WEALTH INEQUALITY AND HOUSEHOLD STRUCTURE: US VS. SPAIN

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1 Introduction and summary

- Differences in wealth distribution across developed countries are large

  (eg share held by top 1%: 15 to 35%)

- Documenting these differences is important in at least two contexts (and now feasible in many cases):

    . literature on inequality measurement

    . may help discriminate between alternative theories of the distribution of wealth

- Potentially a lot more heterogeneity in nature of households across countries than individuals (eg patterns of household formation by young adults)

- To what extent the differences we observe in wealth distributions across countries persist for comparable households? To what extent are they due to differences in household structure between countries?

Table 1. Summary statistics for US and Spanish wealth distributions, all and selected groups

	Gini	Median[1]	p75/p25	p25/p50	p75/p50	p90/p50	Nº of observations
All households							
US	0.80	66	22.7	0.15	3.4	8.5	4442
Spain	0.56	102	4.3	0.42	1.8	3.2	5143
Households with head aged 35 to 54							
US	0.77	79	13.6	0.21	2.9	6.7	1994
Spain	0.54	114	3.8	0.46	1.8	2.9	1717
Households with head aged 35 to 54 and couple							
US	0.74	118	8.1	0.32	2.6	5.6	1427
Spain	0.52	121	3.6	0.50	1.8	2.9	1293
Households with head aged 35 to 54, couple, one child <16							
US	0.74	121	8.1	0.31	2.5	4.9	297
Spain	0.50	118	3.5	0.52	1.8	2.7	417
All households, using square root equivalence scale ($\sqrt{n^o}$ of hh members)							
US	0.80	45	22.5	0.15	3.4	8.6	4442
Spain	0.56	62	4.3	0.44	1.9	3.3	5143
All households, per capita (scaling by nº of hh members)							
US	0.81	31	22.5	0.15	3.3	9.0	4442
Spain	0.58	37	4.5	0.43	1.9	3.7	5143

[1] In thousands of euros

Sources: United States: Survey of Consumer Finances (SCF) 2001

Spain: Spanish Survey of Household Finances (EFF) 2002

Table 2. Household types: indicators for some Western countries

	% of single person households (1990/1991)[1]	% of lone parent families (of fam. with children <18) (1989/1991)[2]	% aged 25-29 still living with parents (1994)[3]	
			Men	Women
Sweden	44.0	22.3	-	-
Denmark	38.1	22.0	-	-
Netherlands	37.7	18.1	-	-
Germany	37.7	15.7	28.8	12.7
UK	30.0	-	20.8	10.8
US	29.2	23.5	15.6	8.8
France	29.2	11.9	22.5	10.3
Italy	23.7	-	66.0	44.1
Greece	21.1	-	62.6	32.1
Spain	16.9	8.6	64.8	47.6

[1] Reher (1998) from Eurostat for Europe; CPS US Census Bureau
[2] Fernández-Cordón and Tobio (1998) from INSEE
[3] Fernández-Cordón (1997) from Eurostat for Europe; CPS US Census Bureau

In this paper:

- Prevailing family systems in each country may be important to understand differences in wealth inequality between countries (we take cross-country differences in family structure as given)

- Two countries: US (weak family ties) Spain (strong family ties) and comparable micro data (SCF 2001 and EFF2002)

- Non-parametric estimation of counterfactual distribution that results by combining the US conditional wealth distributions with the Spanish demographic characteristics of households.

- For various summary distribution measures we decompose the difference between the two countries into a part due to differences in household composition and another part holding composition constant

- Quantile regressions for within groups differences between US and Spain

2 Data and demographic groups

- SCF 2001 and EFF 2002; both oversample; we construct comparable assets and wealth definitions

- Measure of marketable net wealth

- To characterize the structure of households in both countries, we consider 16 types of households which differ in the age of household head, marital status, gender, and presence of children (go to Table 4)

- We take differences in the mix of groups to reflect mainly differences in household formation and structure

- Critical role of oversampling in international wealth comparisons

Table 4. Information on the 16 household groups considered

	Percentage in population		Median net wealth[1]		N° of observ. in the sample	
	US	Spain	US	Spain	US	Spain
Age < 25						
1. couple	2.4	0.6	5.8	12.0	78	18
2. single male	1.4	0.6	2.0	3.2	52	20
3. single female	1.8	0.4	0.3	6.5	57	18
25 ≤ Age < 35						
couple						
4. no children	3.4	4.0	34.5	71.0	121	98
5. children	6.9	5.4	26.0	70.2	242	149
6. single male	2.6	1.7	9.7	62.6	94	62
single female						
7. no children	1.9	1.1	6.1	30.4	72	47
8. children	2.4	0.3	1.8	10.8	89	10
35 ≤ Age < 55						
couple						
9. no children	12.0	12.0	118.6	130.0	560	486
10. children	16.0	20.9	117.5	116.1	867	807
11. single male	5.2	3.6	36.5	78.5	215	163
single female						
12. no children	5.4	3.9	25.0	108.1	203	190
13. children	4.2	1.3	11.7	68.4	149	71
Age ≥ 55						
14. couple	19.7	28.2	220.9	122.4	1102	1938
15. single male	4.4	3.8	85.0	86.1	191	283
16. single female	10.2	12.1	60.7	78.6	350	783

[1] In thousands of euros
Sources: SCF 2001 and EFF 2002

Table 5. Precision of wealth distribution measures: oversampling vs. random sampling

	$p10^{1}$	$p25^{1}$	$p50^{1}$	$p75^{1}$	$p90^{1}$	$\dfrac{p75-p25}{p25}$	% of wealth held by top				
							50%	20%	10%	5%	1%
US											
point estimate	0.05	9.7	65.8	221.1	562.7	21.7	97.1	82.2	69.0	56.9	32.1
standard error with oversampling	0.06	0.5	2.1	5.0	14.2	1.1	0.1	0.4	0.5	0.6	0.5
random sample	0.08	0.8	2.9	7.4	24.5	1.7	0.2	1.3	2.2	3.0	4.0
Spain											
point estimate	6.4	43.2	101.9	185.7	330.2	3.3	86.4	58.6	41.8	29.5	13.2
standard error with oversampling	1.0	2.0	2.8	3.3	10.3	0.2	0.5	1.0	1.3	1.5	1.6

[1] In thousands of euros

3   Counterfactual US wealth with Spanish household structure

- Estimating the US empirical wealth distribution

$$\widehat{F}_{US}(r) = \widehat{\Pr}_{US}(w \leq r) = \sum_{j=1}^{J} \widehat{\Pr}_{US}(w \leq r | z = j) \widehat{\Pr}_{US}(z = j)$$

j $(j = 1, ..., J)$ types of households

- Counterfactual US distribution

$$\widehat{F}_{US}^{SP}(r) = \sum_{j=1}^{J} \widehat{\Pr}_{US}(w \leq r | z = j) \widehat{\Pr}_{SP}(z = j),$$

- Illustrative example: Proportion of owner occupied housing: US 68%, Spain 82% but differences across types of households are substantial, counterfactual US 75%

Table 6a. Percentage of owner occupiers, by type of households

|	US	Spain	US with Spanish mix of households
Overall	67.7	81.9	74.9
Age < 25			
couple	21.0	41.7	
single male	3.9	49.2	
single female	11.7	49.4	
25 ≤ Age < 35			
couple			
no children	56.4	79.5	
children	63.8	73.9	
single male	35.2	55.6	
single female			
no children	25.4	53.3	
children	25.1	59.6	
35 ≤ Age < 55			
couple			
no children	81.4	83.4	
children	83.3	83.3	
single male	54.3	67.0	
single female			
no children	51.2	78.9	
children	48.6	65.9	
Age ≥ 55			
couple	89.3	90.5	
single male	75.4	77.1	
single female	67.1	82.6	
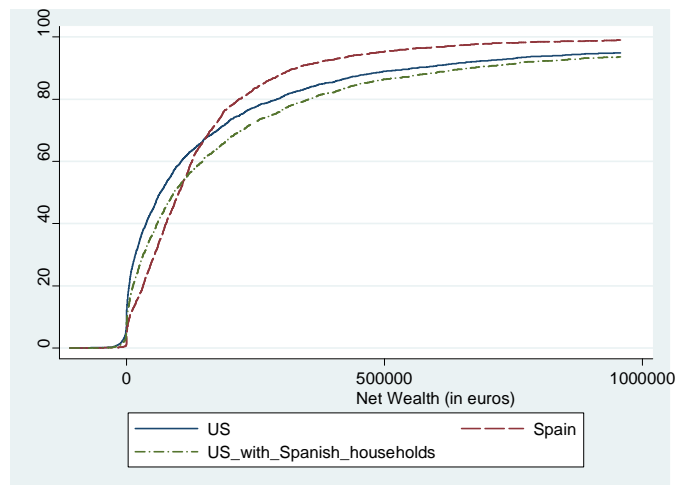
Figure 1: Empirical wealth distributions

- Considerable more households with zero or very low wealth in US wrt Spain. Household wealth in the US is lower than in Spain up to approx 67th perc. At this point the two distributions cross and the situation is reversed

- Household structure prevailing in US as compared to Spain explains a large part of the difference in first part of the distribution

- In contrast, for the upper half if the structure of households in the US was the same as in Spain, the differences between US and Spain would be even larger

- To further characterize the difference between the two countries we look at portfolio composition

- Table 6a point to an association between differences in lower part of the distribution (and the earlier part of the life cycle) and home ownership

Table 6b. Financial assets: wealth share[1] and participation rates

	US	Spain	US with Spanish mix of households
Financial assets share	41.2	12.0	41.8
Percentage of households holding financial assets			
. All financial assets (excluding bank accounts)	71.0	35.2	73.9
. Stocks	21.7	12.5	24.3
. Mutual funds	21.5	7.2	24.2
. Fixed-income securities	18.9	1.9	20.6
. Pension schemes	61.6	24.1	65.1

[1] Wealth in financial assets (including bank accounts and deposits, stocks, mutual funds, fixed-income securities, and pension schemes) over wealth (including debts).

[2] Percentage of households holding various types of financial assets (excluding bank accounts and deposits).

● Table 6b shows that counterfactual US participation in financial assets and portfolio share in financial assets are closer to US figures than to the Spanish ones. In fact, they are higher than the actual US figures.

● Tables 6b and 6c indicate an association between the importance of financial wealth in household portfolios and the differences observed in the upper part of the wealth distribution (and in the later part of the life-cycle)

Table 6c. Financial assets: group composition (%)

	Wealth share		Participation[1]	
	US	Spain	US	Spain
Overall	41.2	12.0	71.0	35.2
Age < 25				
couple	38.2	7.7	56.5	37.7
single male	71.7	13.0	49.8	13.2
single female	16.5	9.0	30.0	23.7
$25 \leq$ Age < 35				
couple				
no children	31.0	5.0	75.4	26.6
children	29.9	7.8	72.6	39.7
single male	29.1	11.0	64.8	32.5
single female				
no children	42.0	8.8	62.3	24.0
children	47.4	2.3	45.1	9.0
$35 \leq$ Age < 55				
couple				
no children	40.8	15.9	81.6	47.1
children	34.3	11.6	82.2	48.6
single male	44.8	11.7	77.2	31.7
single female				
no children	44.8	9.8	66.0	42.0
children	34.3	7.6	58. 9	15.7
Age $\geq$ 55				
couple	46.9	13.8	78.3	32.1
single male	48.6	16.7	64.2	22.6
single female	50.5	9.8	54.5	16.4

[1]% of households holding financial assets (including shocks, mutual funds, fixed-income securities,
 and pension schemes) excluding bank accounts and deposits.

4 Summary measures for the counterfactual US distribution

- Table 7 reports various measures of position and dispersion for the three distributions

- Table 8 we decompose the differences between the US and Spain in previous summary measures

$$m_{SP} - m_{US} = (m_{SP} - m_{US}^{SP}) + (m_{US}^{SP} - m_{US})$$

  . first term: difference in wealth for the same household composition

  . second term: differences when only household composition changes

Table 7 (and 8). Summary wealth distribution measures for the US, Spain, and US with Spanish structure of households

	US m_{US}	Spain m_{SP}	counterfactual US m_{US}^{SP}	Dif. same hh composition $m_{SP}-m_{US}^{SP}$ %	Diff. only hh comp changes $m_{US}^{SP}-m_{US}$ %
% households net worth ≤0	9.6	1.4	6.4	61.0	39.0
p10[1]	0.04	6.4	1.7	73.4	26.6
p25[1]	9.7	43.2	22.6	61.4	38.6
Median[1]	65.8	101.9	91.6	28.5	71.5
Mean[1]	299.8	160.4	367.3	148.4	-48.4
p75[1]	221.1	185.7	282.9	274.5	-174.5
p90[1]	562.7	330.2	664.0	143.5	-43.5
$\dfrac{p75-p25}{p25}$	21.7	3.3	11.5	44.6	55.4
$\dfrac{p50-p25}{p25}$	5.7	1.4	3.0	37.2	62.8
$\dfrac{p75-p50}{p50}$	2.3	0.8	2.1	86.5	13.5
$\dfrac{p90-p50}{p50}$	7.5	2.2	6.2	75.5	24.5

[1] In thousands of euros except last two columns.

- Types of households that make the compositional difference:

  Vary proportion of types of households in the US one type at a time ie. divide households in two types (group of interest and the rest) and see how US wealth at various percentiles would change if only the proportion of that particular type would change

$$\widehat{F}_{US[j]}^{SP}(r) = \widehat{\Pr}_{US}(w \leq r | z = j)\widehat{\Pr}_{SP}(z = j) + \widehat{\Pr}_{US}(w \leq r | z \neq j)\widehat{\Pr}_{SP}(z \neq j)$$

Table 9. Difference due to household composition, by household groups: varying one group at a time

	p25	Diff with US p25	p50	Diff with US p50	p75	Diff with US p75
Age < 25						
couple	11.0	1.3	69.7	3.8	227.8	6.6
single male	10.7	1.0	67.6	1.8	223.1	1.9
single female	11.2	1.5	68.8	3.0	225.3	4.2
25 ≤ Age < 35						
couple						
no children	9.7	-0.03	65.7	-0.15	220.5	-0.6
children	9.9	0.2	67.9	2.0	224.3	3.2
single male	10.1	0.4	66.4	0.6	222.1	1.0
single female						
no children	10.2	0.4	66.6	0.7	222.4	1.3
children	11.3	1.6	70.0	4.1	228.0	6.8
35 ≤ Age < 55						
couple						
no children	9.7	0	66.0	0.1	221.1	0
children	11.2	1.5	69.6	3.8	228.0	6.9
single male	9.7	0	66.3	0.4	222.1	1.0
single female						
no children	10.0	0.3	66.9	1.1	223.2	2.1
children	11.0	1.2	69.6	3.8	228.0	6.9
Age ≥ 55						
couple	13.0	3.3	76.7	10.9	249.5	28.4
single male	9.7	-0.02	65.8	0	221.1	0
single female	9.8	0.05	65.7	-0.1	220.5	-0.6

$p25_{US} = 9.7$, $p25^{SP}_{US} = 22.6$, $p25^{SP}_{US} - p25_{US} = 12.9$ $\quad$ $p50_{US} = 65.8$, $p50^{SP}_{US} = 91.6$, $p50^{SP}_{US} - p50_{US} = 25.8$

$p75_{US} = 221.1$, $p75^{SP}_{US} = 282.9$, $p75^{SP}_{US} - p75_{US} = 61.7$

(note that in the case of quantiles the sum of the differences for each group is not equal to the overall difference)

Table 10. Gini and wealth concentration measures for the US, Spain,

and US with Spanish structure of households

		% of total wealth held by top				
	Gini	1%	5%	10%	20%	50%
US	0.80	32.1	56.9	69.0	82.2	97.1
Spain	0.56	13.2	29.5	41.8	58.6	86.4
US with Spanish structure of households	0.78	30.0	55.3	67.1	80.1	96.0

● Other summary measures usually reported: Lorenz and Gini (not very informative about where in the distribution differences occur) and other concentration measures (very sensitive to the tails of the distribution).
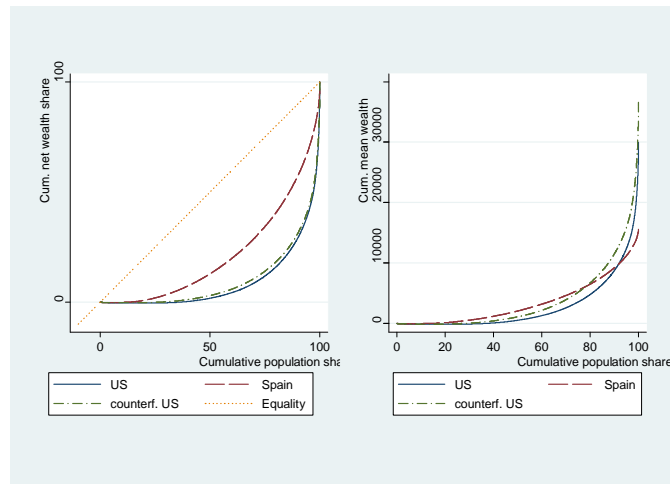
Figure 2: Lorenz and Generalized Lorenz curves

- Given that the means of the distributions are very different, these measures may be misleading about the similarities between the two distributions

- Generalized Lorenz curve

$$H(r) = E(W|w \le r)F(r).$$

5   Within group differences

- Plot conditional wealth distributions in the US and Spain: for some types of households the conditional distributions are very similar in the two countries, for some others quite different (Figure 5)

- To have more precise measures of the difference in the conditional distributions we present quantile regressions

$$Q_\tau(W|z_i) = \alpha_{1\tau}1(z=1) + \gamma_{1\tau}1(z=1)D_{SP} + ...$$
$$+\alpha_{16\tau}1(z = 16) + \gamma_{16\tau}1(z=16)D_{SP}$$

where $\tau = 0.25$, 0.50, and 0.75 and D_{SP} is a zero-one dummy for Spain
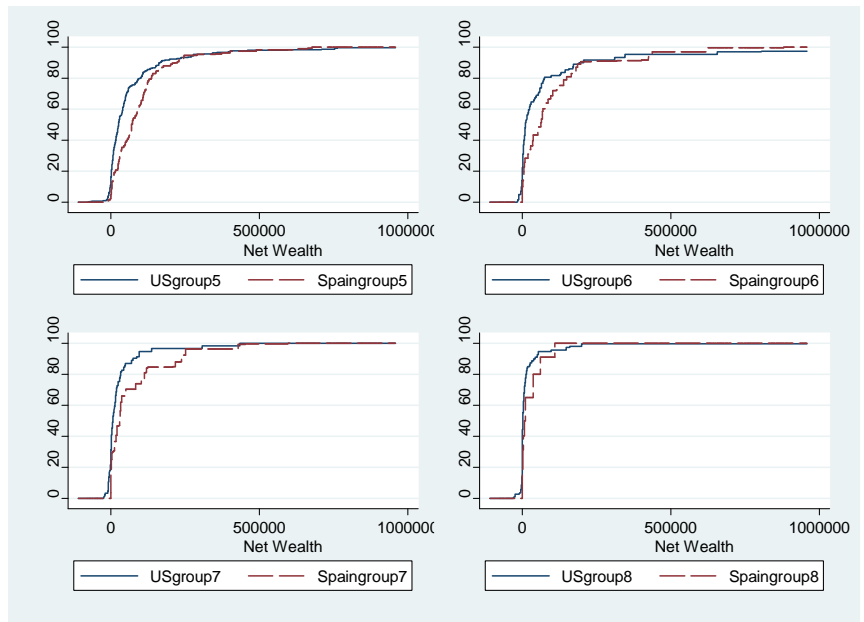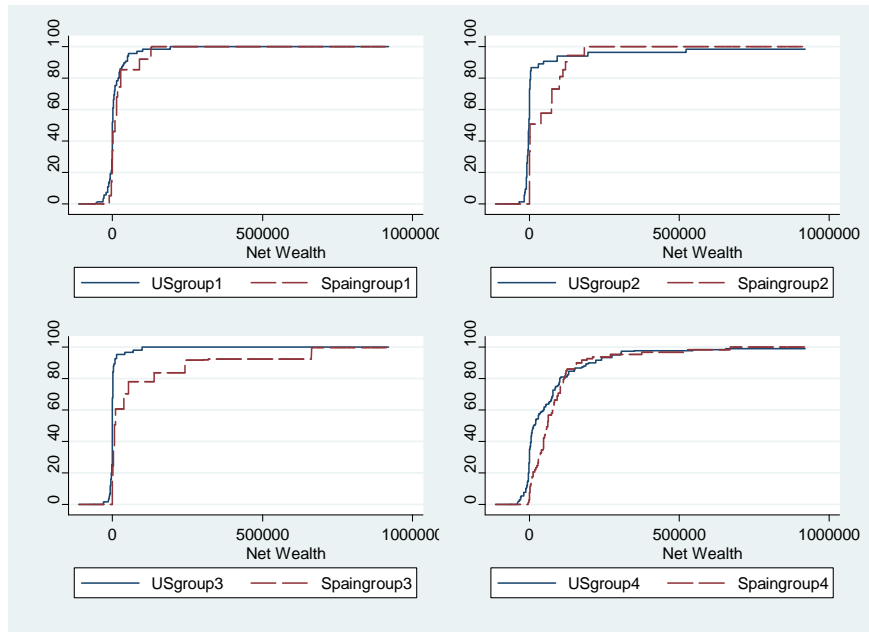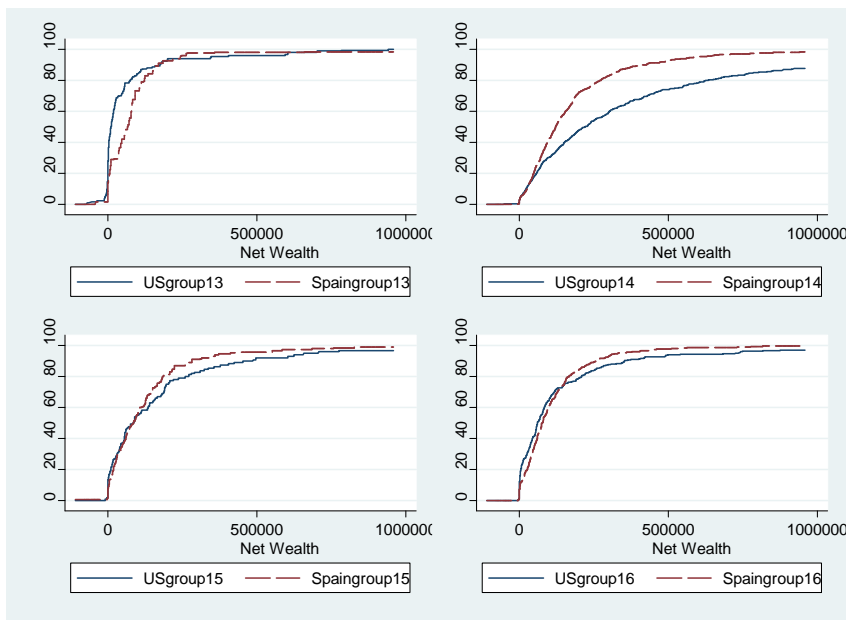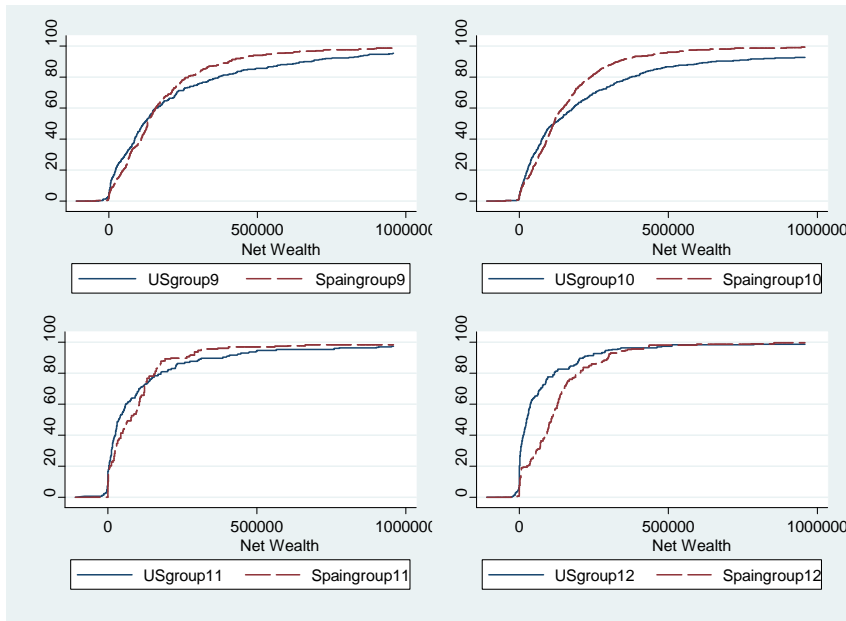
Figure 5: Conditional distributions, by type of household

Table 11. Quantile regressions for the conditional distributions[1]

	p25	p50	p75
Age < 25			
couple	1.2	6.3	15.2
single male	2.8	1.1	104.5*
single female	4.6	12.0	52.3
25 ≤ Age < 35			
couple			
no children	29.3**	36.5**	3.6
children	20.9**	44.3**	56.4**
single male	4.8	52.9**	52.0
single female			
no children	3.0	24.3*	76.8*
children	1.1	9.0	27.0
35 ≤ Age < 55			
couple			
no children	26.8**	11.4**	-65.3**
children	18.5**	-1.4	-107.6**
single male	11.8**	42.1**	-8.2
single female			
no children	39.3**	83.1**	73.2**
children	9.8**	56.7**	55.2*
Age ≥ 55			
couple	-14.5**	-98.5**	-301.9**
single male	10.6**	1.1	-32.3
single female	22.0**	17.9**	-2.2

[1]The coefficients reported reflect the difference of the Spanish conditional quantile with respect to the US one for each of the 16 groups. In thousands of euros.

[2] * 5% significance, **1% significance.

6 Concluding remarks

- We highlight the link between family demographics and wealth distribution

- For the first part of the distribution controlling for household demographics explains a great deal of the observed difference between the US and Spain (71% at the median, 55% in the inter-quartile range)

- In contrast, for the upper part, the differences in family structure are masking the extent of the differences between the two countries (eg. at 75th percentile the difference between Spain and the counterfactual US would be 2.75 times the actual US vs. Spain difference)

- Identify main groups behind the difference between counterfactual and actual US distributions

  . couples aged 55 and over (eg if Spanish 28% instead of US 19.7%, the US median would increase by 10900 euros)

  . very young single women and couples

  . single women under 55 with children

  . couples aged 35 to 54 with children

- looking at comparable groups, the main feature that emerges is how differences between the US and Spain in household wealth change over the life-cycle (age, rather) for a large group of the population

- In the US significantly worse off at all quartiles when young (aged 25-34), signicantly better off at all quartiles when old (over 54), and worse off in the first part of the distribution but better off in the upper part when aged in between

- International comparisons may be useful to construct models that uncover mechanisms that generate observed wealth data

- However differences in household structures and properties of the data at hand must be considered

- Look at how models fare for other measures of the distribution (aside from Gini and concentration measures)