Ways to Richness: Determination of Household Wealth in 16 Countries[†]

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Abstract: The study examines determination of wealth among older households from a cross-national comparative perspective. Data obtained from 16 national samples reveal that in all countries household wealth is accumulated through two major mechanisms: labor market income and inter-generational transfers. Higher income and reception of inheritance are likely to increase household net worth. Despite considerable cross-country variation in the distribution of wealth, the effects of income and inheritance on net worth are found to be uniform across societies. Further analysis does not detect any systematic association between household net worth and country-level characteristics or social and taxation policies. Nor does it detect any systematic association between country structural attributes and the ways that wealth is determined and accumulated. The findings are discussed in light of previous research and theory on the topic.

Introduction

Students of stratification have long stressed the role played by family resources and household wealth in production and reproduction of economic inequality (e.g. Oliver and Shapiro, 1995; Conley, 1999; Spilerman, 2000; Keister and Moller, 2000; Hao, 2007). The growing literature on the topic reveals that wealth is best perceived as a distinct dimension of stratification for two main reasons: first, wealth is more unequally distributed than earnings or income (e.g. Wolff, 1995; Kiester and Moeller, 2000); second, wealth exerts a strong impact on standard of living and consumption capacity independent of labor market-economic outcomes (e.g. Semyonov and Lewin-Epstein, 2001; Spilerman, 2004; Elmelech 2008; Torche and Costa-Riberio, 2012). Subsequently, the number of studies on sources, patterns, and impact of wealth inequality within specific countries has increased considerably in the past two decades (e.g. Oliver and Shapiro, 1995; Conley, 1999, 2001; Torche and Spilerman, 2008; Hills, 2010; Semyonov and Lewin-Epstein, 2011; Nau and Tumin, 2012; Torche and Costa-Riberio, 2012). Nevertheless, relatively few studies to date had examined determination of wealth within specific countries, and even fewer studies had examined the issue from a cross-national comparative perspective (for notable exceptions, see Kessler and Wolff, 1991; Siemernska et al., 2006; Wolff, 2006; Bauer et al., 2011).

In the present study, therefore, we aim to fill a lacuna in the literature by providing a systematic comparative examination of the social mechanisms underlying accumulation of wealth across 16 economically developed countries. We contend that because the study of household wealth combines economic processes (such as labor market outcomes, saving, and investing) and family practices (such as intergenerational support and bequests), a cross-national comparative examination of household wealth and its determinants will enrich our understanding of stratification processes both within and across societies. We focus on the ways that the two major mechanisms—non-assets income and intergenerational transfers—impact the accumulated wealth among older households across 16 countries. The main questions we seek to answer are as follows: first, whether average amount of household wealth differs across

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countries; second, whether wealth is similarly determined by income and by intergenerational transfers across countries; and third, whether variation in wealth holding is systematically affected by country-specific institutional arrangements (i.e. structural characteristics of the countries and their social policies).

Theoretical Considerations

The literature on wealth inequality underscores three main mechanisms through which household wealth is accumulated: labor market income, intergenerational transfers, and government transfers and 'state sponsored opportunities'. The three mechanisms are governed by different, at times even counteracting, institutional logics. For most families, wealth is generated by excess of earnings over expenditures. That is, labor market income is used to cover consumption expenditures; the remainder is saved or invested in wealth producing assets. According to the 'life-cycle' theoretical model (Modigliani, 1988), the relations among labor market income, consumption, and saving vary over the life cycle. The model assumes that households aim to maintain a fairly constant standard of living. Persons tend to save and invest when their earnings are relatively high and start using the savings and de-accumulate when their income declines or when they are out of the labor market. That is, savings and investment in assets are prevalent at early age but tend to decrease later in life, especially after retirement, when labor market income declines. According to this model, the relations between wealth and age are not linear; wealth tends to increase with age, peak around the time of retirement but to decline after retirement.

For many families, wealth is accumulated for a long period if not for generations. Although the overwhelming majority of families built their wealth through saving and investment of excess income over expenditures, wealth is also transmitted from one generation to another in the forms of gifts and bequests, especially in the form of inheritance (e.g. Conley, 1999; Elmelech, 2008; Semyonov and Lewin-Epstein, 2011; Nau and Tumin, 2012). The key role of parental transfers notwithstanding, economic support and transfers also occur among distant relatives and friends (e.g. Wolff, 2002). Although the magnitude of intergenerational transfers varies considerably across families, such transfers are by no means marginal to the process of wealth accumulation and economic inequality (e.g. Gale and Scholz, 1994; Menchik and Jiankoplos, 1998; Conley, 1999). A recent study in the United Kingdom found that people with greater wealth are also more likely to receive inheritance. Consequently, intergenerational transfers

reinforce differences among social strata with unequal abilities to save (Hills, 2010). In a related vein, it was suggested (e.g. Conley, 1999) that inheritance plays a greater role than earnings for wealth inequality in the United States, but earnings seem to play a greater role than inheritance for wealth inequality in Israeli society (e.g. Semyonov and Lewin-Epstein, 2011).

Household wealth can be also affected by 'government sponsored opportunities' (Oliver and Shapiro, 1995). Generally speaking, in contemporary welfare states, government transfers often serve to compensate for low income to mitigate and soften the detrimental impact of labor market hardships and poor economic performance. Yet, governments can also provide opportunities to accumulate assets and to build wealth through special programs and initiatives that could be differentially accessible to sub-populations within the state. Oliver and Shapiro (1995) demonstrated that although whites in the United States had benefited from a 'cumulative advantage' in access to economic assets through government sponsored opportunities, blacks have suffered from 'cumulative disadvantages'. That is, unlike the white population, blacks in the United States were denied in the past equal access to state-sponsored opportunities in the forms of homesteading, loans for housing, admission to educational institutions, and land acquisition. In Israel, although Jewish immigrants benefit considerably from generous government support in the form of 'easy term loans' and access to land and housing, non-Jewish labor migrants are denied access to any rights or privileges (Semyonov and Lewin-Epstein, 2011).

To date, the literature on wealth inequality has repeatedly demonstrated that within specific societies, household wealth is related to labor market activities, intergenerational transfers, housing assets, and government policies. Unfortunately, cross-national studies on wealth accumulation are too sparse to draw detailed hypotheses about the ways that wealth is differentially determined across social systems and the ways that government policies affect wealth accumulation. The few notable exceptions (e.g. Kessler and Wolff, 1991; Sierminska et al., 2006; Wolff, 2006; Bauer et al., 2011) that focus on the unequal distributions of wealth within a cross-national comparative framework do not lead to any conclusive expectations regarding the ways that welfare state policies and institutional arrangements may affect unequal distributions of wealth. They do not formulate any expectations regarding the impact of societal characteristics and social policies on the determination of wealth.

In fact, findings reported by comparative studies of wealth inequality indicate that what has been a useful framework for clustering welfare regimes with regard to

labor market processes may not be as appropriate a framework for the study of household wealth. For example, Sierminska *et al.* (2006) show that at the turn of the century, Gini coefficients for the distribution of household net worth across nine advanced economies was as high in Sweden (the prototype of the social-democratic welfare regime where income inequality is low and where public pensions are large) as in the United States (the prototype of a market economy representing the liberal welfare state regime where income inequality is relatively high and public pensions are low). Likewise, the share of households with nil or negative net worth was higher in Sweden than in other societies. Wealth inequality was lowest in Italy, a country in which the old age pensions provided by the state (as a proportion of the average salary) is the highest among the developed countries (Holzman *et al.*, 2003). Apparently, both income inequality in society and its welfare state regime are poor predictors of societal wealth inequality.

It was previously suggested that household wealth can be affected by societal characteristics, such as economic conditions and governmental policies (e.g. Oliver and Shapiro, 1995, for the Unites States; Bauer *et al.*, 2011, for Australia, Germany, and the United States; Semyonov and Lewin-Epstein, 2011, for Israel). Therefore, in what follows, we consider various ways through which societal characteristics and state policies affect inequalities in wealth accumulation. We suggest here that the relationship among family attributes, labor market outcomes, inheritance, and wealth holding is embedded to some extent in the institutional arrangements that are manifested in welfare state policies, access to pension and housing, taxation, and housing policies that are particular to each society. Furthermore, although we expect wealth holdings to increase with labor market earnings and with reception of intergenerational transfers in all countries, we also expect some cross-national variation in the magnitude of their impact on wealth holdings as a result of the institutional arrangements characterizing each of the countries.

More specifically, we expect the impact of labor market outcomes (i.e. earnings) on accumulated wealth to be more pronounced in rich societies and in more liberal economic systems than in social welfare regimes because market mechanisms generate greater inequality in earnings and greater need for wealth to support one's standard of living in older age. Likewise, and for the same reason, we expect the impact of inheritance on accumulated wealth to be more pronounced in liberal economies where government intervention in economic processes is more limited than in social-democratic welfare regimes. We also expect taxation policies to affect the relationship between intergenerational transfers and wealth holding. That is, we expect the impact of inheritance on accumulated wealth to be lower in societies that have high tax rates on inheritance, and we expect the impact of income on wealth to be lower in countries that impose high taxes on earnings. Thus, in what follows, we will use data from 16 countries to estimate and compare differential impact of labor market earnings and of inheritance on accumulated wealth.

Data Sources and Variables

The present analysis combines three separate data sets to arrive at 16 nationally representative full probability samples of households where at least one member was aged $\geq$50 years at the time of the survey. We believe that the focus on respondents aged >50 years is an advantage because persons in advanced stages of the life cycle have had opportunity to accumulate wealth, and their well-being is more dependent on resources that they have accumulated. Data for 13 European countries and for Israel were obtained from either the 2004–2005 (first wave) or 2006–2007 (second wave) of the Survey for Health, Ageing and Retirement in Europe (SHARE) project. Data for the United States were obtained from 2004 (seventh wave) of the Health and Retirement Study (HRS), and data for United Kingdom were obtained from the 2004 (second wave) survey of English Longitudinal Study of Aging (ELSA). The list of countries, data source, year of the survey, and number of respondents and their age range are displayed in Appendix Table A1.

Data in all countries were collected by means of face-to-face interviews conducted in respondents' homes using Computer-assisted personal interviewing (CAPI). The questionnaire covers a wide range of topics and is highly structured to ensure comparability of the data. Household information was obtained from the primary respondent. For the purpose of the present analysis, the most relevant information is family financial and real assets and liabilities that are used to estimate net worth.

Net worth—the dependent variable in the present analysis—is defined as the sum of real and financial assets minus debts. Financial assets reflect the sum of values of accounts, bonds, stocks, mutual funds, and savings. Real assets pertain to the value of primary residence net of mortgage, other real estate, owned businesses, and owned cars. All assets are measured in Euro currency.[1] Because the distribution of net worth is highly skewed and contains both negative and zero values, we followed procedures adopted by previous studies (e.g. Campbell and Kaufman, 2006; Cobb-Clark and Hildebrand, 2006; Semyonov and Lewin-Epstein,

2011) to transform the distribution of net worth. In the present research, we shifted the distribution by adding the minimum value of net worth plus 1 to each original value. This modified indicator of wealth was then further transformed to its natural logarithm as follows: Ln [(wealth) + (minimum + 1)].

Non-asset income is defined as an income from employment, self-employment, pension, private regular transfer, and long-term care. As we focus on the older populations and income measured at a specific point in time serves as a proxy of income flows generated by economic activities, we refine the income information by including three dichotomous indicators to adjust the income for respondents' employment situation: retired (retire = 1), private pension recipient (receive = 1), and public pension or government transfers recipient (receive = 1). Non-asset income was transformed into a rank order scale within each country where each household was given a score of its relative position (from low to high) in the income distribution.

Intergenerational transfers are captured by a dummy variable distinguishing between families that received inheritance (or bequest) of ≥5,000 Euro (=1) and households that had not received an inheritance (=0). It would have been preferable to use a continuous variable indicating the sum of transfers. However, we decided to use the dichotomous variable for two reasons. Intergenerational transfers for different households were made at different points in time, but this information was not available. Therefore, the current value of the sum of transfers could not be determined. Furthermore, in several countries, there were inconsistencies in the currency used to report intergenerational transfers and often the actual amount was not recorded.[2]

Additional variables are also included for control purposes. They are as follows: size of household (number of persons), family composition (dummy variables distinguishing between married couple household, single female household, and single men household), age of respondent (in years), immigrant status (immigrant = 1), and respondent's education (dummy variable distinguishing between tertiary education and others). The list of variables and their definition is provided in Appendix Table A2.

Analysis and Findings

Descriptive Overview

We start the analysis by providing a descriptive overview of the distribution of wealth and its two determinants across countries. In Table 1, we list for each country: mean (and median) household net worth, mean

household income, and percentage of households that received inheritance. The data displayed in Table 1 reveal considerable variation across countries with regard to average wealth holding, income, inheritance, and home ownership. The average net worth of households is highest in Switzerland (>600,000 Euro) and lowest in Poland (<100,000 Euro). In Belgium, France, and Spain, average household net worth exceeds 350,000 Euro; in Sweden, Denmark, and the Netherlands, the average net worth of households is slightly >300,000 Euro; in USA, UK, Greece, and Italy, net-worth >200,000 Euro but <250,000 Euro; and in Austria and the Czech Republic, average household wealth does not reach 200,000 Euro but is considerably higher than the average wealth in Poland.

The data show considerable cross-country variation not only in level of wealth but also in its two major determinants: income and inheritance. For example, average income is highest in Switzerland, Germany, and the Netherlands (~48,000, 47,000, and 46,000 Euro per annum, respectively) and Lowest in Poland, the Czech Republic, and Greece (~11,400 and 14,600 Euro per year, respectively). The proportion of households that benefited from intergenerational transfers is highest in Switzerland, Sweden, and Belgium (where >40 per cent of the older population reported receiving an inheritance) and lowest in the United States, Spain, Italy, and Austria (where <20 per cent received any inheritance).[3]

Country-Specific Multivariate Analysis

Although the descriptive findings reveal interesting patterns, they do not inform us on the extent to which income flows and reception of inheritance contribute to household wealth independently of other attributes of households. Thus, in Table 2, we display for each country, two regression equations predicting household net worth. In Equation 1, we let net worth be a function of income and of inheritance, the two main predictors of wealth. In Equation 2, we control for socio-demographic attributes of households to estimate the effect of income and inheritance net of differences in household characteristics. More specifically, in equation 2, we control for age, household size, household composition, education, and nativity status for the following reasons: wealth is likely to decrease with age but to increase with education; wealth is likely to be diluted with number of the family members living in the household as well as in single-person households; and wealth tends to be lower among immigrant families than among native-born households. We also control for retirement status to adjust for income (because retirement income is likely to be lower than regular labor market earnings) and for

Table 1 Mean (SD) or percentage of inheritance, non-asset income and net worth by countries

Country	Percentage received inheritance (%)	Mean non-asset income (Euro)	Mean net worth (Euro)	Median net worth (Euro)
Austria	17.0	39220.246 (40545.26)	199654.420 (381677.093)	107394.027
Belgium	42.0	33646.825 (49255.538)	371248.626 (856387.234)	205223.602
Czech Republic	22.5	14640.852 (14790.965)	181145.194 (602126.238)	76861.106
Denmark	36.1	38121.8207 (34645.623)	311080.284 (935862.248)	86293.898
France	23.0	39707.803 (49629.512)	357502.353 (908554.305)	167719.953
Germany	29.1	46921.239 (52854.820)	238678.301 (518852.346)	119791.375
Greece	24.3	22561.596 (24046.831)	209456.793 (337698.039)	129270.906
Italy	18.1	28808.171 (31458.020)	285273.182 (945039.833)	149901.133
Israel	29.1	21794.836 (25715.360)	258789.2983 (538549.794)	143955.481
Netherlands	27.3	46145.6601 (41546.179)	313097.991 (965734.345)	158498.969
Poland	14.0	11404.869 (12506.457)	97455.403 (767301.079)	39381.613
Spain	16.5	28699.5614 (39047.370)	374218.163 (1251330.061)	152665.070
Sweden	41.5	37504.630 (29540.54)	324885.950 (1112979.627)	101606.258
Switzerland	46.2	48073.623 (49393.141)	614379.484 (1440088.508)	192359.703
United Kingdom	4.4	17063.736 (37332.691)	258613.664 (479729.197)	163800.000
United States	12.0	27899.827 (47578.412)	224420.472 (1341789.552)	115500.000

public pensions and government transfers (because such transfers substitute for private wealth). The estimated coefficients of this set of two regression equations for each one of the countries are displayed in Table 2.

The findings presented in Equation 1 reveal considerable similarities across countries in the determination of wealth. In all countries, net worth tends to increase with non-asset income and with reception of inheritance. The coefficients derived from Equation 2 suggest that even after controlling for socio-demographic attributes of household, the effects of both income and inheritance on net worth remain positive and significant. Other things being equal, in all countries without exception, household net worth is likely to increase with income and with reception of inheritance. Indeed, the data lend

strong support for the argument that household wealth is produced via saving and investment of surplus income and via the transfers of economic resources across generations. Further analysis reveals that in most countries, the relative impact of income on net worth is stronger than that of intergenerational transfers. In all countries, except Belgium and Switzerland, the unique contribution of income to the explained variance of net worth is larger than that of inheritance.[4]

The analysis also shows that in most countries (but not in all), wealth is likely to increase with age. The findings reveal that in half of the countries (i.e. Austria, Germany, Sweden, Denmark, Switzerland, Belgium, the Czech Republic, and United States), the positive relations between age and wealth are likely to take a curve-linear

Table 2 Coefficients (S.E.) of linear regression equations predicting household net worth by household-level characteristics by country

	Inheritance	Income	Age	Age square	Household size	Single-male household	Single-female household	Tertiary education	Immigrant	Retired	Private pension	Public pension	Constant	Adjusted R2	Number of observations
Austria	1.477**	0.002**	—	—	—	—	—	—	—	—	—	—	8.238**	0.103	1,390
	(0.250)	(0.000)											(0.188)		
	1.334**	0.001**	0.464**	−0.004**	0.101	−1.203**	−1.317**	0.399	−0.482	−0.202	0.950*	−0.355	−4.529	0.185	1,387
	(0.241)	(0.000)	(0.119)	(0.001)	(0.117)	(0.325)	(0.245)	(0.225)	(0.286)	(0.289)	(0.375)	(0.308)	(4.043)		
Germany	1.443**	0.002**	—	—	—	—	—	—	—	—	—	—	8.573**	0.138	1,929
	(0.152)	(0.000)											(0.139)		
	1.195**	0.001**	0.302**	−0.002**	−0.128	−1.583**	−1.764**	0.561**	−0.539**	0.435*	0.580**	−0.579**	0.211	0.211	1,921
	(0.148)	(0.000)	(0.097)	(0.001)	(0.098)	(0.240)	(0.200)	(0.154)	(0.158)	(0.206)	(0.205)	(0.197)	(3.310)		
Sweden	1.187**	0.002**	—	—	—	—	—	—	—	—	—	—	8.553**	0.112	1,568
	(0.169)	(0.000)											(0.166)		
	1.027**	0.001**	0.521**	−0.003**	0.066	−0.378	−1.179**	0.398	−0.941**	−0.333	0.446*	−0.404	−10.001**	0.167	1,555
	(0.166)	(0.000)	(0.102)	(0.001)	(0.175)	(0.323)	(0.293)	(0.205)	(0.256)	(0.318)	(0.203)	(0.292)	(3.646)		
Netherlands	1.527**	0.002**	—	—	—	—	—	—	—	—	—	—	8.826**	0.130	1,868
	(0.158)	(0.000)											(0.142)		
	1.220**	0.001**	0.197**	−0.001	0.020	−1.252**	−1.417**	0.672**	−2.033**	0.026	0.099	−1.245**	3.185	0.227	1,855
	(0.152)	(0.000)	(0.089)	(0.001)	(0.099)	(0.268)	(0.214)	(0.178)	(0.246)	(0.197)	(0.189)	(0.174)	(3.099)		
Spain	0.441*	0.001**	—	—	—	—	—	—	—	—	—	—	10.516**	0.036	1,662
	(0.175)	(0.000)											(0.130)		
	0.503**	0.001**	0.013	0.000	−0.088	−1.231**	−1.310**	0.580*	−1.676**	−0.301	0.244	0.228	10.371**	0.078	1,657
	(0.173)	(0.000)	(0.075)	(0.001)	(0.058)	(0.248)	(0.195)	(0.241)	(0.394)	(0.187)	(0.491)	(0.192)	(2.603)		
Italy	1.138**	0.002**	—	—	—	—	—	—	—	—	—	—	9.326**	0.097	1,735
	(0.190)	(0.000)											(0.146)		
	1.049**	0.001**	0.158	−0.001	−0.122	−0.919**	−1.441**	0.599	−0.318	0.490*	−0.203	−0.319	5.581	0.140	1,734
	(0.188)	(0.000)	(0.102)	(0.001)	(0.073)	(0.291)	(0.207)	(0.326)	(0.505)	(0.210)	(0.375)	(0.234)	(3.482)		
France	1.212**	0.002**	—	—	—	—	—	—	—	—	—	—	9.156**	0.128	2,005
	(0.161)	(0.000)											(0.134)		
	1.007**	0.001**	0.106	−0.001	−0.203*	−1.091**	−1.417**	0.623**	−0.644**	0.771**	0.428*	−0.519*	6.859*	0.182	1,987
	(0.160)	(0.000)	(0.089)	(0.001)	(0.081)	(0.224)	(0.181)	(0.178)	(0.177)	(0.214)	(0.167)	(0.221)	(3.073)		
Denmark	1.529**	0.004**	—	—	—	—	—	—	—	—	—	—	7.186**	0.131	1,147
	(0.241)	(0.000)											(0.239)		
	1.376**	0.002**	0.716**	−0.005**	0.519*	−1.245**	−0.661	0.232	−0.810	−0.696	0.565	−1.378**	−17.628**	0.187	1,142
	(0.240)	(0.001)	(0.138)	(0.001)	(0.208)	(0.373)	(0.349)	(0.264)	(0.541)	(0.406)	(0.318)	(0.368)	(4.851)		
Greece	0.995**	0.001**	—	—	—	—	—	—	—	—	—	—	9.776**	0.056	1,885
	(0.161)	(0.000)											(0.141)		
	0.949**	0.000**	0.053	−0.001	−0.096	−1.320**	−1.199**	0.438*	−0.848*	0.237	0.490	−0.130	9.817**	0.094	1,878
	(0.159)	(0.000)	(0.079)	(0.001)	(0.083)	(0.260)	(0.209)	(0.210)	(0.404)	(0.203)	(0.668)	(0.230)	(2.735)		

(continued)

Table 2 Continued

	Inheritance	Income	Age	Age square	Household size	Single-male household	Single-female household	Tertiary education	Immigrant	Retired	Private pension	Public pension	Constant	Adjusted R2	Number of observations
Switzerland	1.478**	0.004**	—	—	—	—	—	—	—	—	—	—	9.362**	0.118	687
	(0.225)	(0.001)											(0.238)		
	1.113**	0.002**	0.375**	−0.002*	0.387*	−1.048**	−1.347**	0.727	−0.879**	−0.146	−0.160	−0.856**	−3.860	0.205	666
	(0.224)	(0.001)	(0.134)	(0.001)	(0.154)	(0.371)	(0.309)	(0.378)	(0.286)	(0.394)	(0.302)	(0.326)	(4.617)		
Belgium	1.273**	0.001**	—	—	—	—	—	—	—	—	—	—	10.147**	0.105	2,437
	(0.100)	(0.000)											(0.104)		
	1.111**	0.000**	0.175*	−0.001*	0.239**	−0.619**	−0.877**	0.354**	−0.750**	0.241	0.166	−0.570**	4.388	0.158	2,420
	(0.099)	(0.000)	(0.069)	(0.000)	(0.070)	(0.168)	(0.142)	(0.115)	(0.169)	(0.139)	(0.254)	(0.134)	(2.380)		
Israel	1.103**	0.003**	—	—	—	—	—	—	—	—	—	—	8.302**	0.213	1,614
	(0.163)	(0.000)											(0.148)		
	1.034**	0.002**	−0.040	0.001	0.073	−0.531	−0.648**	−0.851**	−0.467**	−0.364	0.683**	−0.493**	9.291*	0.241	1,547
	(0.165)	(0.000)	(0.109)	(0.001)	(0.059)	(0.287)	(0.202)	(0.170)	(0.160)	(0.192)	(0.193)	(0.191)	(3.721)		
Czech Republic	1.486**	0.002**	—	—	—	—	—	—	—	—	—	—	8.122**	0.095	1,888
	(0.191)	(0.000)											(0.163)		
	1.222**	0.001**	0.533**	−0.004**	0.107	−0.705**	−0.950**	0.778**	−0.771**	−0.213	−0.437	−0.626*	−6.555	0.149	1,867
	(0.186)	(0.000)	(0.126)	(0.001)	(0.087)	(0.265)	(0.207)	(0.265)	(0.316)	(0.340)	(0.410)	(0.312)	(4.266)		
Poland	1.351**	0.002**	—	—	—	—	—	—	—	—	—	—	7.384**	0.067	1,734
	(0.261)	(0.000)											(0.183)		
	1.216**	0.001**	−0.136	0.001	−0.009	−0.472	−1.157**	0.686	−1.025*	0.647*	0.828	−0.032	14.174**	0.100	1,729
	(0.259)	(0.000)	(0.125)	(0.001)	(0.054)	(0.337)	(0.250)	(0.359)	(0.490)	(0.271)	(0.910)	(0.278)	(4.215)		
United States	0.977**	0.000**	—	—	—	—	—	—	—	—	—	—	7.649**	0.160	13,136
	(0.095)	(0.000)											(0.061)		
	0.693**	0.000**	0.360**	−0.002**	0.299*	−0.781**	−1.321**	1.088**	−0.841**	0.475**	0.502**	−1.026**	−5.471**	0.236	13,124
	(0.092)	(0.000)	(0.034)	(0.000)	(0.150)	(0.155)	(0.154)	(0.073)	(0.096)	(0.071)	(0.071)	(0.092)	(1.226)		
United Kingdom	0.901**	0.001**	—	—	—	—	—	—	—	—	—	—	8.091**	0.177	6,263
	(0.211)	(0.000)											(0.087)		
	0.801**	0.001**	0.069	−0.000	−0.349**	−1.182**	−0.831**	1.152**	−0.158	0.412**	0.654**	−0.334	6.152*	0.173	4,426
	(0.228)	(0.000)	(0.072)	(0.000)	(0.070)	(0.163)	(0.145)	(0.129)	(0.198)	(0.141)	(0.115)	(0.200)	(2.601)		

Note: Net worth is measured as the logarithm of Net worth according to the formula: $Ln\ [(wealth) + (minimum + 1)]$.

**P < 0.01, *P < 0.05. Income variable coefficients are multiplied by 100.

form as predicted by the model proposed by Modigliani (1988). However, in several countries (i.e. Spain, Italy, Greece, France, Poland, and the United Kingdom), age is not significantly associated with net worth. In all countries, wealth of a single-person household, whether man or woman, tends to be lower than the wealth of a non-single household as evident by the negative and significant coefficient for the variables representing family type. Not surprisingly, the two-adult household is more conducive to accumulating and maintaining wealth. Tertiary education tends to increase wealth significantly in all countries (except for Denmark), and immigrant status is associated with lower wealth holding in almost all countries (except for Austria, Italy, Denmark, and the United Kingdom where the effect is negative, but not statistically significant). The positive effect of high education may be interpreted in several ways. First, highly educated persons are more know-ledgeable about the need to save and may use more effective strategies to save and invest. Second, highly educated people earn more on average during the life course than less-educated people. When taking into consideration that we only have a measure of income at the time of the survey, education may capture some of the long-term income differences.

Immigrant status is associated with lower wealth holding in almost all countries (except for Austria, Denmark, Italy, and the United Kingdom where the effect is negative, but not statistically significant), The negative impact of immigrant status on wealth is consistent with previous studies that demonstrate the greater difficulties faced by immigrants in wealth accu-mulation (e.g. Cob-Clark and Hildebrand, 2006; Hao, 2007; Semyonov and Lewin-Epstein, 2011). Although private pension is positively associated with wealth in most countries, reception of public pension and govern-ment transfers are negatively associated with wealth. This is so because public pensions (and government transfers) substitute for private wealth. The impact of both retirement status and household size on wealth is not consistent and varies across countries.

Determination of Net Worth—Results from Pooled Data Analysis

The findings presented in the previous section lend firm support for the contention that income flows, and intergenerational transfers independently contribute to the accumulation of household wealth. Nevertheless, some cross-country differences in the magnitude of the impact of income and inheritance on accumulated wealth were also observed. Therefore, before examining the extent to which these cross-country differences are systematically associated with structural characteristics of countries and with social policies, we would like to evaluate the ways that net worth is determined on average across the countries included in the study. To do so, we pooled the data for all 16 countries into one data set and estimated a series of Ordinary Least Square (OLS) and multi-level regression equations. The coeffi-cients of these equations enable us to arrive at estimates of the impact of the two major determinants of wealth (i.e. income and inheritance) on household wealth across the countries. The analysis also permits us to partition the variation in net worth into two parts: the portion of the variation attributed to household-level variables and the portion of the variation attributed to country-level variables.

In Table 3, we display coefficients of two regression equations predicting net worth (obtained from the 16 countries pooled data set). In the two equations, net worth is taken as a function of household income and intergenerational transfers, controlling for the variables representing household's characteristics plus a series of dummy variables representing the 16 countries. The equation displayed in column 1 is estimated using OLS regression procedure, and the equation displayed in column 2 is estimated using the Hierarchical Linear Model (HLM) regression procedure. The OLS regression equation is estimated as fixed-effect models while controlling for country differences (i.e. including the dummy variables representing the 16 countries among the independent variables). In the HLM equations, the slopes for inheritance and income were allowed to vary across countries (i.e. random effects).

Results obtained from the OLS regression procedure are virtually identical to the results obtained by the HLM procedure and lead, indeed, to identical conclusions.[5] The equations reveal that most of the variation in house-hold net worth is attributed to household-level attributes. Nevertheless, the incremental contribution of countries to the explained variation in net worth is not trivial and is significant at conventional level of statistical tests. Specifically, the unique contribution of the set of dummy variables representing the 16 countries to the total explained variance in Equation 1 is 3 per cent (of the total 18.6 per cent). Likewise, the country-level variance component resulting from the unconditional HLM equations reaches 5 per cent (i.e. country-level component = 0.51; individual-level component = 10.27). Clearly, some of the variation in wealth holdings is associated with cross-country difference. Later in the analysis, we will explore whether specific characteristics of countries (i.e. characteristics representing economic structure and welfare and taxation policies) are systematically associated with wealth holding and with the ways that wealth is determined across countries.

Table 3 Coefficients (S.E.) Obtained from linear regression equations (OLS and HLM) predicting household net worth by household level variables

Variables	Equation OLS	Equation HLM
Age	0.124*	0.124*
	(0.019)	(0.057)
Age^2	−0.002*	−0.002*
	(0.001)	(0.001)
Household size	−0.035	0.035
	(0.021)	(0.060)
Single male household	−1.131*	−1.133*
	(0.054)	(0.107)
Single female household	−1.489*	−1.490*
	(0.045)	(0.082)
Tertiary education	0.840*	0.840*
	(0.042)	(0.140)
Immigrant	−0.795*	−0.793*
	(0.054)	(0.099)
Retired	0.284*	0.284*
	(0.043)	(0.087)
Private pension	0.675*	0.675*
	(0.044)	(0.074)
Public pension	−0.592*	−0.594*
	(0.048)	(0.185)
Inheritance	1.103*	1.105*
	(0.042)	(0.088)
Non asset income*100	0.027*	0.027*
	(0.001)	(0.003)
Constant	5.598*	11.433*
	(0.672)	(0.182)
R^2	0.186	—
Variance component		
Country-level random effects—u_0	—	0.51241
Household-level effects	—	10.27554

Note: Net worth is measured as the logarithm of Net worth according to the formula: Ln [(wealth) + (minimum + 1)].
**P < 0.01, *P < 0.05.

The findings revealed by the analysis suggest that, on average, net worth across the 16 countries tends to increase with age but at a declining rate (as evident by the positive effect for age and the negative coefficient for age squared). Single-person households (whether single man or single woman) have less accumulated wealth than households composed of multiple persons (the co-efficients for single-female and single-male households are negative and significant in all equations). The positive and significant net effect of tertiary education in all equations suggests that, other things being equal, higher education contributes to accumulation of wealth. We believe that persons with higher education are more

knowledgeable of the economy and through smart investments are more able to convert income into accumulated wealth. Other things being equal, retired persons and those receiving private pension seem to be wealthier than others, whereas those receiving government transfers appear to be poorer than others. Immigration status exerts negative impact on wealth in all equations, providing support for the argument that immigrants experience hardships in the economic system of host societies. Such hardships, in turn, impede immigrants' ability to accumulate the same level of wealth as comparable native born. Somewhat surprisingly, size of household does not influence wealth in any significant way. In sum, thus, the data presented in Table 3, provide additional and firm support to the proposition that across all countries, wealth is determined in part by level of income and through transfer of resources across generations. Net of other household characteristics and the coefficients for income and for inheritance predicting net worth remain positive and highly significant in all equations.

Searching for Cross-Country Variation in Household Wealth

At the outset of the article, we outlined the proposition that cross-country variations in household wealth and the ways that wealth is generated are influenced by characteristics of societies and by their social policies. More specifically, we argued that the accumulation of household wealth can be affected, directly and indirectly, by the country-specific context and the public policies enacted. Subsequently, we expect household wealth to increase with level of economic development (as an indicator of resources available). We also expect the impact of income and of inheritance on accumulated wealth to increase with level of economic development and to be more pronounced in liberal economic systems where government intervention in the economy is limited. By contrast, we expect that a greater allocation of economic resources to the public domain (through welfare-state policies and through taxation of earnings and inheritance) would reduce the impact of inheritance and of income on accumulated wealth. Likewise, we expect that greater accessibility to housing would increase the direct impact of both income and inheritance on wealth.

Following this logic, we selected country-level indicators as proxies of level of economic development, welfare and taxation policies, and accessibility to housing. Level of economic development is measured by gross domestic product (GDP) per capita (a measure traditionally used as an indicator of country's economic resources and

richness); allocation of state resources for the welfare of the public is measured by percentage of the country's GDP that is used for social expenditures; rate of taxation on income and on inheritance are included as two respective measures of taxation policies; accessibility to housing is measured by percentage of home owners and by proportion of persons that pay >40 per cent of earnings to cover mortgage as an indicator of overburden of housing cost. The detailed definition of the six country-level variables, their values, data source, and year for data collection are listed in Appendix Table A3.

The country-level indicators are introduced to HLM regression equations to estimate the extent to which these country characteristics are systematically associated with cross-country variation in wealth holding and with the ways that wealth is determined. Because only 16 countries are included in the analysis, the degrees of freedom at the second level are limited. Subsequently, each of the HLM regression equations predicts net worth as a function of all household characteristics (as first level variables) plus only one country-level characteristic (as a second-level variable) at a time. We allowed the effects of the two main determinants of wealth (i.e. inheritance and income) to vary across countries (i.e. computed as random effects). The estimated regression coefficients for the country-level variables are listed in Table 4. The coefficients for household-level variables are the same as those included in the equations displayed in Table 3. However, to avoid cumbersome and unnecessary repetitions and for the sake of parsimonious presentation, only the coefficients for household income and reception of inheritance are listed in Table 4 as household-level variables.

The findings presented in Table 4 do not support the thesis that variation in household wealth across countries is systematically associated with the characteristics of countries included in this analysis (be it GDP per capita or indicators of welfare state policies or of taxation policy or indicators of housing accessibility). That is, the analysis reveals that the coefficients for all country-level characteristics fall far below the conventional level of statistical significance (as evident by the ratio of the coefficient to its standard error). Consequently, we found no reason to expand the HLM analysis and to present estimated coefficients of the non-robust regression models that include interaction terms between country-level attributes and either income or inheritance. We must conclude, therefore, that variations across countries in household wealth and particularly cross-country variation in the impact of either income or inheritance on net worth are not systematically associated with the country-level characteristics that were included in this analysis.

Notwithstanding the similarity in wealth determination across countries, a sensitivity analysis was conducted to evaluate specific country interactions. To detect country-specific effects on net worth, we re-estimated the OLS regression equations presented previously in Table 3 while adding two respective sets of interaction terms to the set of independent variables (the United States serves as the omitted category, hence, as the base for comparison). The two sets of interaction terms are as follows: the interaction between each of the dummy variables representing country and inheritance and the interaction between country and income. The coefficients for these three interaction terms by country serve as estimated indicators of the relative effect of either inheritance or income on net worth. The detailed results of this analysis are available from the authors on request. This analysis reveals a few notable country-specific differences. Although the impact of inheritance on net worth is similar in magnitude across the countries (as evident by the insignificant interaction terms between the country dummy variable and inheritance), the impact of income on net worth is significantly more pronounced in the United States than in all countries (except for Israel and Denmark.). Both the United States and Israel are immigrant societies, and the United States is considered to be a prototype of a liberal market society that differs from European welfare state regimes. It is possible, that the impact of labor market income on accumulated wealth is considerably more pronounced in immigrant societies and in market economies.

Discussion and Conclusions

The present article provides a comparative examination of determination of accumulated household wealth (among older persons) across 16 countries. The data reveal that in all countries, wealth holding is accumulated through two major avenues: income generated in the labor market and transfers of economic resources across generations. In all societies, without exception, higher income and reception of inheritance are likely to increase wealth holding. The analysis also shows that, on average, wealth tends to increase with age but at a curve-linear declining rate. Although the present study focuses on older populations (≥ 50), the findings are generally consistent with the model proposed by Modigliani (1988) according to which household net worth is likely to increase at earlier age but to decline as persons grow older (when consumption starts exceeding income flows and revenues). Higher education is also associated with greater wealth holding, perhaps, because educated persons are more knowledgeable of economic opportunities and are more able than others to benefit

Table 4 Coefficients (S.E.) obtained from Bi-level HLM regression predicting household net worth by household and country level variables[a]

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Individual-level effects						
Inheritance	1.104*	1.104*	1.105*	1.105*	1.104*	1.104*
	(0.087)	(0.088)	(0.088)	(0.088)	(0.088)	(0.088)
Income *100	0.027*	0.027*	0.027*	0.027*	0.027*	0.027*
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Country-level effects						
GDP*1000	0.001	—	—	—	—	—
	(0.021)					
Social expenditure	—	0.029	—	—	—	—
		(0.045)				
Income tax	—	—	−0.017	—	—	—
			(0.028)			
Inheritance tax	—	—	—	−0.001	—	—
				(0.007)		
Home ownership	—	—	—	—	0.003	—
					(0.012)	
Housing cost overburden rate	—	—	—	—	—	−0.011
						(0.017)
Variance component						
Country-level random effects—u_0	0.54913	0.53242	0.54076	0.54313	0.54781	0.54913
Individual-level effect	10.27554	10.27555	10.27554	10.27554	10.27554	10.27554

Note: Net worth is measured as the logarithm of Net worth according to the formula: Ln [(wealth) + (minimum + 1)].
[a]*Only coefficients for inheritance, income and homeownership measured at the household-level variables are presented in the table. All other coefficients for the household-level variables are not presented in the table; the set of household-level variables that are included in the equations are the same as those included in Table 4.*
**P < 0.01, *P < 0.05. Income variable coefficients are multiplied by 100.

from smart and sound economic investments. Immigrant status, however, is associated with lower level of wealth holding. Apparently, immigrants face difficulties in the economic system of host societies and therefore are less able to build up wealth than comparable native-born populations.

We embarked on this study with the intention of detecting systematic cross-national differences in the ways that income and intergenerational transfers affect wealth determination. We expected income to exert a stronger impact on accumulated wealth in highly developed, rich economies, in liberal-market welfare systems than in poorer countries, social-democratic welfare regimes. We also expected that the effect of income on accumulated wealth would decrease with taxation rate on earnings. Likewise, we expected that the effect of inheritance on accumulated wealth would decrease with taxation rate on inheritance or on property. Curiously, the analysis failed to detect any such systematic cross-national variation. Although the data reveal some cross-country variation in household wealth (with Switzerland having the highest average net

worth per household and Poland having the lowest average household net worth), the analysis could not detect any systematic variations in the ways that wealth is build up and accumulated. Nevertheless and despite these findings, we cannot flatly reject the hypothesis or dismiss the possibility that household net worth can be affected by country-level attributes. It is possible that the similarity in wealth determination observed in the present research can be attributed to the fact that the countries studied do not vary much level of economic development and political structures. This may not be the case if a more representative sample of countries were to be studies.

A growing number of researchers have recently urged students of social stratification and economic inequality to move beyond the study of labor market outcomes and to pay greater attention to the study of wealth and family resources. In the present research, we find more similarities than differences in the ways that wealth is determined in all the countries included in this research. Specifically, in all societies, wealth is accumulated through surplus income and through intergenerational

transfers, and in all societies, home ownership is not only a major component of net worth but also an independent source for wealth built up. These findings shed light on social and economic inequality as a temporal process whereby inequality develops within one's lifetime but is transmitted across generations.

Notes

1   One of the main problems with questions about financial resources is a high rate of the non-responses. To solve this problem, the SHARE, the HRS, and the ELSA teams are using imputations for estimating missing values for non-responding persons (based on persons that share similar characterics and provided the relevant information) to arrive at estimated values of net worth. Although HRS and ELSA teams use single imputation method, SHARE team uses the method of multiple imputations (Rubin, 1987), in which for every missing value, five values are estimated. In the current article, we use the first imputed value for net worth.

2   As our study is based on cross-sectional analysis, we cannot actually determine the process of wealth accumulation and the way it is affected by income and intergenerational transfers. We hope however to establish the relationships among these household attributes and examine the extent to which they cohere with expectations regarding wealth accumulation and the generation of wealth inequality.

3   In the SHARE questionnaire, the question about inheritance was asked regarding the period of 'ever', and this variable maps all households that received inheritance at any time before the interview. In HRS questionnaire, in the first wave, the question about inheritance was asked regarding the period of 'ever', but in all following waves, it refereed to the period of 'last year'. Because we used the information of seventh wave, we trace back in all six previous waves all households in the United States that received inheritance at any time before the interview. Yet, the value of receiving intergenerational transfers for the US population is somewhat underestimated. In ELSA questionnaire, in both the first and the second wave, the question about inheritance was asked regarding 'last year'. Because we used the information of second wave, we get back to the first

wave to map all households that received inheritance in the previous survey (2002). The proportion of households that received inheritance in the United Kingdom, thus, is underestimated (based on only 2 years). Some caution should be exercised, thus, regarding the impact of inheritance on net worth in the United States and the United Kingdom. The effect of the variable inheritance on net worth in the United States and especially in the United Kingdom is underestimated.

4   Some caution should be applied to this finding because income is measured on a detailed ordinal scale while intergenerational transfers are measured using dichotomous variable distinguishing between those received transfers >5,000 Euros versus those who had not received such transfers but not the actual amount of the transfer.

5   Although the coefficients are very similar, standard errors estimated with HLM are larger. This however does not affect the statistical significance.

Funding

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Appendix

Table A1 List of countries, source of data, year data were collected, age range, and number of households included in the national sample

Country	Data source	Year of data collection	Wave	Age range				Sample size
				50–65	65–70	70–80	80+	
Austria	SHARE	2004	1	48.3	20.5	21.7	9.6	1,408
Germany	SHARE	2004	1	52.7	22.3	18.5	6.6	2,000
Sweden	SHARE	2004	1	52.9	16.9	20.0	10.2	2,137
Netherlands	SHARE	2004	1	58.4	15.0	18.6	8.0	1,938
Spain	SHARE	2004	1	46.4	17.5	25.0	11.1	1,742
Italy	SHARE	2004	1	52.5	20.6	21.1	5.8	1,772
Israel	SHARE	2005/6	1	53.1	19.0	20.0	8.0	1,758
France	SHARE	2004/5	1	51.1	15.0	22.6	11.3	2,107
Denmark	SHARE	2004	1	54.8	13.0	21.4	10.8	1,175
Greece	SHARE	2004/5	1	53.0	16.8	19.1	11.2	1,980
Switzerland	SHARE	2004	1	52.2	16.8	21.3	9.7	709
Belgium	SHARE	2004/5	1	51.7	15.6	22.8	9.9	2,518
Czech Republic	SHARE	2006/7	2	54.8	15.6	20.4	9.2	1,940
Poland	SHARE	2006/7	2	55.5	15.2	20.6	8.7	1,765
United States	HRS	2004	7	34.3	24.0	20.9	20.8	13,136
United Kingdom	ELSA	2004	2	45.8	17.6	23.5	13.0	6,276
Total	—	—	—					42,603

Table A2 List of household level variables included in the analysis, definition, and descriptive statistics (Percentage, Mean, SD)

Variables	Definition	Mean (SD) or percentage
Net worth	Household's net worth in Euro, ppp-adjusted: Sum of real and net financial assets.	291210.63 (1003761.17)
Age	Household respondent's age in years	66.76 (10.88)
Type of household:	Single male = 1	14.00
	Single female = 1	29.00
	Omitted category: non single household	57.00
Tertiary education	Household respondent's education level: Tertiary education = 1	19.70
Household size	Number of person in the household	1.89 (0.99)
Immigrant	Main respondent was born outside (survey's) country = 1	9.30
Retired	Main respondent retired = 1	52.00
Private pension recipient	Main respondent receives private pension = 1	26.20
Public transfers recipient	Main respondent receives public pension/government transfers = 1	66.80
Income	Household's non-asset annual income in Euro ppp-adjusted	28818.35 (42472.10)
Inheritance received	Household received inheritance (or bequest) = 1	19.10

Table A3 Country-level variables included in the analysis, definition, source of data, year data were collected and descriptive statistics for 16 countries

Variable	Definition	Source	Year	Mean (SD)
GDP per capita	RGDPL: Real gross domestic product per capita (constant price), unit $	Penn World Table Version 6.2, CICUP	2003	23598.83 (6234.81)
Income tax	Taxes on personal income as a percentage of GDP	OECD	2003	9.71 (5.21)
Death/Inheritance tax rate	Tax rate imposed on estates inherited by spouses and children	ACCF	1999, 2005	19.19 (16.20)
Social expenditures	Social expenditures as a percentage of GDP	OECD	2003	21.99 (4.22)
Homeownership	Per cent privately owned dwellings of total national dwellings	World Bank		62.37 (15.53)
Housing cost overburden rate	Percentage of households that spend 40 per cent and more of the disposable income on owner-occupied property	Eurostat	2009	12.56 (6.75)