

# Europe and the US: Asset Ownership

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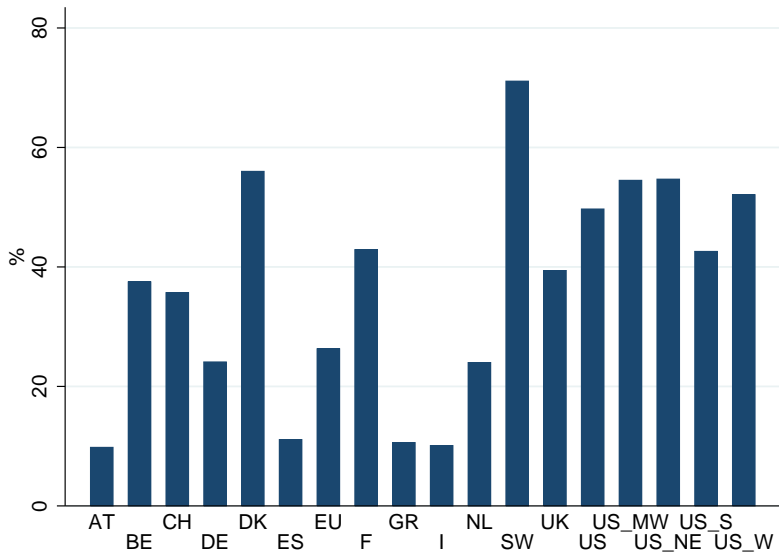
Summer Term, 2010

- ▶ “Economic Integration and Mature Portfolios”  
by Dimitris Christelis, Dimitris Georgarakos and Michael Haliassos
- ▶ Downloadable from  
[http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1089802](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1089802)

# Data Sets

- ▶ Health and Retirement Study (HRS); started in 1992
- ▶ English Longitudinal Study of Aging (ELSA); started in 2002
- ▶ Survey of Health, Aging and Retirement in Europe (SHARE); started in 2004/05
- ▶ Frequency: biannual
- ▶ They use the 2004/05 wave.

# Stock Ownership Rates (Christelis et al, 2009)



# Counterfactual Analysis

- ▶ Define Participation Rate in country  $i$ :

$$PR^i = \frac{1}{N^i} \sum_{j=1}^{N^i} \mathbf{1}(S_j^i = 1)$$

- ▶ Imagine true participation rate could be described by a linear regression, i.e.  $PR^i = \frac{1}{N^i} \sum_{j=1}^{N^i} \mathbf{x}_j^i \beta$ , with  $\mathbf{x}_{1 \times K}$  and  $\beta_{K \times 1}$

- ▶ Run OLS regression for *BASE* country and obtain  $\hat{\beta}^B$

- ▶ Construct counterfactual for country  $i$ :  $\hat{P}^{i,B} = \frac{1}{N^i} \sum_{j=1}^{N^i} \mathbf{x}_j^i \hat{\beta}^B$

- ▶ Difference in Participation Rates between countries *BASE* and  $i$

$$PR^B - PR^i = \underbrace{\left\{ PR^B - \hat{P}^{i,B} \right\}}_I + \underbrace{\left\{ \hat{P}^{i,B} - PR^i \right\}}_{II} \quad (1)$$

- ▶ In fact, they use Probit which makes things slightly more difficult

# Covariate Effect

- ▶ Part I of Equation (1)

$$PR^B - \hat{P}^{i,B} = \frac{1}{N^B} \sum_{j=1}^{N^B} x_j^B \beta^B - \frac{1}{N^i} \sum_{j=1}^{N^i} x_j^i \hat{\beta}^B \quad (2)$$

- ▶ Assume  $\hat{\beta}^B = \beta^B$ , then Covariate effect (4) would simplify to

$$PR^B - \hat{P}^{i,B} = \left( \frac{1}{N^B} \sum_{j=1}^{N^B} x_j^B - \frac{1}{N^i} \sum_{j=1}^{N^i} x_j^i \right) \beta^B = (\bar{x}^B - \bar{x}^i) \beta^B \quad (3)$$

- ▶ Difference in participation rates due to a different composition of household characteristics

# Coefficient Effect

- ▶ Part II of Equation (1)

$$\begin{aligned}\hat{P}^{i,B} - PR^i &= \frac{1}{N^i} \sum_{j=1}^{N^i} x_j^i \hat{\beta}^B - \frac{1}{N^i} \sum_{j=1}^{N^i} x_j^i \beta \\ &= \frac{1}{N^i} \sum_{j=1}^{N^i} x_j^i (\hat{\beta}^B - \beta^i) \\ &= \bar{x}^i (\hat{\beta}^B - \beta^i)\end{aligned}\tag{4}$$

- ▶ Difference in participation rates due to different coefficients
- ▶ Their interpretation:
  - $\beta$ 's reflect market conditions rather than preferences.
  - The more integrated a set of countries or regions, the more similar the prevailing participation probabilities with a given configuration of characteristics and attitudes.

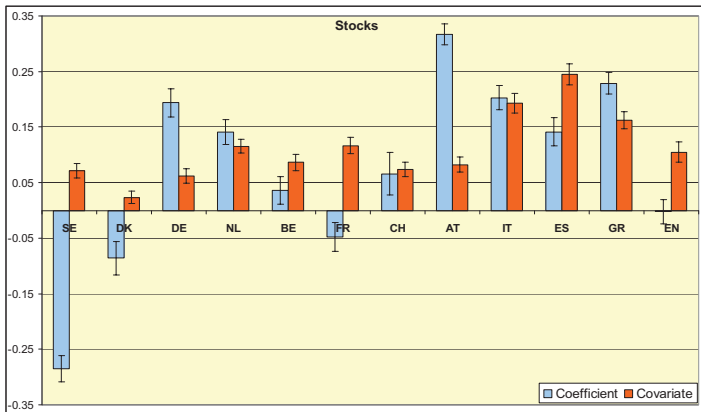
# The $\beta$ 's

Variable	United States				
	Coeff.	Std. Error			
				2nd Income Quartile	0.20 0.04 ***
				3d Income Quartile	0.30 0.04 ***
				4th Income Quartile	0.40 0.05 ***
Age	3.08	1.40	**	2nd Wealth Quartile	0.54 0.04 ***
Age squared	-1.84	1.02	*	3d Wealth Quartile	1.09 0.04 ***
Couple	0.05	0.04		4th Wealth Quartile	1.52 0.05 ***
Widow	-0.02	0.05		Working	0.11 0.06 *
Never Married	0.08	0.07		Retired	0.15 0.05 ***
Household Size	-0.11	0.01	***	Probability to leave a bequest	0.58 0.06 ***
High School Graduate	0.53	0.04	***	Provides help to others	0.11 0.03 ***
Post-Secondary Degree	0.89	0.05	***	Engages in voluntary activities	0.09 0.03 ***
Bad Health	-0.19	0.03	***	Constant	-3.74 0.49 ***
Number of ADL	-0.02	0.01			
Recall Score	0.07	0.01	***		



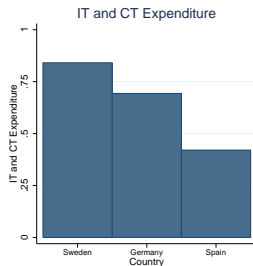
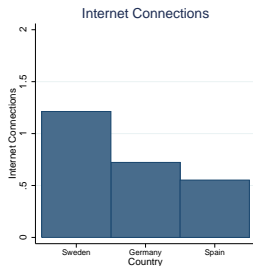
# Stock Ownership Rates (Christelis et al, 2009)

Figure 1: Decompositions of Differences in Stock Ownership Rates (relative to the US)



**Notes:** All decompositions refer to differences from the US. The error bands reflect 95% confidence intervals.

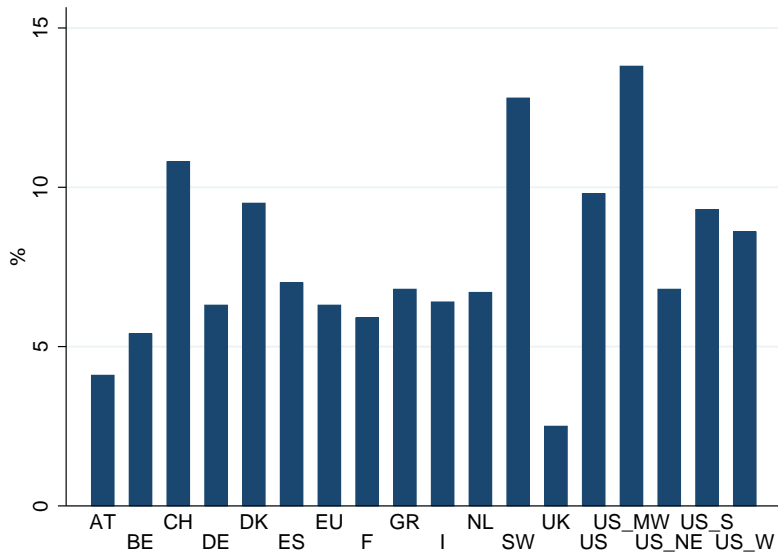
# Stock Market Indicators (Christelis et al, 2009)



# Stock Ownership Rates: Integration

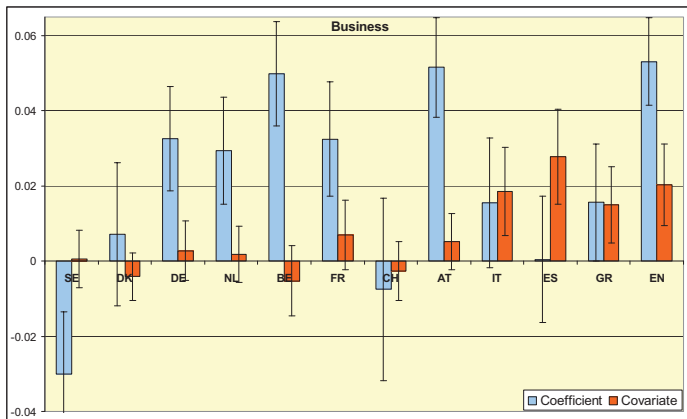
Country/ Region	Stocks		
	Total Difference	Difference due to Coefficients	Difference due to Covariates
US Northeast	-0.002	-0.020	0.019 ***
US South	0.119	0.083 ***	0.036 ***
US West	0.025	0.024 *	0.001
Sweden	-0.469	-0.461 ***	-0.008
Denmark	-0.318	-0.279 ***	-0.039 ***
Netherlands	0.001	-0.003	0.004
Belgium	-0.133	-0.138 ***	0.004
France	-0.187	-0.208 ***	0.020
Switzerland	-0.116	-0.093 ***	-0.023
Austria	0.144	0.140 ***	0.004
Italy	0.140	0.091 ***	0.049 **
Spain	0.131	0.065 **	0.066 **
Greece	0.135	0.117 ***	0.018
England	-0.153	-0.154 ***	0.001

# Business Ownership Rates (Christelis et al, 2009)



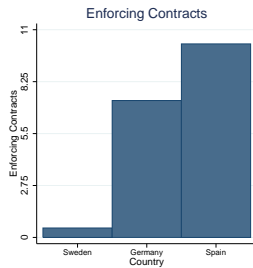
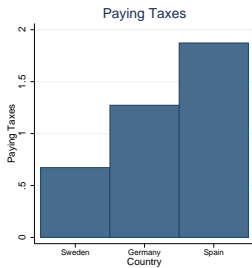
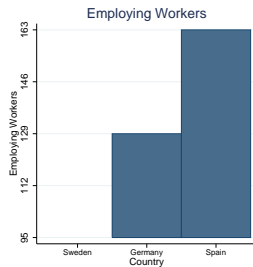
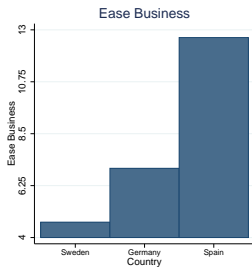
# Business Ownership Rates (Christelis et al, 2009)

Figure 2: Decompositions of Differences in Business Ownership Rates (relative to the US)



**Notes:** All decompositions refer to differences from the US. The error bands reflect 95% confidence intervals.

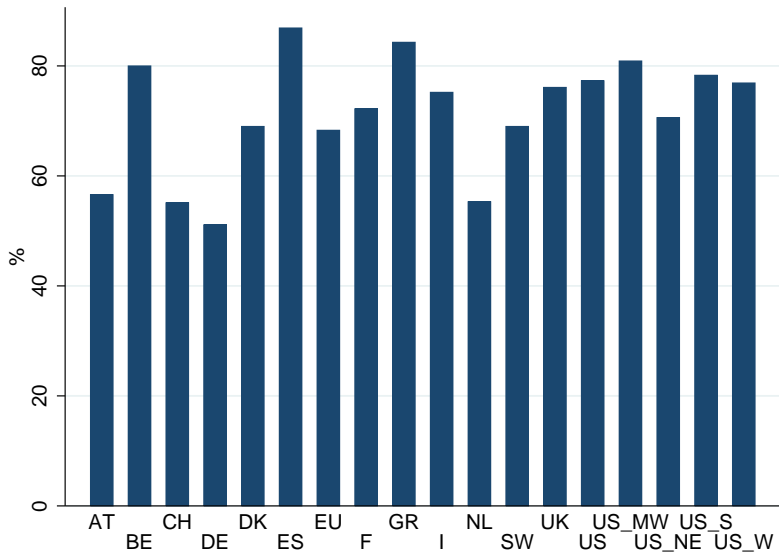
# Business Indicators



# Business Ownership Rates: Integration

Country/ Region	Own Business		
	Total Difference	Difference due to Coefficients	Difference due to Covariates
US Northeast	0.070	0.052 ***	0.019 ***
US South	0.045	0.028 ***	0.018 ***
US West	0.053	0.041 ***	0.012 ***
Sweden	-0.065	-0.073 ***	0.008
Denmark	-0.032	-0.033 ***	0.001
Netherlands	-0.004	-0.012	0.007
Belgium	0.009	0.002	0.007
France	0.004	-0.007	0.011 *
Switzerland	-0.046	-0.052 ***	0.006
Austria	0.021	0.020 ***	0.001
Italy	-0.001	-0.021 *	0.020 *
Spain	-0.007	-0.036 ***	0.029 **
Greece	-0.005	-0.007	0.002
England	0.038	0.007	0.031 ***

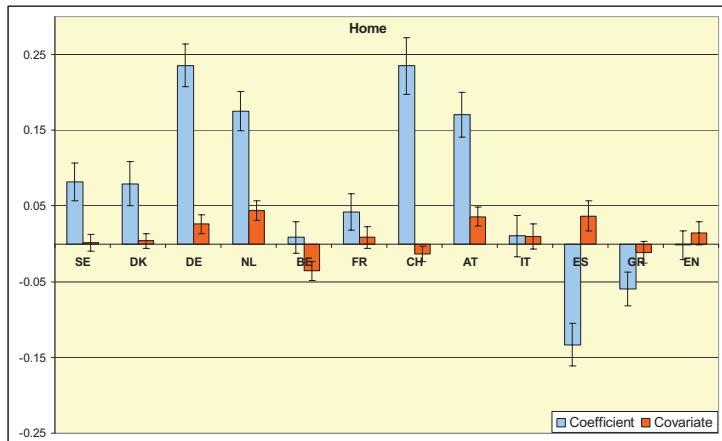
# Home Ownership Rates (Christelis et al, 2009)





# Home Ownership Rates (Christelis et al, 2009)

Figure 3: Decompositions of Differences in Home Ownership Rates (relative to the US)



**Notes:** All decompositions refer to differences from the US. The error bands reflect 95% confidence intervals.

# Home Ownership Rates: Integration

Country/ Region	Home		
	Total Difference	Difference due to Coefficients	Difference due to Covariates
US Northeast	0.102	0.066 ***	0.037 ***
US South	0.025	-0.016	0.041 ***
US West	0.041	0.021	0.020 ***
Sweden	-0.178	-0.209 ***	0.030 *
Denmark	-0.178	-0.180 ***	0.001
Netherlands	-0.042	-0.106 ***	0.064 ***
Belgium	-0.289	-0.274 ***	-0.015
France	-0.211	-0.239 ***	0.029 *
Switzerland	-0.040	-0.051 *	0.011
Austria	-0.055	-0.099 ***	0.044 ***
Italy	-0.241	-0.277 ***	0.036
Spain	-0.358	-0.431 ***	0.074 **
Greece	-0.332	-0.357 ***	0.025
England	-0.249	-0.330 ***	0.081 **