

**Inherited vs Self-made Wealth  
Theory & Evidence  
from a Rentier Society  
(Paris 1872-1937)**

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- **Q.: What do we know about the relative importance of inherited wealth vs self-made wealth?**

- **A.: Very little...**

- & very controversial:

Kotlikoff-Summers JPE 1981: inherited wealth = 80% of total US wealth accumulation

Modigliani AER 1986: inherited wealth = 20% of total US wealth accumulation...

→ This extreme confusion is due both to ill-defined concepts (inadequate representative agent framework) and to bad data

# What this paper does

- (1) We propose a **new theoretical definition** of the share of inherited wealth in aggregate wealth, based upon the division of population into two groups : « inheritors » (or « rentiers ») vs « savers » (or « self-made men »).  
Straightforward, but completely different from standard, representative-agent definitions
- (2) We apply this definition to **new data base** on inheritance and matrimonial property regimes which we collected using individual estate tax records in Paris 1872-1937

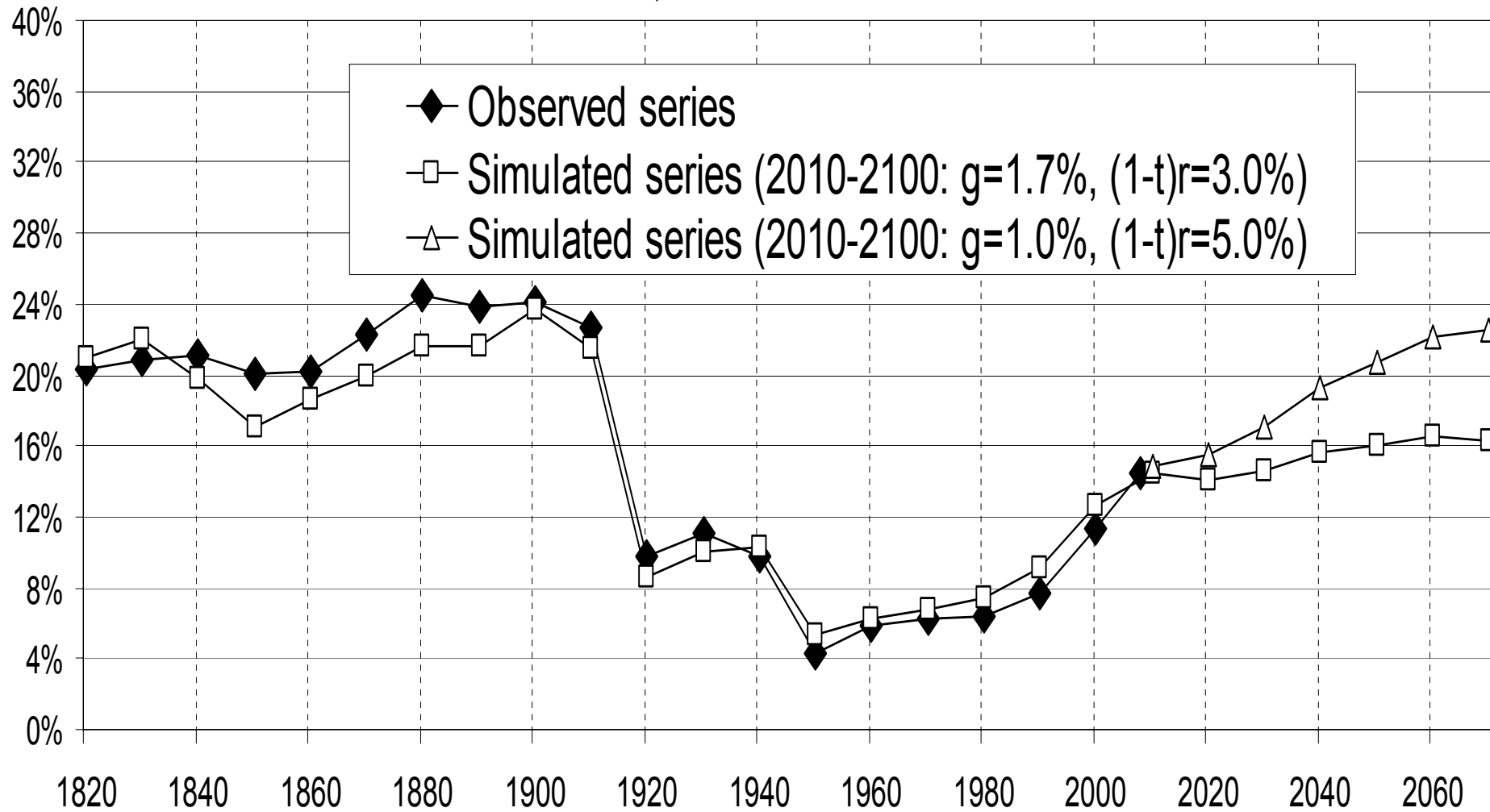
# What we find

- **Paris 1872-1937 = quintessence of a « rentier society »**: top successors, by consuming the return to their inherited wealth, can sustain living standards which are very hard to attain via labor income
- Rentiers: 10% of population, but 60%-70% of wealth
- Total share of inherited wealth = 70%-80%
- Rentiers = only 25% of « middle class » (wealth fractile P50-90), but 50% of « middle rich » (P90-99), & 70% of « very rich » (P99-100)
- Even at the very top, we always find 25%-30% of self-made men. But they are a minority. Two very different groups. Representative agent models are inappropriate to study wealth accumulation.

# Do rentiers belong to the past?

- No modern data source is as rich as our 1872-1937 Paris data base; with modern data, we would probably find lower rentiers shares; but it is **impossible to say at this stage**
- One should not over-estimate how much the world has changed since 1900:
  - Aggregate inheritance flows – as compared to aggregate income & wealth – will probably be as large in 21<sup>C</sup> as in 19<sup>C</sup> ( $r > g$  logic): see Piketty, « On the Long-Run Evolution of Inheritance – France 1820-2050 »
  - Wealth concentration did not decline all that much: top 10% share = 87% France 1912, 72% US 2007 (lower bound)
- **In any case**, critical point: these important issues need to be studied with proper concepts & data; wealth accumulation always involves 2 very different kinds of people (inheritors vs savers); **representative-agent models are inappropriate**

**Figure 1: Annual inheritance flow as a fraction of national income, France 1820-2100**



**Table 1: Wealth inequality, France 1912 vs U.S. 2007**

	<b>France 1912</b>	<b>U.S. 2007</b>
<b>Top 10%</b> <b>"Upper Class"</b>	<b>87%</b> <b>1 740 000 €</b>	<b>72%</b> <b>1 440 000 €</b>
<i>incl. Top 1%</i> <i>"Very Rich"</i>	<i>53%</i> <i>10 600 000 €</i>	<i>34%</i> <i>6 800 000 €</i>
<i>incl. Other 9%</i> <i>"Middle Rich"</i>	<i>34%</i> <i>755 556 €</i>	<i>38%</i> <i>844 444 €</i>
<b>Middle 40%</b> <b>"Middle Class"</b>	<b>12%</b> <b>60 000 €</b>	<b>26%</b> <b>130 000 €</b>
<b>Bottom 50%</b> <b>"Poor"</b>	<b>1%</b> <b>4 000 €</b>	<b>2%</b> <b>8 000 €</b>
Share in total wealth <i>Average per adult wealth</i>	100% 200 000 €	100% 200 000 €

# Theory 1: basic notations

- Population =  $N_t$  , Aggregate private wealth =  $W_t$
- National income  $Y_t = Y_{Lt} + r_t W_t$ , where  $Y_{Lt}$  = labor income, and  $r_t$  = average rate of return on private wealth
- $w_t = W_t / N_t$  = per capita wealth,  $y_{Lt} = Y_{Lt} / N_t$  = per capita labor income,  $y_t = y_{Lt} + r_t w_t$  = per capita national income
- Consider a given individual  $i$  with wealth  $w_{ti}$  at time  $t$ . Assume he or she received bequest  $b_{ti}^0$  at time  $t_i < t$ .
- Note  $b_{ti}^* = b_{ti}^0 e^{r(t_i, t)}$  the capitalized value of  $b_{ti}^0$  at time  $t$  (where  $r(t_i, t)$  is the cumulated rate of return between time  $t_i$  and time  $t$ ).



# Theory 2: definitions

- $N_t = N_t^r + N_t^s$
- $N_t^r = \text{“inheritors” (or “rentiers”)} = \{i \text{ s.t. } w_{ti} < b_{ti}^*\}$
- $N_t^s = \text{“savers” (or “self-made men”)} = \{i \text{ s.t. } w_{ti} > b_{ti}^*\}$
- By construction: during their lifetime, inheritors have consumed more than their labor income, while savers have consumed less than their labor income
- Rentier share in population  $\rho_t = N_t^r / N_t$
- Average rentiers wealth:  $w_{tr} = E(w_{ti} \mid w_{ti} < b_{ti}^*)$
- Average savers wealth:  $w_{ts} = E(w_{ti} \mid w_{ti} \geq b_{ti}^*)$
- Average capitalized bequests:  $b_{tr}^* = E(b_{ti}^* \mid w_{ti} < b_{ti}^*)$  (rentiers)  
 $b_{ts}^* = E(b_{ti}^* \mid w_{ti} \geq b_{ti}^*)$  (savers)
- Rentier share in wealth  $\pi_t = \rho_t w_{tr}^r / w_t$
- Share of inherited wealth in aggregate wealth:

$$\varphi_t = [\rho_t w_{tr} + (1 - \rho_t) b_{ts}^*] / w_t = \pi_t + (1 - \rho_t) b_{ts}^* / w_t$$

# Exemple 1

- At age  $a=60$ , Mr Martin owns a Paris apartment worth 500,000€ (net of outstanding mortgage liabilities), 100,000€ in equities, another 300,000€ in mutual funds.
- At age  $l=30$ , he inherited 400,000€ in life insurance assets from his parents, which he does not own any more.
- So  $w_{t_i}=900,000\text{€}$  and  $b_{t_i}^0=400,000\text{€}$ . With  $l=30$ ,  $a=60$  and  $r=4\%$ , then  $e^{r(a-l)}=332\%$  and  $b_{t_i}^*=1,328,000\text{€} = 400,000\text{€}$  (capital value) + 928,000€ (cumulated return).
- That is,  $b_{t_i}^* > w_{t_i}$ , i.e. according to our definitions Mr Martin is an “inheritor” (or a “rentier”): during his lifetime he consumed more than his labor income (what his labor income flows and portfolios choices might have been)

## Exemple 2

- At age  $a=60$ , Mr Smith owns a small house worth 60,000€ (net of outstanding mortgage liabilities), and 20,000€ in various savings accounts. He inherited 10,000€ from his parents at age  $I=30$ , which he spent when he contracted a loan to purchase his house. So  $w_{ti}=80,000€$ ,  $b_i=10,000€$ , and  $b_{ti}^*=33,000€$ . So we have  $b_{ti}^* < w_{ti}$ . Mr Smith is a “saver”: over his lifetime he consumed less than his labor income
- Now consider a hypothetical economy where 20% ( $\rho_t$ ) of the population are inheritors like Mr Martin and 80% are savers like Mr Smith. Then inheritors' share of aggregate wealth  $\pi_t$  is  $\rho_t w_{tr}/w_t = 74\%$ , and the total share of inherited wealth in aggregate wealth is  $\varphi_t = \pi_t + (1-\rho_t)b_{ts}^*/w_t = 85\%$ .

# Difference with standard definitions

- Both Kotlikoff-Summers adopt a representative-agent framework:
  - Kotlikoff-Summers:  $\varphi_{tKS} = b_t^*/w_t$
  - Modigliani:  $\varphi_{tM} = b_t/w_t$
- Modigliani definition is artificially low (returns to wealth are basically ignored...), while Kotlikoff-Summers definition is artificially high (it can easily be larger than 100%, even in an economy with a significant fraction of savers and self-made wealth)
- One needs to distinguish between two groups

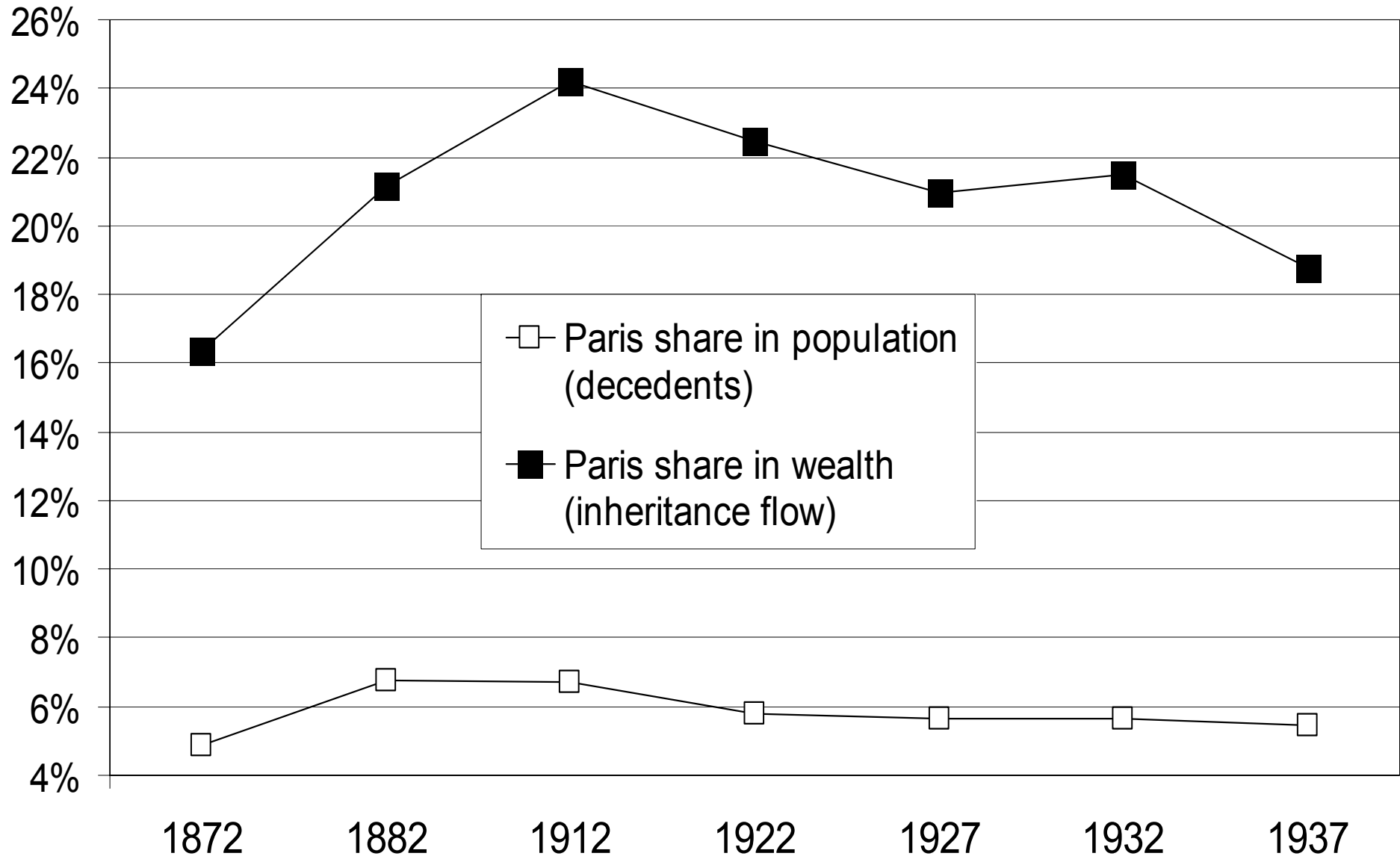
# Applying the definitions to a new data base on inheritance & wealth

- Continuation of Piketty-Postel-Vinay-Rosenthal AER 2006, « Wealth Concentration in a Developing Economy: Paris & France 1807-1994 »
  - **Novelty:** for 1872-1937 we collected extra data on matrimonial regimes (community vs separate assets)
- **this allows to measure directly the share of inherited wealth (without matching two generations!)**

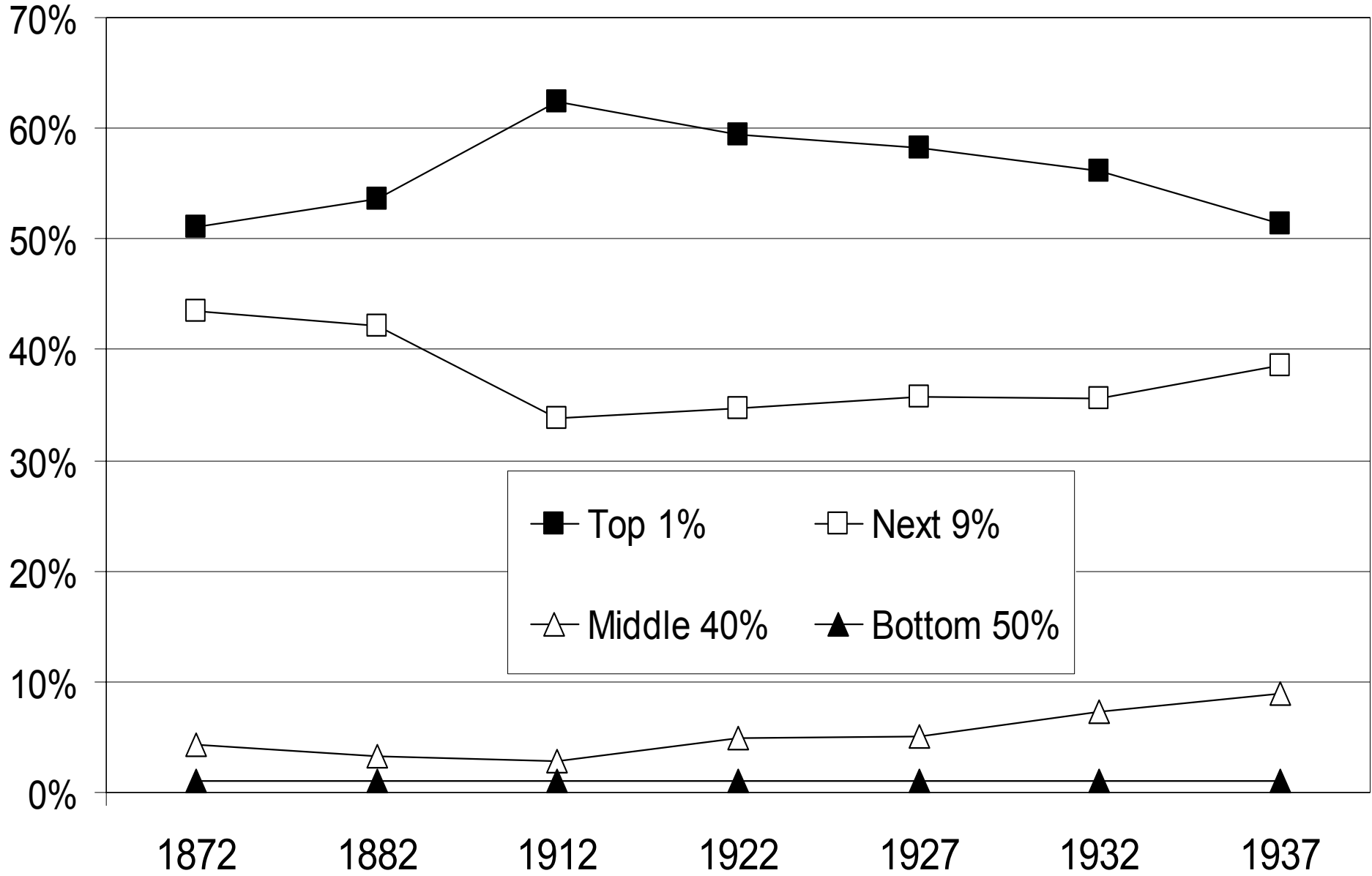
**Table 2: Inheritance in Paris, 1872-1937 - Summary Statistics**

	N. decedents (20-yr +)	N. decedents with estate>0	% decedents with estate>0	Average estate (estate>0) (current francs)	Average estate (all decedents)
1872	24 348	6 937	28%	85 925	24 481
1882	36 790	9 418	26%	98 557	25 230
1912	36 681	10 262	28%	133 547	37 362
1922	33 300	10 791	32%	166 265	53 877
1927	31 780	9 934	31%	256 435	80 160
1932	31 725	12 017	38%	272 377	103 176
1937	30 274	12 790	42%	219 343	92 666

**Figure 2: Paris share in France, 1872-1937**



**Figure 3: Wealth concentration in Paris, 1872-1937**





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**Table 4: Asset composition in Paris 1872-1937**

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(% gross assets)	<b>Real estate assets</b>	<b>Financial assets</b>	inc. Equity	inc. Private bonds	inc. Govt bonds	inc. Other, cash,..	<i>Total foreign assets</i>	<b>Furnitures</b>
1872	<b>34%</b>	<b>64%</b>	17%	21%	15%	10%	7%	<b>3%</b>
1882	<b>35%</b>	<b>63%</b>	18%	21%	16%	9%	8%	<b>2%</b>
1912	<b>36%</b>	<b>62%</b>	20%	18%	14%	9%	20%	<b>3%</b>
1922	<b>27%</b>	<b>69%</b>	25%	13%	19%	11%	15%	<b>4%</b>
1927	<b>23%</b>	<b>71%</b>	37%	10%	13%	11%	20%	<b>6%</b>
1932	<b>27%</b>	<b>66%</b>	30%	11%	14%	11%	11%	<b>7%</b>
1937	<b>25%</b>	<b>69%</b>	35%	10%	11%	12%	22%	<b>7%</b>

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Note: Out-of-Paris real estate assets are missing in 1872-1882; in 1912-1937, they make about 1/3 of real estate assets

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## Table 5: Community asset composition in Paris 1872-1937

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(% gross assets)	<b>Real estate assets</b>	<b>Financial assets</b>	inc. Equity	inc. Private bonds	inc. Govt bonds	inc. Other, cash,..	<i>Total foreign assets</i>	<b>Furnitures</b>
1872	<b>34%</b>	<b>63%</b>	20%	20%	11%	12%	5%	<b>3%</b>
1882	<b>31%</b>	<b>66%</b>	24%	19%	12%	11%	6%	<b>3%</b>
1912	<b>29%</b>	<b>68%</b>	27%	17%	14%	11%	21%	<b>3%</b>
1922	<b>17%</b>	<b>78%</b>	30%	14%	22%	12%	13%	<b>5%</b>
1927	<b>12%</b>	<b>81%</b>	46%	10%	13%	12%	24%	<b>7%</b>
1932	<b>16%</b>	<b>77%</b>	35%	12%	15%	15%	11%	<b>8%</b>
1937	<b>15%</b>	<b>76%</b>	42%	11%	11%	12%	20%	<b>9%</b>

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Note: Out-of-Paris real estate assets are missing in 1872-1882; in 1912-1937, they make about 1/3 of real estate assets

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**Table 6: Inherited asset composition in Paris 1872-1937**

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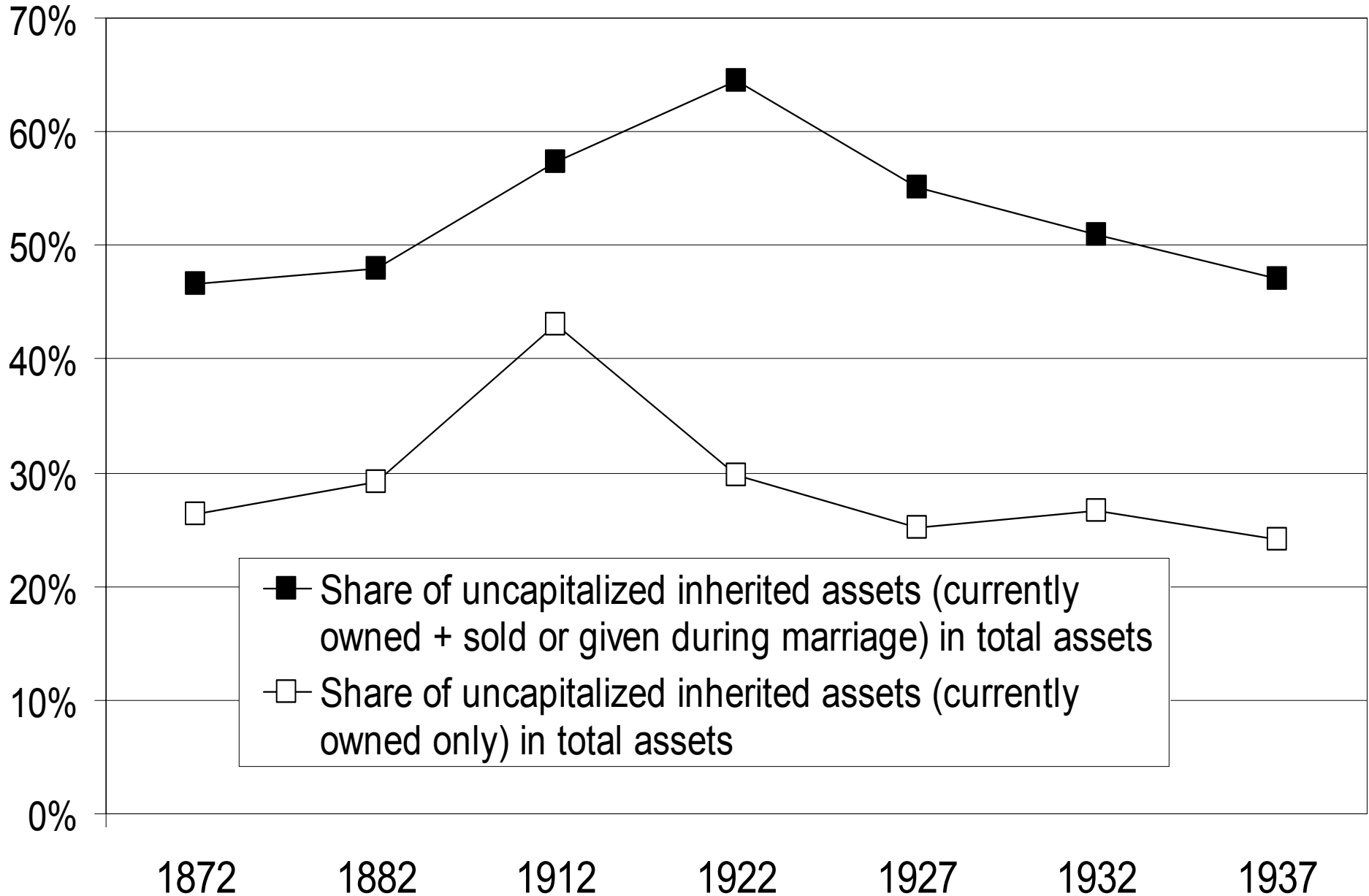
(% gross assets)	<b>Real estate assets</b>	<b>Financial assets</b>	inc. Equity	inc. Private bonds	inc. Govt bonds	inc. Other, cash,..	<i>Total foreign assets</i>	<b>Furnitures</b>
1872	<b>43%</b>	<b>56%</b>	14%	18%	16%	8%	8%	<b>1%</b>
1882	<b>43%</b>	<b>55%</b>	18%	15%	15%	8%	6%	<b>2%</b>
1912	<b>45%</b>	<b>54%</b>	17%	16%	10%	9%	11%	<b>1%</b>
1922	<b>33%</b>	<b>63%</b>	24%	11%	11%	17%	11%	<b>4%</b>
1927	<b>32%</b>	<b>63%</b>	34%	8%	9%	13%	15%	<b>4%</b>
1932	<b>39%</b>	<b>57%</b>	29%	8%	11%	8%	12%	<b>3%</b>
1937	<b>43%</b>	<b>53%</b>	28%	9%	8%	8%	14%	<b>4%</b>

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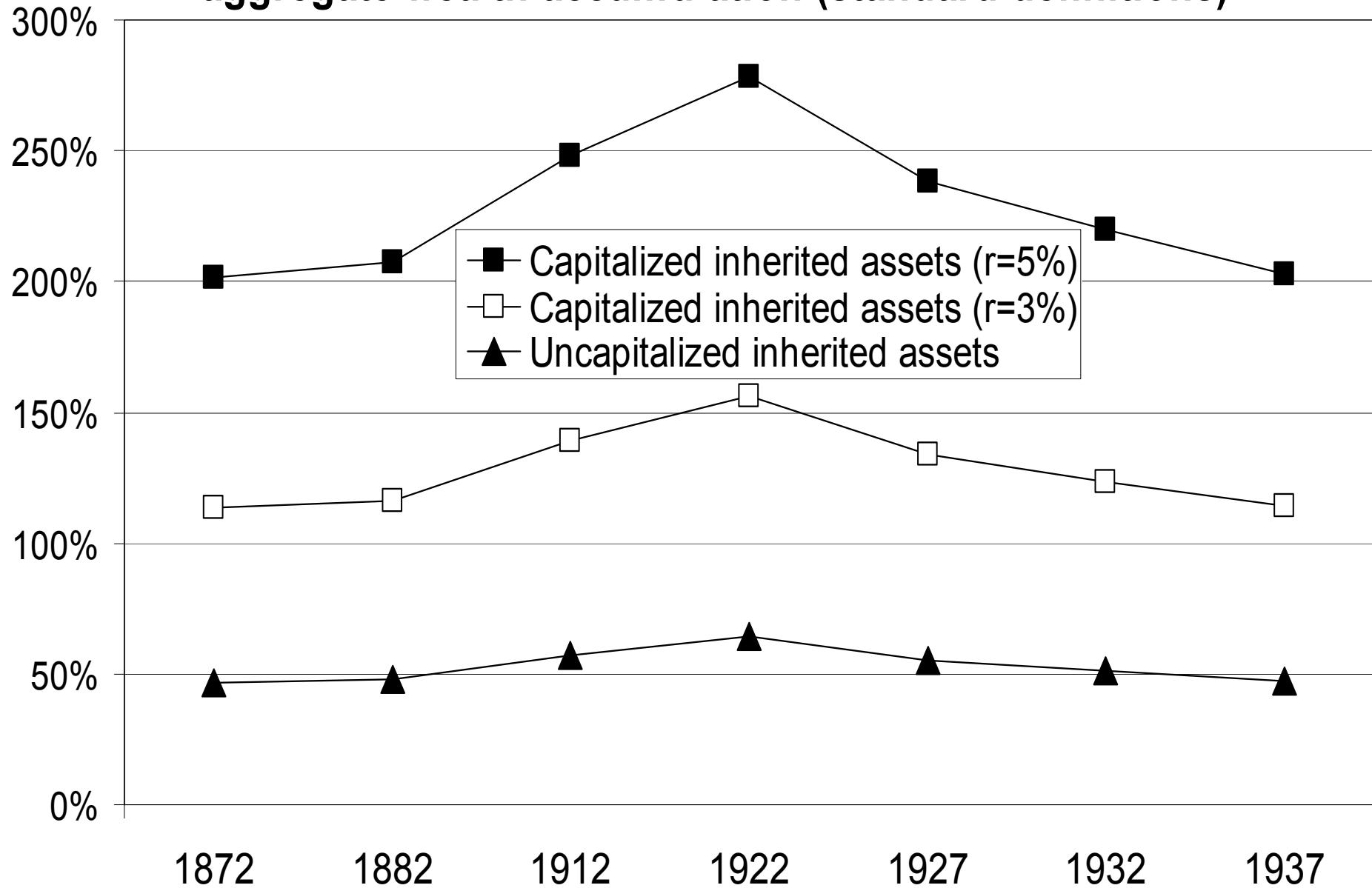
Note: Out-of-Paris real estate assets are missing in 1872-1882; in 1912-1937, they make about 1/3 of real estate assets

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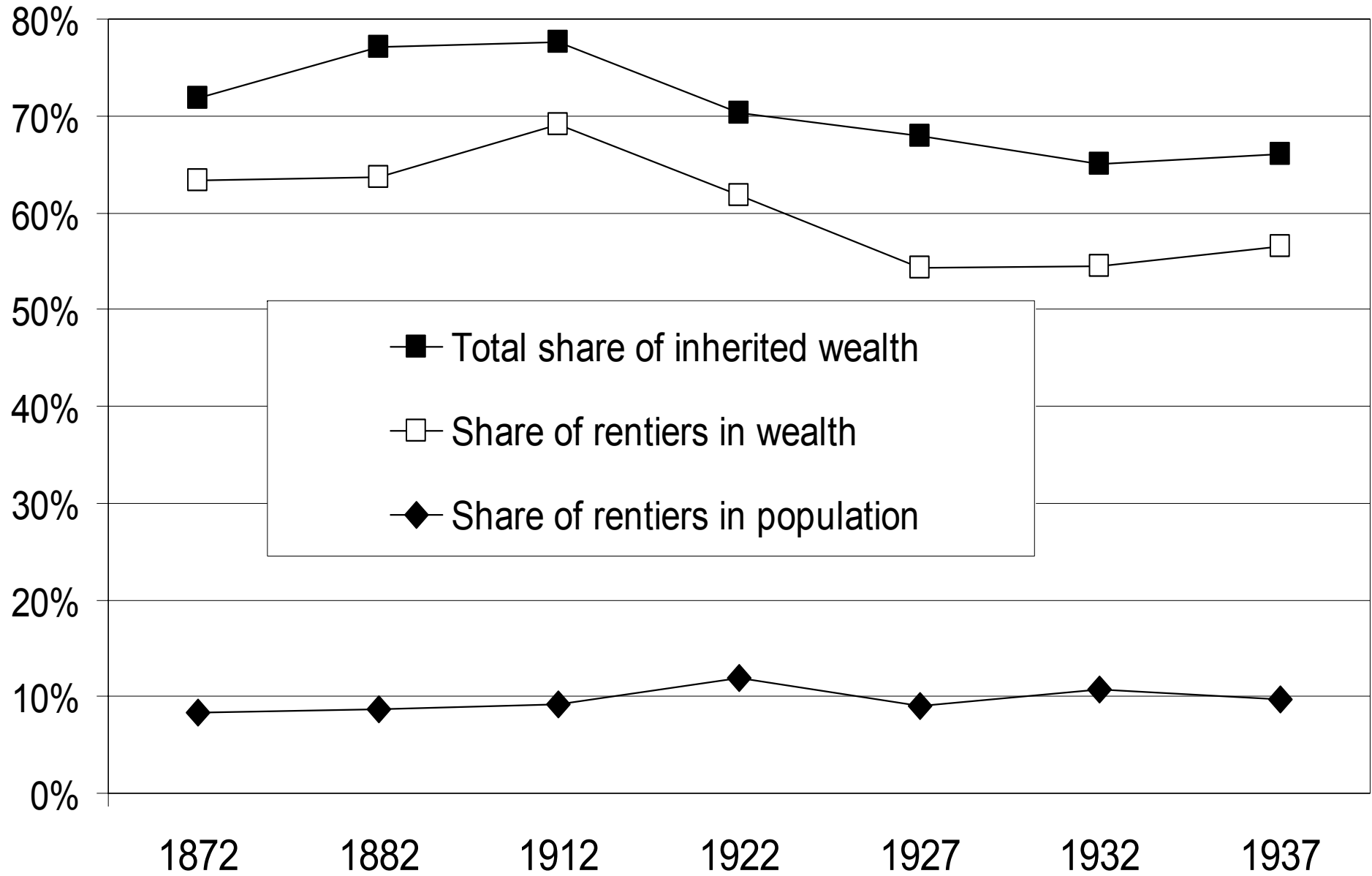
**Figure 4: Portfolio reallocations during marriage**



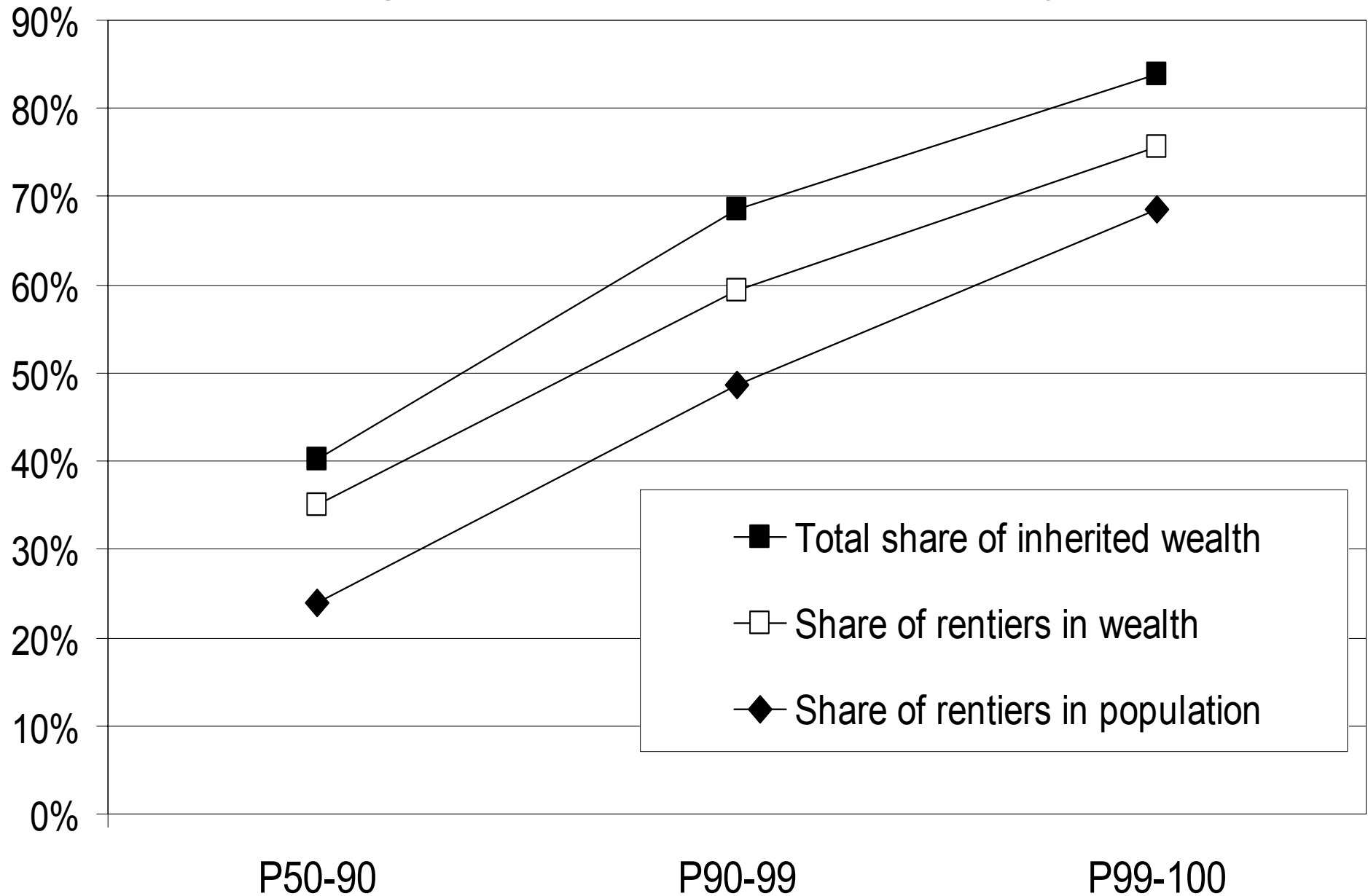
**Figure 5: Uncapitalized vs capitalized inheritance share in aggregate wealth accumulation (standard definitions)**



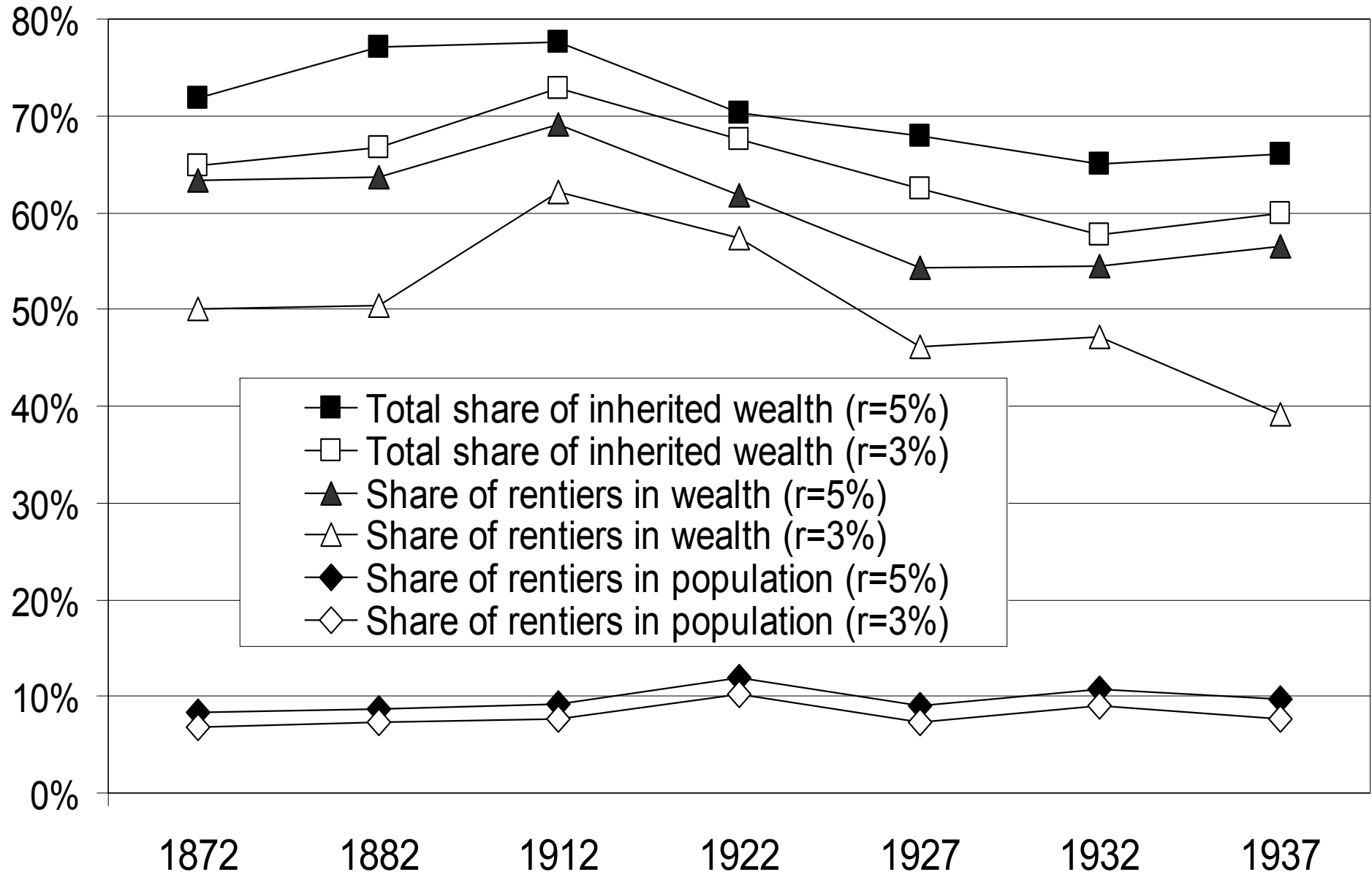
**Figure 6: Rentiers in Paris, 1872-1937**



**Figure 7: Paris 1912: a Rentier Society**



**Figure 8: Robustness with respect to the rate of return**





# What have we learned?

- The wealth accumulation process always involves 2 very different kinds of people: inheritors vs savers
  - Our new definition of the share of inherited wealth in aggregate wealth is more appropriate than the standard representative-agent definition
  - **In order to properly analyze capital accumulation, macroeconomics needs to go beyond representative agent models...**
  - ...& beyond infinite horizon models with idiosyncratic shocks, which are inappropriate to study inherited vs self-made wealth
- one needs to model explicitly the existence of different, unequal social groups with finite horizon

**Table 3: Average estate vs price indexes in Paris 1872-1937**

	Average estate (estate>0)	Average estate (all deced.)	Consum er price index	Asset price index	Average estate (estate>0)	Average estate (all deced.)
	(current francs)				(relative to asset price index)	
1872	64	66	97	100	64	66
1882	74	68	98	100	74	68
1912	100	100	100	100	100	100
1922	124	144	312	203	61	71
1927	192	215	574	273	70	79
1932	204	276	537	229	89	121
1937	164	248	616	242	68	102

# Figure 1: Annual inheritance flow as a fraction of national income, France 1820-2008

