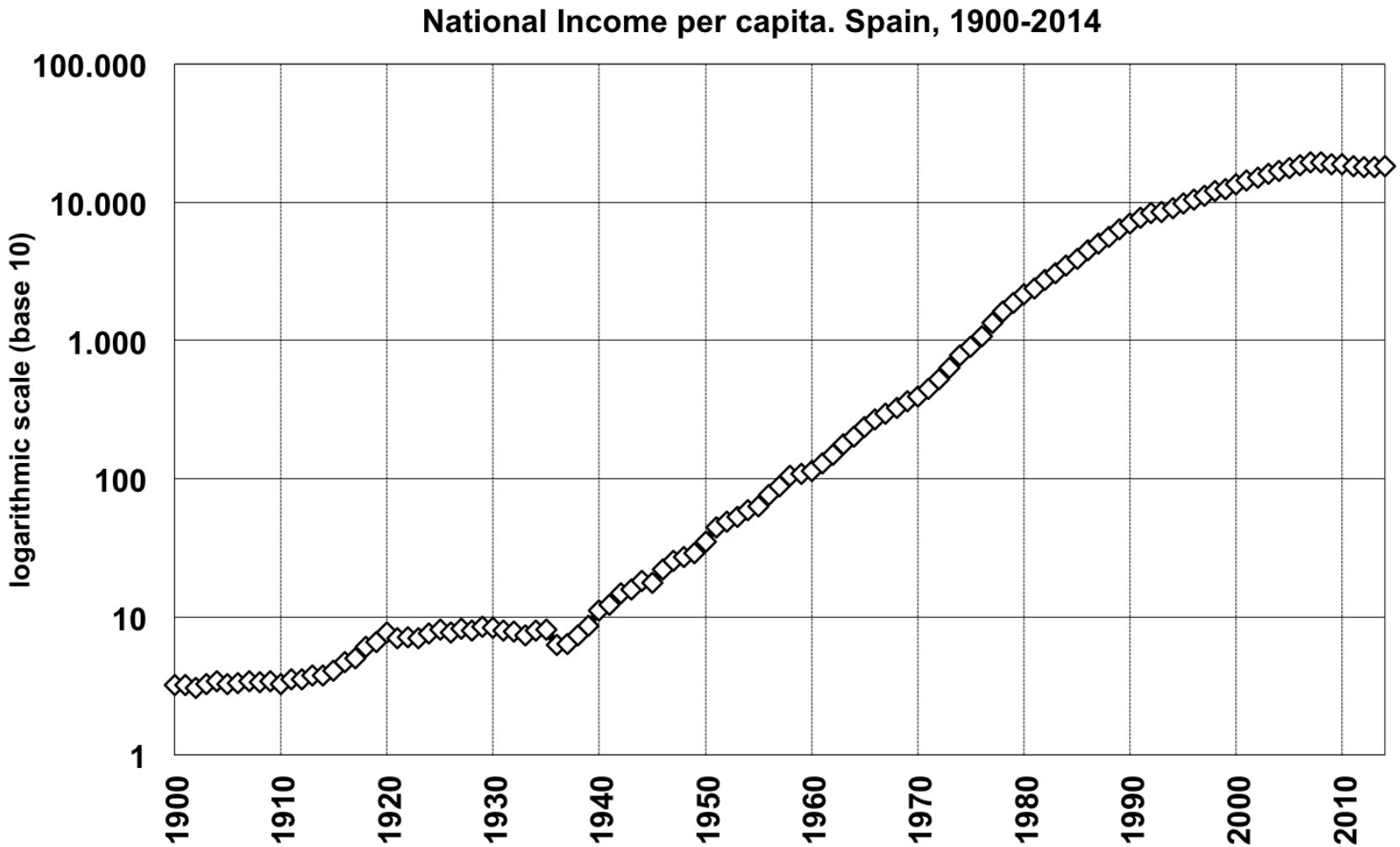


Non-financial assets: alternative PIM specification



National Income, Spain 1900-2014

National Income per capita, Spain 1900-2014



Decomposition of wealth accumulation: Book-value national wealth

Accumulation of book-value national wealth in Spain, 1900-2010 (Multiplicative decomposition)

	Book-value national wealth-income ratios (%)		Decomposition of national wealth growth rate (%)			Decomposition of housing wealth growth rate (%)			Decomposition of non-housing wealth growth rate (%)		
			Real growth rate of national wealth	Savings-induced wealth growth rate	Capital gains-induced wealth growth rate	Real growth rate of housing wealth	Savings-induced wealth growth rate	Capital gains-induced wealth growth rate	Real growth rate of non-housing wealth	Savings-induced wealth growth rate	Capital gains-induced wealth growth rate
	βt	βt+n	gw	gws=s/β	q	gw	gws=s/β	q	gw	gws=s/β	q
1900-2010	446%	763%	3,3%	1,6%	1,5%	4,1%	1,9%	2,2%	2,5%	1,5%	1,0%
				51	49		46	54		61	39
1900-1950	446%	513%	1,2%	0,9%	0,2%	1,2%	1,0%	0,2%	1,2%	0,8%	0,4%
				83	17		82	18		70	30
1950-2010	513%	763%	4,9%	2,1%	2,7%	6,3%	2,4%	3,8%	3,4%	1,9%	1,4%
				44	56		39	61		58	42
1950-1980	513%	478%	5,4%	2,7%	2,6%	6,9%	3,3%	3,5%	4,4%	2,5%	1,9%
				50	50		48	52		56	44
1980-2010	478%	763%	4,3%	1,6%	2,7%	5,7%	1,5%	4,1%	2,4%	1,4%	0,9%
				37	63		27	73		62	38

Decomposition of wealth accumulation: Book-value national wealth

Accumulation of book-value national wealth in Spain, 1900-2010 (Additive decomposition)

	Savings (% of total cumulated net savings)			Capital gains (% of total capital gains)		
	Housing	Other types of capital	Foreign	Housing	Other types of capital	Foreign
1900-1950	32%	66%	2%	28%	26%	46%
1950-2010	59%	83%	-42%	81%	18%	1%
1950-1980	42%	93%	-35%	61%	12%	27%
1980-2010	67%	79%	-46%	86%	20%	-5%