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Saving for Old Age

Asli Demirgüç-Kunt
Leora Klapper
Georgios A. Panos

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Abstract

Countries around the world face a retirement crisis brought on by aging populations, declining birthrates, and fiscal shortfalls. As a result, policy makers increasingly seek to understand retirement savings patterns, a crucial component of the safety net for the elderly. Drawing on the 2014 Global Findex database, which provides individual-level data on the use of financial products in more than 140 countries, this paper examines how adults save for old age. It finds that about 25 percent of adults worldwide save for old age, with rates exceeding 35 percent in high-income Organisation for Economic Co-operation and Development economies and the East Asia and Pacific region. On average, men are slightly more likely than women to save for this purpose, but the gender gap is deeper in developing countries. Worldwide, saving for old age is more common among older adults, more educated adults, and adults who own accounts. Adults in countries with English legal origin, and with high savings rates, are also more likely to save for old age. The paper also finds that measures to increase trust in the financial system, such as the safety net/moral hazard index based on deposit insurance, lead to higher rates of saving for old age. Finally, the paper finds little evidence of substitution between pension system provisions and contribution rates with saving for old age.

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The authors may be contacted at lklapper@worldbank.org.

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Asli Demirgüç-Kunt **Leora Klapper** **Georgios A. Panos**

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* Demirgüç-Kunt, World Bank, Ademirguckunt@worldbank.org; Klapper, World Bank, lklapper@worldbank.org; Panos, Adam Smith Business School, University of Glasgow, Georgios.Panos@glasgow.ac.uk. We thank Saniya Ansar, Ehui Adovor and Christiana Sintou for excellent research assistance and participants at the 2015 Symposium by the Pension Research Council on Implications of the New Regulatory Order for Retirement System Risk Management for valuable comments.

1. Introduction

Programs catering to the financial well-being of the elderly are coming under strain across the world. The depletion of public coffers during the financial crisis has left governments struggling to cope with rising retirement costs triggered by aging populations, low birth rates, and weakened informal safety nets (Ellis, et al., 2014). That this crisis threatens both the elderly and the young is well-established; it also endangers future generations, who will shoulder a disproportionate share of the costs of caring for older generations directly or indirectly (Gratton, 1996; Fridson, 2015).

Despite rising interest in the safety net for elderly people, there is very limited information on both formal and informal voluntary saving for old age. Drawing on novel microeconomic data, this paper offers a detailed descriptive analysis of saving for old age around the world and across geographic regions. It also features an empirical analysis of the determinants of saving for old age, using detailed individual characteristics, macroeconomic characteristics at the country level, and country pension-system characteristics. To our knowledge this is the first study examining saving for old age around the world using detailed global micro-data.

The 2014 Global Findex data show how and why adults save and borrow and shed light on their financial resilience to unexpected expenses (Demirgüç-Kunt, et al., 2015). In 2014, 56% of adults around the world reported having saved money in the past 12 months. Adults in high-income OECD economies and East Asia and the Pacific were the most likely to have done so, with 71% reporting that they had saved, followed by 60% of adults in Sub-Saharan Africa. In other regions the figure stands between 30% and 40%. The 2014 Global Findex survey also asked about three specific reasons for saving. While marked differences emerge across regions, almost 25% of adults worldwide reported having saved in the past year for old age. A similar share reported saving for education expenses, while 14% reported saving to start, expand, or operate a business.

The percentage of adults saving for old age varies considerably across economies: 39.7% in high-income OECD countries (hereafter $OECD^{HI}$); 36.6% in East Asia & Pacific (hereafter EAP); 11.8% in Europe & Central Asia (hereafter ECA); 10.6% in Latin

America & Caribbean (hereafter LAC); 9.8% in Sub-Saharan Africa (9.8%); 9.1% in South Asia; and 7.0% in the Middle East & North Africa (hereafter MENA).

Our findings show a small gender gap in saving for old age, which is larger in developing countries, as well as large differences based on education and employment status. All regions other than EAP exhibit patterns of higher savings for old age among those with higher education. In every region, employed adults are far more likely to save for old age than unemployed adults, with the only exception of South Asia. In terms of the age distribution, saving for old age experiences a sharp rise in the 36-45 age group, with delayed occurrence taking place in LAC, MENA, South Asia and Sub-Saharan Africa. Large income disparities are also evident, with the richest centile being much more likely to save for old age, and the bottom centile far less likely.

Adults who have an account at a financial institution or a mobile money account are about 53%-64% more likely to save for old age than adults who lack an account. Furthermore, our empirical estimates find a strong significant relationship between saving for old age and a country's generic saving propensity, legal origin and education. Residents of countries with English legal origin more likely to save for old age, with an effect in the magnitude of 15%-28% compared to countries with French legal origin. Residents of countries with higher generic savings rates are much more likely to save for old age, echoing the arguments in Chen (2013) in favor of a strong cultural component shaping the propensity to save. Moreover, there is a strong positive relationship with GDP per capita, while GDP per capita growth and interest rates have insignificant effects. In addition, there is evidence in favor of institutional arrangements enabling greater trust in the financial system, in terms of the safety net/moral hazard index based on deposit insurance (Demirguc-Kunt, et al., 2014), being conducive to increasing rates of savings for old age.

Finally, the results of our empirical analysis show a moderate negative relationship with pension coverage of population over 60, and insignificant relationships with other pension-system characteristics, such as benefits, cost of pension spending, age of eligibility, contribution rates and ratios. It is also the case that a higher housing affordability index is positively related to saving for old age in ECA, LAC and MENA. We interpret the latter sets of findings as in line with Poterba et al. (1995) suggesting little substitution between

pension system provisions and contribution rates (and other forms of financial saving in the case of housing affordability) and saving for old age.

The paper proceeds as follows: Section 2 reviews the existing literature. Section 3 describes the data and presents the descriptive statistics for saving for old age around the world. Section 4 presents the empirical analysis of saving for old age, in terms of empirical strategy and estimation results with sets of individual, macroeconomic and pension-system characteristics. Section 5 concludes.

2. Review of existing literature

Research has long shown that retirees suffer from a variety of economic hardships, even in developed economies that enjoy relatively strong pension systems. In their study of the United States, Bernheim, et al. (2001) show that consumption drops rapidly at the time of retirement, and decreases even more post-retirement. Using UK data, Bardasi et al. (2000) report that on average, economic well-being declines sharply in the years preceding retirement, and continues to do so through retirement and the years following it,[1] with women facing a swifter decline than men. Among adults in Germany, satisfaction with current household income decreases substantially upon retirement, while satisfaction with free time increases, according to Bonsang and Klein (2011). Retirement has an overall negative effect on life satisfaction, with larger effects for involuntary retirement, and insignificant effects for voluntary retirement.

High levels of poverty among the elderly compound the negative economic consequences of a retirement crisis. In the US, Clark and Quinn (1999) report that the elderly remain disproportionally represented among the near poor and certain older Americans still face substantial risk of economic deprivation, even though their average economic well-being has significantly improved compared to older generations (also see Sabelhaus and Manchester, 1995). Crystal and Shea (1990) also show that resources among the elderly are distributed even more unequally than among the rest of the population.

[1] For evidence against the negative impact of retirement on well-being, see e.g. Kerwin (2002).

A number of studies have examined post-recession policy responses to these challenges. Galasso (2008) runs simulations based on the political determinants of social security contribution rates and retirement ages, and concludes that the retirement age is likely to increase in each country, regardless of political constraints. However, according to Andersen (2008), indexing benefits and retirement ages to longevity does not ensure financial viability of the social security system. Recognizing this, Poterba (2014) suggests that individuals bear a larger share of the responsibility for determining their retirement security.[2]

According to Papke (2003), allowing participants a choice of investment options may increase their retirement savings. However, Lusardi (2003) reports that little is known about how households make saving plans and how they collect information to make savings decisions. A survey of households by the Board of Governors of the Board of Governors of the Federal Reserve System (2014) found that almost half of respondents have given little or no thought to retirement savings. Among those who have, many either do not plan to retire, expect to keep working into retirement to pay for expenses, or do not know how they will pay for their retirement.[3] Nearly a third had no retirement savings or pension. These retirement planning challenges were exacerbated by the recession, which resulted in many respondents delaying their planned retirement.[4]

One way firms have responded is by shifting from defined benefit pensions to defined contribution pensions, where employees have to decide how much money to put into their retirement funds and how to allocate their pension wealth. However, such plans do not go without criticism, taking into account insights on cognitive limitations from the behavioral economics and finance literature.[5] For instance, Banks and Oldfield (2007) report that the

[2] The author reviews how designing public policy toward retirement security must recognize both the heterogeneity among households saving for retirement, as well as the multiple policy objectives that are served by various policy instruments.

[3] In similar veil, the Future of Retirement report by HSBC (2013), which surveyed 1,050 respondents in the UK and more than 16,000 people across 15 countries, revealed that almost two-fifths of retired respondents in the UK (39%) said that they had not prepared adequately or at all for a comfortable retirement.

[4] Moreover, it was found that one-third of respondents said that they had foregone some form of medical treatment in the preceding year due to the treatment's expected cost. Not surprisingly, the decision not to seek treatment was more common for those without savings, those indicating that they were struggling with their finances, or those without insurance.

[5] For a detailed investigation on the heuristics and the biases that emerge in the area of retirement savings, see e.g. Benartzi and Thaler (2007). Other studies on retirement planning strategies involving relevant considerations include: Ameriks and Zeldes (2004), and Brown (2007).

elderly suffer from greater cognitive, gender and education gaps than other groups. As a result, they are less likely to have a savings account, own shares in a company, or have private pensions. Lusardi and Mitchell (2011; 2014) report that financial literacy is a significant determinant of retirement planning for all age groups, with elderly people suffering from high levels of financial illiteracy.

Recent research by Chen (2013) identifies a cultural component in saving and retirement planning behavior, finding that speakers of languages which grammatically associate the future and the present save more and retire with more wealth. In addition, Duflo and Saez (2002) find evidence of peer effects in retirement plan participation decisions. Duflo and Saez (2003) present quasi-experimental evidence that an individual's decision about how much to save for retirement is affected by small changes in their environment and that network effects impact participation decisions. Instead of education, Benartzi and Thaler (2007) propose a method of influencing decisions about retirement saving plans based on the principles of "automatic enrollment". This involves changes in plan design, sensible default options, and opportunities to increase savings rates and rebalance portfolios automatically. Such design features help less sophisticated investors while maintaining flexibility for more knowledgeable participants.

Recent evidence suggests that financial security for the elderly and economic growth are best served when governments adopt three pillars of old age security:[6] (i) a publicly managed pension system with mandatory participation and the limited goal of reducing poverty among the elderly; (ii) a privately managed mandatory savings system; and (iii) voluntary savings. The first pillar caters to redistribution, the second and third cover savings, and all three co-insure against the many risks of old age.[7] Spreading the insurance function across all three pillars creates greater income security for the old, and provides greater insurance than any single system. Valdés-Prieto (2002a; b) reviews the potential costs and benefits of "third-pillar" prograss, defined as those that use incentives to promote voluntary saving for old age. Among the benefits of voluntary saving are the relative ease of accessing and mobilizing funds and the prevention of potential labor market

[6] See Holzmann (2012) and Pallares-Miralles et al. (2012) for reviews of international pension systems.
[7] The rationale is that by separating the redistributive function from the savings function, the public pillar, as well as the size of the payroll tax needed to support it, can be kept relatively small, thus avoiding many of the growth-inhibiting problems associated with a dominant public pillar (World Bank, 1994).

distortions. However, voluntary savings programs are also likely to incur social costs, particularly when they involve fiscal incentives.[8]

To develop measures to improve the financial well-being of the elderly and incorporate an element of self-control in retirement planning, policy makers must first understand worldwide retirement savings patterns. In the next sections, we evaluate these patterns using a binary measure of saving for old age, which capture whether an individual has saved for old age during the last year. Data limitations prevent us from measuring the volume of savings for old age. However, examining savings behavior can reveal a more complete picture of consumer characteristics and inform policy design.

3. Who saves for old age?

3.1 The data

We use data from the Global Findex database, which provides in-depth data showing how people save, borrow, make payments, and manage risk.[9] It is the world's most comprehensive set of data providing consistent measures of people's use of financial services across economies and over time. The data were collected in partnership with Gallup, Inc. and with funding from the Bill & Melinda Gates Foundation. The survey was carried out over the 2014 calendar year as part of the Gallup World Poll, which since 2005 has continually conducted surveys of approximately 1,000 people in each of more than 160

[8] Such incentives involve tax exemptions and subsidies. These might require changes in fiscal policy that can be socially costly because they increase distortions. Moreover, such schemes might suffer from limited or lower coverage as well as volume of savings, particularly among the poor, compared to the remaining pillars. Valdés-Prieto (2002a) suggests that most third-pillar fiscal incentives are regressive because the incentives are taken up mostly by higher-income workers while the increase in general tax rates fall to some degree upon middle- and lower-income workers. There is already a rich literature on the effects of social security incentives and provisions on labor market distortions (e.g. Gruber and Wise, 1998; 2002; Coile, 2015), on the strong connections between subjective retirement expectations and future work behavior (e.g. Chan and Stevens, 2004), on the role of financial incentives on retirement choices (e.g. Kingston, 2000; Belloni and Alessie, 2009), and the role of fluctuations on the business cycle, financial markets and the housing market on retirement choices (e.g. Crawford and Lilien, 1981; Coile and Levine, 2010).

[9] The complete country-level database is available at: http://datatopics.worldbank.org/financialinclusion/

economies and in over 140 languages, using randomly selected, nationally representative samples.[10]

3.2 Descriptive statistics

We employ a representative sample of 143 economies and 147,692 individuals, aged 18 and older.[11] We use a binary variable (0/1) of responses to the question: "*In the past 12 months, have you saved for old age?*" Figure 1 shows the percentage of adults who saved any money for old age during the last year by regional classification and Appendix Figure A1 presents a global map.[12] The weighted global figure for saving for old age around the world is 24.8%. The top performers are Thailand, in which 59.2% of the population saves for old age, Germany (55.1%), Malaysia (54.0%), Canada (51.7%), and New Zealand (51.5%). The bottom performers in terms of saving for old age are Niger (0.9%), Georgia (0.9%), the Republic of Yemen (1.4%), Jordan (1.9%), and Armenia (2.1%). The top performing region is OECD^{HI}, though an interesting outlier is Greece amidst the debt-crisis, with 9.3% of the population saving for old age.

The bars in Figure 1 further distinguish between saving for old age and financial inclusion status, in terms of having an account at a bank or formal financial institution. It can be seen that 84.7% of the individuals who save for old age around the world are financially included, with the remaining 15.3% being financially excluded. The low figures in certain regions such as ECA and MENA could be indicative of the usage of alternative means of

[10] The survey is conducted in the major languages of each country. The target population is the entire civilian, non-institutionalized population aged 15 and above. Data weighting is used to ensure a nationally representative sample for each economy. Final weights consist of the base sampling weight, which corrects for unequal probability of selection based on household size, and the poststratification weight, which corrects for sampling and nonresponse error. Poststratification weights use country-level population statistics on gender and age and, where reliable data are available, education or socioeconomic status. In some large economies, such as China and the Russian Federation, sample sizes of at least 4,000 are collected. Detailed country-level information about the data collection dates, sample sizes, excluded populations, and margins of error can be found at http://go.worldbank.org/IGRTPHK660

[11] We do not exclude from the sample individuals older than 65 years old, following the evidence in Alessie et al. (1999), who find only some evidence of decumulation among the elderly, but only at an advanced age. The authors find that precautionary savings, bequest motives, and health are among the reasons why some elderly do not decumulate in the pattern predicted by the life-cycle model.

[12] All summary statistics are weighted country averages.

saving for old age, such as livestock, gold, and stuffing money under the mattress. It could also be indicative of less liquid means of saving for old age, like home ownership.

Figure 2 presents the gender distribution of saving for old age around the world and by region. The global gender gap in terms of saving for old age is in the magnitude of 2.5 percentage points (10.5%), with 26% of males saving for old age, versus 23.5% of females, globally. Notably, this is lower than the 9 percentage point gap in account ownership around the world. The gap is largest in South Asia, and smallest in EAP, which also has the highest absolute savings rates for old age.

Figure 3 then presents the educational gaps in terms of saving for old age. The global education gap is wider between tertiary and secondary education, compared to the respective gap between secondary and primary education (or less). Specifically, 37.9% of individuals with tertiary education save for retirement, compared to 27% of individuals with secondary education and 22.2% of individuals with primary education or less. The savings-for-old-age gap seems to be much wider between the tertiary and secondary education groups, compared to the gap between secondary and primary education or less. The pattern is remarkably strong in LAC, in which 25.3% of individuals with tertiary education save for old age, compared to 11.9% and 8.6% of individuals with secondary and primary education or less, respectively. The exception in this pattern is EAP.

Figure 4 presents the age distribution of saving for old age around the world. The distinction is between six groups, namely those aged 18-25, 26-35, 36-45, 46-55, 56-65 and 65+, respectively. The global age distribution of saving for old age in the 2014 Global Findex data suggests that 10.1% of individuals aged 18-25 save for old age. The figure for those aged 26-35 rises to 21% and to 31% for those aged 36-45. 33.3% of the group aged 46-55 save for old age and so do another 36.9% of the 56-65 group. The figure for those aged 65+ is close to that for the 56-65 group at 36.5%. In EAP, a near doubling of the proportion of people saving for old age arises at age 26-35, at 31.9% compared to 16.3% at age 18-25. In comparison, in ECA, the tiny figure of 3.6% at age 18-25 rises at 6.2% at age 26-35 and 8.2% at 36-45. A rather major rise to 14.2% of the population occurs at age 45-55, with a further 20.8% of the age group 56-65 saving for old age. The figure is the

highest for the 65+ group, at 29.6%, indicating that saving for old age peaks at a late age in ECA.

In $OECD^{HI}$, the major rise in the proportion of the population that saves for old age happens at age 26-35. Specifically, in $OECD^{HI}$ countries, 21% of the population saves for old age, rising sharply to a 39.6% at age 26-35, and a further 48.2% at age 36-45. The figures remain at 45.6% and 48% at age groups 46-55 and 56-65, respectively. The figure for the 65+ age group is 40%. Notably, in comparison, the figures in the remaining four groups of countries − LAC, MENA, South Asia and Sub-Saharan Africa − are strikingly low and without any major rises occurring across the early age groups.

Departing from the age distribution of saving for old age, Figure 5 presents the figures by marital and family status, globally and for the regions of interest. 12.6% of the singles around the world save for old age, compared to 29.3% of the married and 25.9% of the widowed/divorced/separated. Concerning family status, 21.2% of the individuals with children younger than 15 save for old age, compared to 29.7% of individuals with no children younger than 15. The pattern of the married group being more likely to save for old age prevails in all regions.

Figure 6 presents the distribution of saving for old age by real (PPP-divided) household income per capita centile. The centiles presented in Figure 6 are for the global distribution of household-income-per-capita (not by country). Expectedly, the income distribution of saving shows considerable inequality in the degree of financial preparedness for old age. Globally, 9.7% of individuals in the bottom income centile save for old age, compared to 14.4% in the 2^{nd} centile, 28.3% in the 3^{rd} income centile, 35.3% in the 4^{th} centile and 43.9% on the top income centile. In $OECD^{HI}$ countries, massive rises in saving for old age occur at the 4^{th} and 5^{th} income centile. The figures for EAP and ECA also show considerable rises in saving for old age after the 3rd income centile. However, income inequality appears to have the most significant impact on saving for old age in LAC and MENA, with low rates of saving for old age in the first four income centiles and massive rises occurring at the top income centile.

Figure 7 depicts fitted lines from 5th order local polynomial regressions of saving for old age on log (GDP per capita)[13] in Panel A and household income per capita percentile (by country) in Panel B. The figure in Panel A indicates a positive and mildly concave relationship between real GDP-per-capita levels of USD $400 and $3,000, corresponding to rates of saving for old age between 8% and 17%, respectively. The relationship then becomes steeply convex, with the maximum occurring at real GDP per capita levels of around 50,000 and rates of saving for old age just under 50 percent. The rates of saving for old age then drop for figures greater than 50,000 to figures between 40 and 48 percent. In comparison, Panel B depicts a more or less linear relationship between saving for old age and household income per capita percentile by country. The rates of saving for old age are around 13% at the bottom household-income-per-capita percentile, to around 30% at the 97th percentile.

Finally, Figure 8 presents the distribution of saving for old age across different labor market groups—self-employed, wage employed, out of workforce, and the unemployed. We find striking differences between employed adults versus adults out of the workforce. The weighted global figures for saving for old age by labor market status are 33% for those in paid employment, 27.4% for the self-employed, 17.1% for those out of workforce, and 11.2% for the unemployed.

4. Empirical analysis

4.1 Empirical strategy

Our empirical strategy entails three stages. In the first stage, we regress saving for old age on a rich set of individual characteristics. These include: gender, urban/rural region of residence, age [6 groups], education [3 groups], marital status [3 groups], having financially dependent children, household income per capita centile (by country), and labor market status [4 groups]. In the primary specifications we incorporate region fixed effects

[13] Data on real GDP per capita, PPP (constant 2011 international dollars) are from the World Development Indicators.

[7 groups], while we also estimate specifications with country fixed effects for robustness (143 groups).[14]

In additional specifications, we also include control variables for financial inclusion (having ownership of an account at a bank or formal financial institution), having an outstanding housing loan (as a proxy for home ownership), and generic savings by country (having any savings during the last year, as a proxy for cultural factors shaping the propensity to save). In additional regressions, we also estimate multinomial models of saving for old age by financial inclusion status, and type of savings (formal versus informal/semi-formal[15]).

Next, we estimate regressions that incorporate country-level macroeconomic characteristics to our baseline specifications. From the World Development Indicators, we include control variables for: the logarithm of life expectancy, the logarithm of per capita GDP (2011 PPP-constant levels), GDP per capita growth, the real interest rate (e.g. James and Song, 2001), and the WDI legal rights index. In additional specifications, we also include control variables for legal origin (La Porta, et al. 2008), the housing-affordability index (as a proxy for potential home ownership[16]) and indicators for explicit deposit insurance and the safety net/moral hazard index (Demirgüç-Kunt, et al. 2014).

Finally, in the third stage of our analysis we incorporate control variables accounting for country pension-system characteristics, in addition to the baseline individual and macroeconomic variables. We utilize two sources of data capturing country pension systems. Specifically, we incorporate the following variables from the Pension Watch/HelpAge's Social Pensions Database (2014):[17] (i) the logarithm of the benefit (in PPP international dollars), (ii) the benefit as a percentage of GDP per capita, and (iii) the benefit as a percentage of the $1.25 a day poverty line. In addition, we incorporate variables

[14] Out of the total 146 countries in the Global Findex 2014 data, the following countries are excluded from these specifications due to missing data on saving for old age: Liberia, Paraguay and South Sudan.
[15] Across the developing world, only about 4% of adults − 160 million people − are unbanked but save by using a savings club or a person outside the family. But in Sub-Saharan Africa the share is three times that size. On average in the region's economies, 13% of adults are unbanked and save semi-formally (Demirgüç-Kunt, et al., 2015).
[16] The housing affordability index is from Numbeo (2015). The data and description are available at: http://www.numbeo.com/property-investment/rankings_by_country.jsp?title=2014.
[17] The data and detailed description are available at: http://www.pension-watch.net/pensions/about-social-pensions/about-social-pensions/social-pensions-database/.

capturing (iv) the percentage of the population over 60 covered by pension schemes, (v) the cost of pension spending as a percentage of the country's GDP, (vi) the logarithm of the age of eligibility, (vii) the percentage contribution rate and (viii) the ratio of employer/employee contribution from the World Bank Pensions database (2014).[18]

4.2 Results and analysis

Table 1 presents descriptive statistics for the main variables in the analysis of saving for old age around the world. Column 1 present weighted averages for the pooled sample of all countries (147,692 individuals), while Column 2 and Column 3 present averages for individuals who save for old age (24.8% of the weighted sample from 30,395 individuals) and those who do not (75.2% of the weighted sample, from 117, 297 individuals), respectively.[19] Column 4 also presents the mean difference and asterisks for the level of significance from a test of difference in the means of the variables between the two samples.

The comparison of the figures between individuals who save for old age around the world and those who do not in Columns 2-4 suggests that individuals who save for old age are more likely to be males, residing in an urban region, more likely to have tertiary or secondary education, less likely to have primary education or less, more likely to be in the older age groups and less likely to be in the age range 18-25, less likely to be single or never married, and less likely to have children aged under 15. They are more likely to be in the top three income centiles by country, and less likely to be in the bottom two or the missing income centile. Those who save for old age are more likely to be employed, and less likely to be self-employed, unemployed or inactive.

Savers for old age are more likely to be financially included, and to have an outstanding mortgage. They are more likely to reside in countries with higher generic-savings rates and in countries with higher GDP per capita. They reside in countries with lower GDP per

[18] The data and description are described by Pallares-Miralles et al. (2012) and are available at: http://www.worldbank.org/en/topic/socialprotectionlabor/brief/pensions-data.

[19] For completeness, Table A1 in the Appendix presents descriptive statistics for the main variables in the analysis by country group, for each of the eight country groups in our classification. Then, Table A2 in the Appendix presents the weighted pairwise correlation matrix for the main variables in our analysis.

capita growth rates, higher legal rights index, and lower real interest rates. Savers for old age are less likely to be found in countries with French legal origin, and more likely to be found in countries with English, German or other legal origin. In countries which offer some explicit deposit insurance scheme, residents are more likely to save for old age, and so do individuals in countries with a higher safety net/moral hazard index.

Savers for old age are also more likely to be found in countries with higher life expectancy and higher age of eligibility. In addition, they are more likely to be residents of countries with higher benefits, higher coverage and higher pension cost. Finally, they are more likely to be residents of countries with higher contribution rates and lower employer/employee contribution ratio.

Table 2 presents estimates for the determinants of savings for old age around the world. The list of explanatory variables incorporates individual characteristics. All regressions show marginal effects from probit regressions, with robust standard errors in brackets, clustered at the country level (with the exception of Column 5 in which control variables for all 143 countries in the sample are incorporated). Estimates are weighted using country-level weights.

Estimation results reveal a gender gap in savings for old age in the magnitude of 3.2%, based on the predicted probability of the model and the specification with the full set of control variables (Column 4). The magnitude of the gap remains similar when incorporating country fixed effects in Column 5. The difference between urban and rural regions in saving for old age is insignificant in all specifications, with the exception of Column 5, in which residents of urban regions are 2.6% less likely to save for old age. The results also reveal a significant education gap in saving for old age. Individuals with tertiary education are 19% more likely to save for old age, compared to individuals with primary education or less. Moreover, individuals with secondary education are roughly 11.1% more likely to save for old age compared to those with primary education or less.

Table 2 also shows large age differentials. For example, in Column 4, individuals older than 65 are 86.2% more likely to save for old age, compared to those aged 18-25. With the latter groups as reference, the magnitudes of the effects are 77.2% for those aged 56-65, 53.4% for those aged 46-55, 41.8% for those aged 36-45, and 20.1% for individuals aged

26-35. Married individuals are roughly 13.2% more likely to save for old age, while those having children under the age of 15 are somewhat more likely to save for old age (4.8%).

Moreover, individuals in the top income centile (5th) by country are 22.7% more likely to save for old age, compared to those in the income 3rd centile. Individuals in the 4th income centile are 10.6% more likely to save for old age, compared to individuals in the 3rd. Individuals in the 2nd and bottom (1st) income centile are 12.2% and 22.2% less likely to save for old age, compared to those in the 3rd income centile.[20]

With respect to occupational groups, self-employed individuals are 24.3% more likely to save for old age compared to the inactive group. Individuals in paid employment are about 31.2% more likely to save for old age, while the unemployed are roughly 9% less likely to save for old age compared to the inactive.

The financially included individuals around the world are about 53.4% more likely to save for old age, while individuals who have an outstanding mortgage are roughly 23.3% more likely to do so. Hence, having a mortgage for home ownership, as an alternative means of old-age security, does not appear to discourage saving for old age at the global sample.[21]

Country-specific generic savings rates have a very large effect on the probability for an individual to save for old age, in favor of the importance of cultural factors in affecting the likelihood of an individual to cater to future events (Chen, 2013). The magnitudes of the estimates when incorporating country-specific fixed effects (excluding the country-specific generic savings variable) do not differ substantially.[22]

Table 3 presents estimates from multinomial probit models for savings for old age, distinguishing by the individual state of financial inclusion, and the type of savings: formal versus informal. The results in Columns A1-A3 report marginal effects for individuals who: (i) save for old age and have an account at a bank or another financial institution, (ii)

[20] It is worth noting that the magnitude of the effects with respect to the income variables does not differ much when overall equivalized household income centiles are used, instead of centiles by country (results available upon request).
[21] Indeed there is limited empirical evidence in favor of downsizing housing adjustments upon retirement, e.g. Ermisch and Jenkins (1999).
[22] This is also the case when individuals older than 65 years old are excluded from the sample and the analysis (the results are available upon request).

save for old age but do not have an account at a formal financial institution, *i.e.* save in some other way, such as gold, other assets, or in the home; and (iii) do not save for old age.

The results confirm that financially-included males are 4.4% more likely to save for old age, while there are no significant differences between males and females among the financially excluded. Urban residents are 3.8% more likely to save for old age and be financially included and 16.5% less likely to do so and be financially excluded. Individuals with tertiary education are 28.4% more likely to save for old age and be financially included and those with secondary education are about 42.9% more likely, compared to individuals with primary education or less. In contrast, the group with primary education or less is the one most likely to save for old age and be financially excluded.

Older individuals are monotonically more likely to save for old age and be financially included. In contrast, saving for old age while being financially excluded prevails significantly at ages greater than 46. Hence, the younger are less likely to save for old age and be financially excluded. Married individuals are about 17% more likely to save and be financially included, compared to singles. Widowed/divorced/separated individuals are 13.2% more likely to save and be financially excluded.

Columns B4-B6 report estimates for individuals who: (i) save for old age and have saved in the past 12 months using an account at a formal financial institutions, (ii) save for old age and have saved in the past 12 months informally or semi-formally, using an informal savings club or person outside the family (without saving at a formal financial institution), and (ii) do not save for old age, respectively. The results indicate that males are 4.5% more likely to save for old age formally. The widowed/divorced/separated and those with children aged under 15 are more likely to save for old age informally and semi-formally, with the magnitude of the effects being 19.4% and 14.6% respectively. Individuals with missing income information are the income group most likely to save for old age informally and less likely to do so using an account at a formal financial institution.

Table 4 presents estimates that incorporate macroeconomic country-level variables to the specification of Column 3 of Table 2. The results indicate that individuals in countries with English legal origin are between 15.7% and 27.7% more likely to save for old age, compared to regions with French legal origin. GDP per capita exerts a positive impact on

the probability to save for old age, with a one standard deviation increase exerting an impact of a magnitude around 22.1-24.6%. All remaining macroeconomic variables have insignificant impacts on saving for old age for the pooled group of countries, with the notable exception of the safety net/moral hazard index, which exhibits a positive impact on the probability to save for old age, with a one standard deviation increase exerting an impact in the magnitude of 3.7%, significant at the 10% level. We interpret this last result as supportive of the view that the institutional environment that enables greater trust in the financial system is also likely to encourage saving for old age.

Table 5 incorporates country pension-system characteristics to the specification of Column 7 of Table 4. The results show that more generous pension schemes, in terms of benefits, pension costs or age of eligibility, are generally insignificantly (and negatively) correlated with saving for old age. The percentage of the population over 60 that is covered by a pension scheme in negatively related to saving for old age. The effect is in the magnitude of -18.1% for a standard deviation increase in coverage and is significant at the 10% level. However, percentage contribution rates and higher employer/employee contribution ratio are both insignificantly positively related to the probability of saving for old age. Altogether, we interpret the results as in accordance with Poterba et al. (1995) suggesting little substitution between regular retirement savings and other forms of conventional financial saving.

Given the likelihood that that heterogeneous effects of the main variables are likely to prevail in different country groups, Table 6 presents estimates for the determinants of saving for old age around the world, by region. Notable findings include that greater life expectancy exerts a positive impact on the probability of saving for old age in $OECD^{HI}$, LAC and EAP. The impact is much higher in $OECD^{HI}$ and EAP, while it is negative in SSA, ECA, and MENA. Higher GDP per capita and higher per capita growth both exert positive impacts on saving for old age in MENA, while the impact is insignificant in $OECD^{HI}$ and LAC countries, and mixed in the remaining regions. A higher legal-rights index exerts a positive impact on saving for old age in EAP, $OECD^{HI}$, LAC, MENA and South Asia. Higher real interest rates exert a a significant negative impact on saving for old age on EAP, ECA, MENA and South Asia. A greater housing affordability index is positively related to saving for old age in ECA, LAC and MENA.

Table 7 presents two additional sets of estimates for the determinants of savings for old age around the world, by region. The results indicate that the moral hazard/safety net index based on deposit insurance schemes is positively related to saving for old age in $OECD^{HI}$, LAC and SSA. Moreover, higher benefits, the cost of pension spending as a percentage of GDP, and the coverage of the population aged over 60 are only negatively related to saving for old age in EAP countries. The age of eligibility is negatively related to saving for old age in ECA. Contribution rates are only negatively related to saving for old age in SSA. However, higher employer/employee contribution ratios exert a negative impact on saving for old age in EAP and South Asia. In contrast, their impact is positive in EXA and LAC. Hence, the results largely confirm the view of limited substitutability between regular retirement savings and other forms of conventional financial saving. There is heterogeneity on the relationship between the generosity of pension schemes and saving for old age across regions.

5. Conclusions

A looming worldwide retirement crisis has policy makers scrambling to understand how adults financially prepare for old age. We provide the first detailed global inquiry into patterns of saving for old age around the world and across country groups, based on detailed micro-data. We find 24.8% of individuals around the world save for old age, with large regional discrepancies of rates above 35% in $OECD^{HI}$ and EAP, 11.8% in ECA, 10.6% LAC, and rates below 10% in Sub-Saharan Africa, South Asia and MENA. Our findings show a small overall gender gap in saving for old age, which is larger in developing countries. All regions exhibit patterns of higher saving for old age among those with higher education, with EAP standing out as the sole exception. In every region except South Asia, employed adults are more likely to save for old age than unemployed adults. Saving for old age also experiences a sharp rise in the 36-45 age group. Our findings also reveal large income disparities. Adults in the top income centiles are far more likely to save for old age, while those in the bottom centiles are much less likely to save for old age. Adults who have an account at a bank or a financial institution are about 53%-63% more likely to save for old age.

We also find on the country-level significant and positive relationship between saving for old age and a country's generic saving propensity, English legal origin and GDP per capita. We find evidence in favor of institutional arrangements enabling greater trust in the financial system, in terms of the safety net/moral hazard index based on deposit insurance being conducive to increasing rates of savings for old age. Finally, the results show a significantly negative relationship with pension coverage of the population aged over 60, and insignificant relationships the size of contributions, and contribution ratios. However, there is heterogeneity in the impact of pension systems across regions, with the EAP region showing greater substitutability between pension features and saving for old age. It is also the case that a higher housing affordability index is positively related to saving for old age in the majority of regions. We interpret the latter sets of findings as in line with arguments suggesting little substitution between pension system provisions and contribution rates, other forms of financial saving, and saving for old age.

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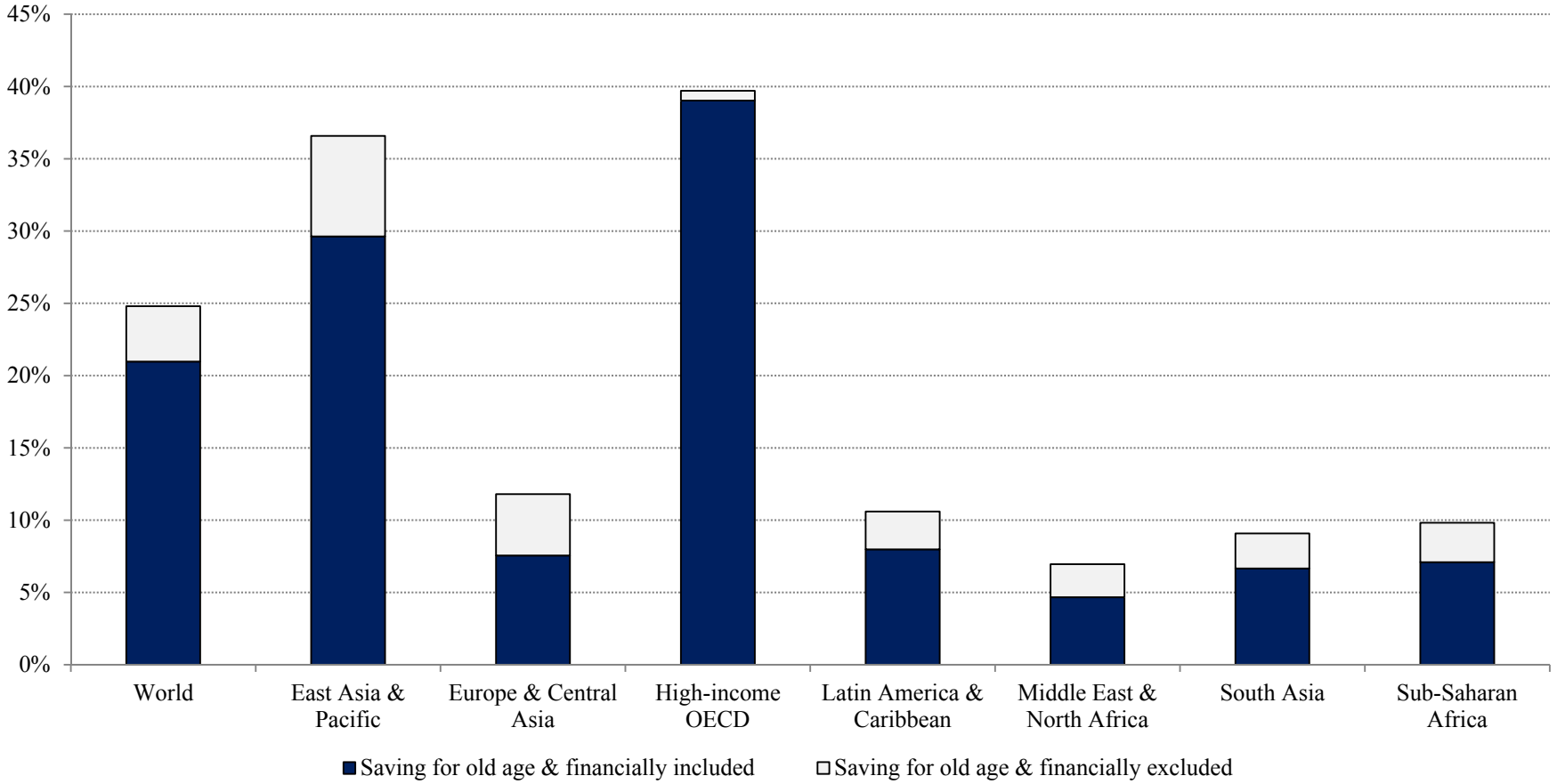
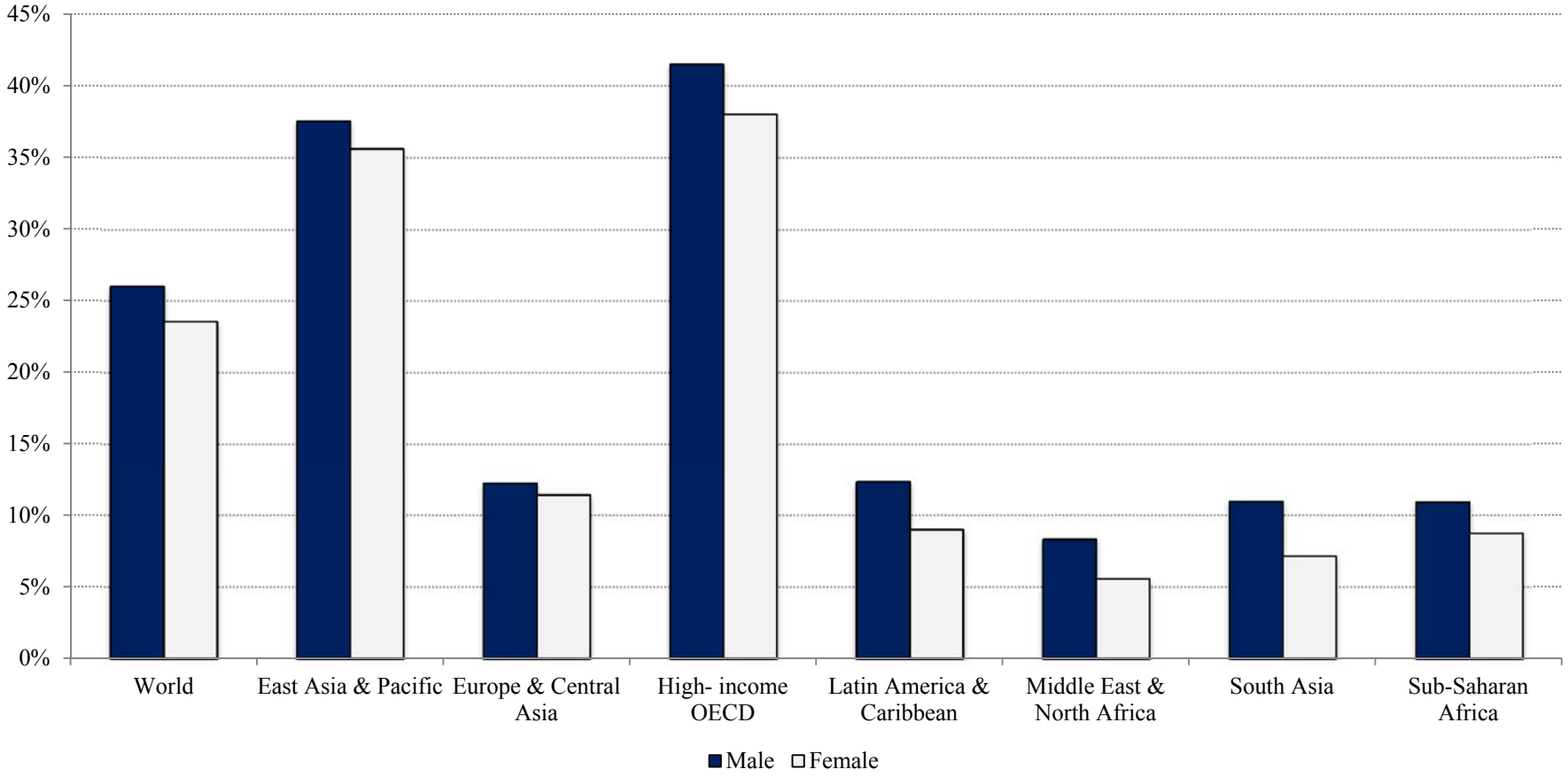
Figure 1
Saving for old age around the world and financial inclusion status



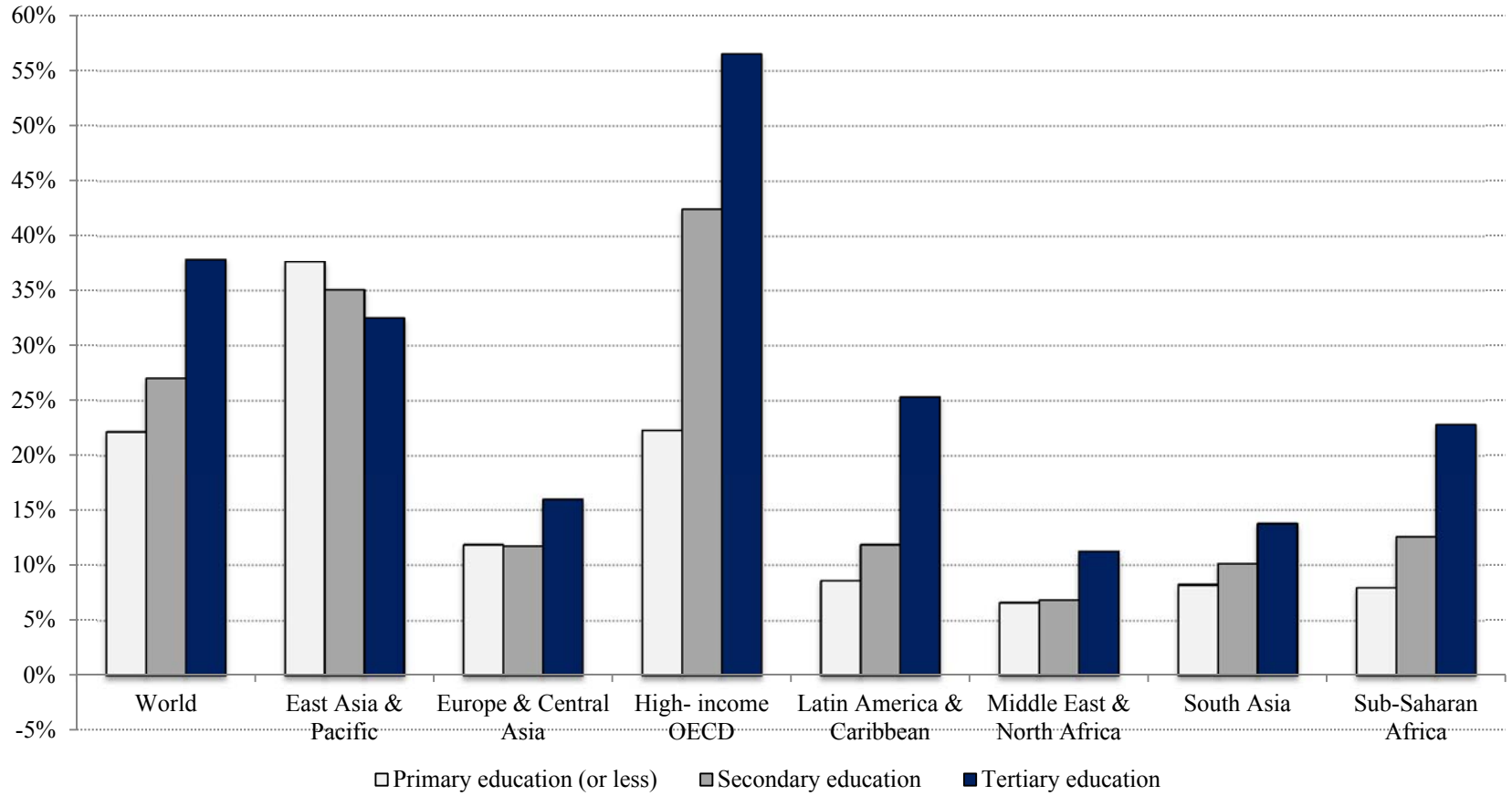
Notes: Weighted averages from the Global Findex (2015) data: http://www.worldbank.org/globalfindex.

Figure 2
Saving for old age around the world and gender



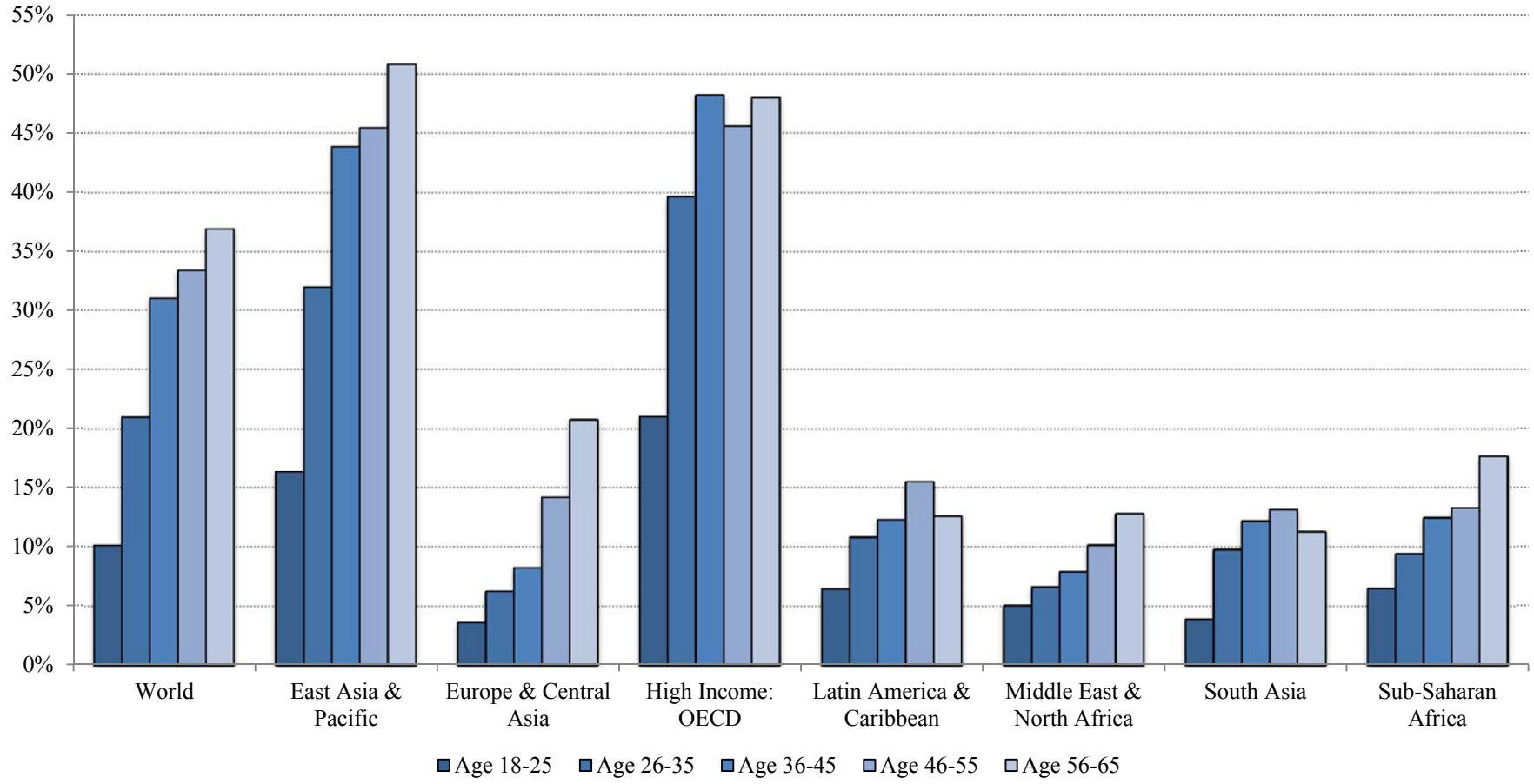
Notes: Weighted averages from the Global Findex (2015): data

Figure 3
Saving for old age around the world and education



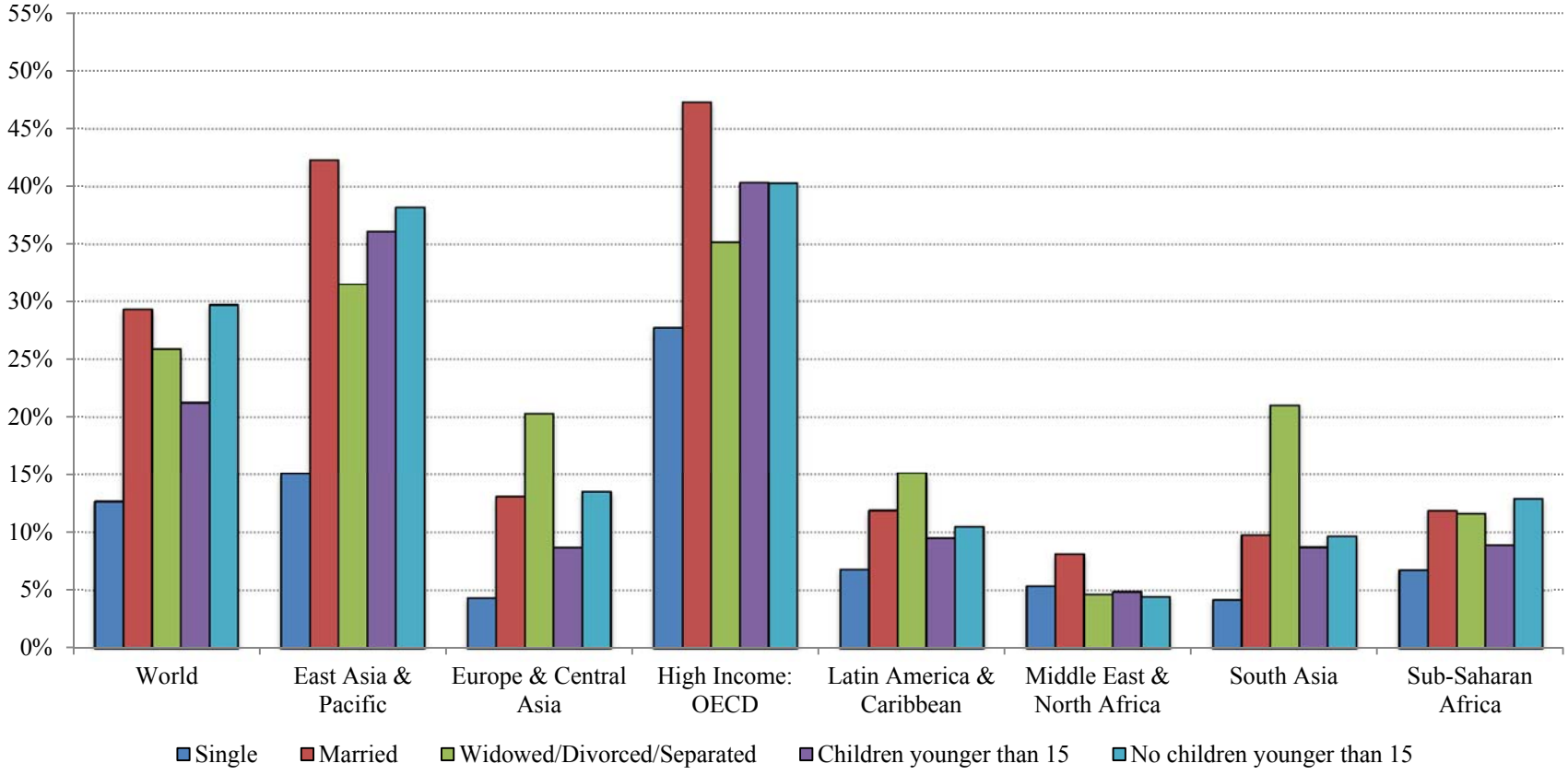
Notes: Weighted averages from the Global Findex (2015) data

Figure 4
Saving for old age around the world and age



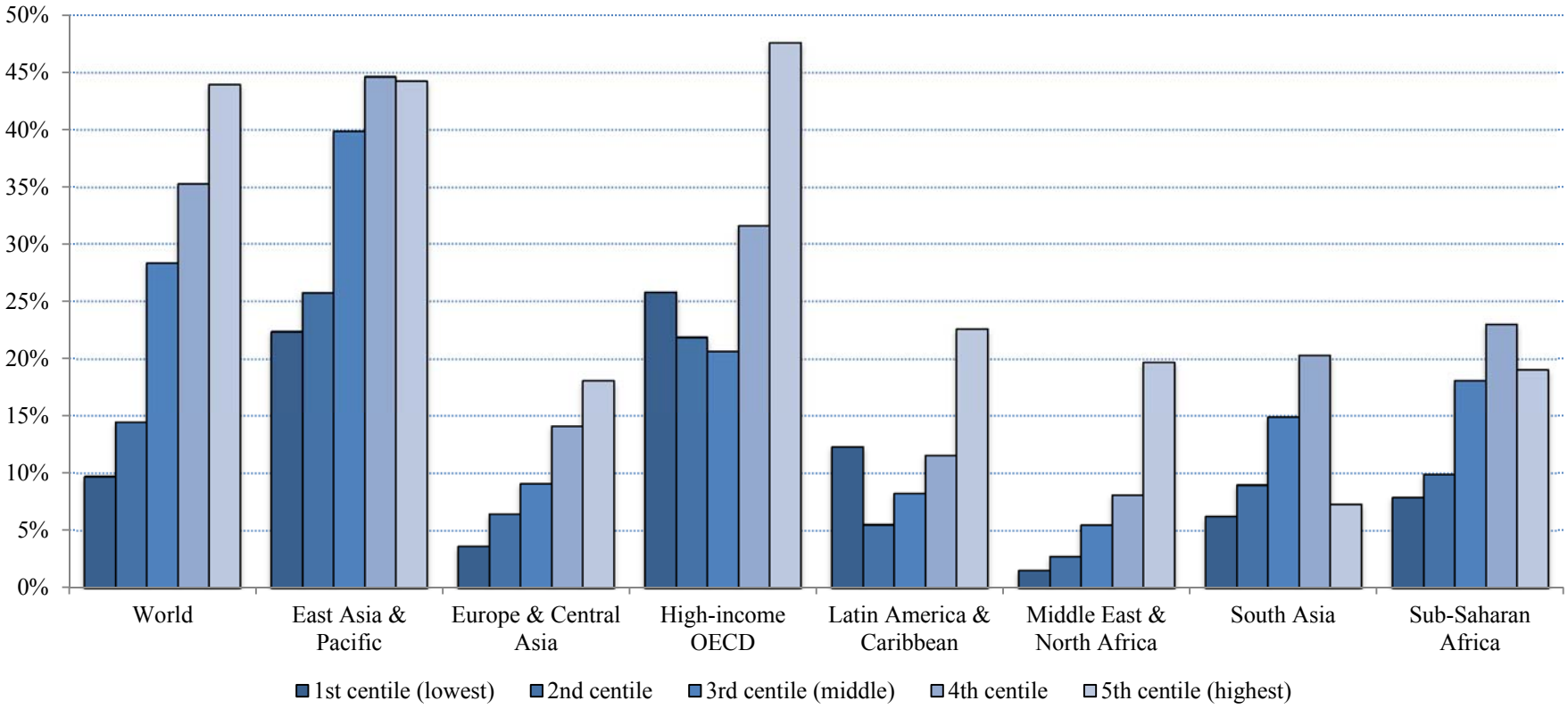
Notes: Notes: Weighted averages from the Global FINDEX (2015) data

Figure 5
Saving for old age around the world and family status



Notes: Weighted averaged from the Global FINDEX (2015) data.

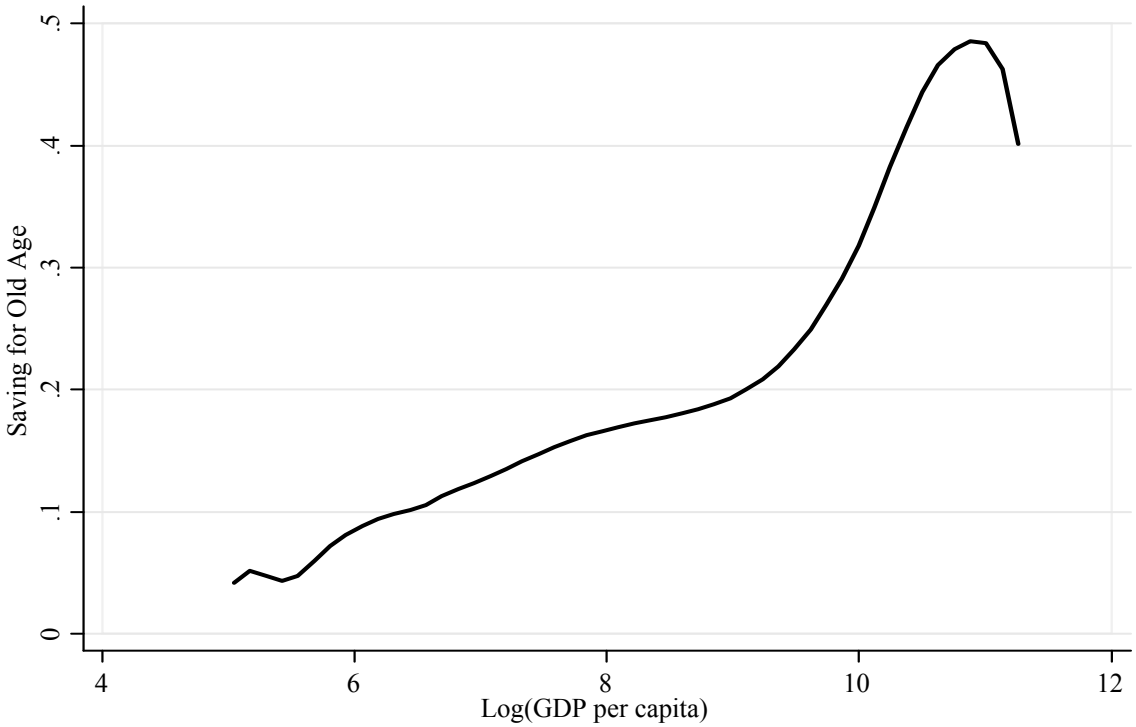
Figure 6
Saving for old age around the world and household income per capita (global ranking)



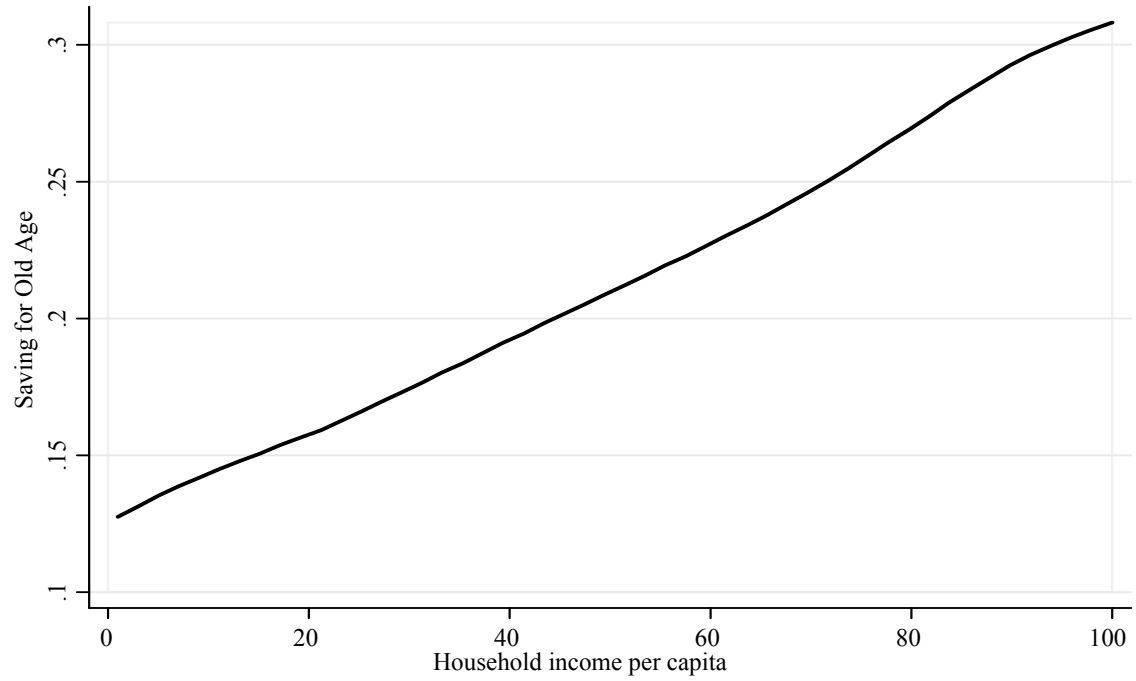
Notes: Weighted averages from the Global FINDEX (2015) data

Figure 7
Saving for old age and income

Panel A: Local (5th order) polynomial regressions on log(GDP per capita)

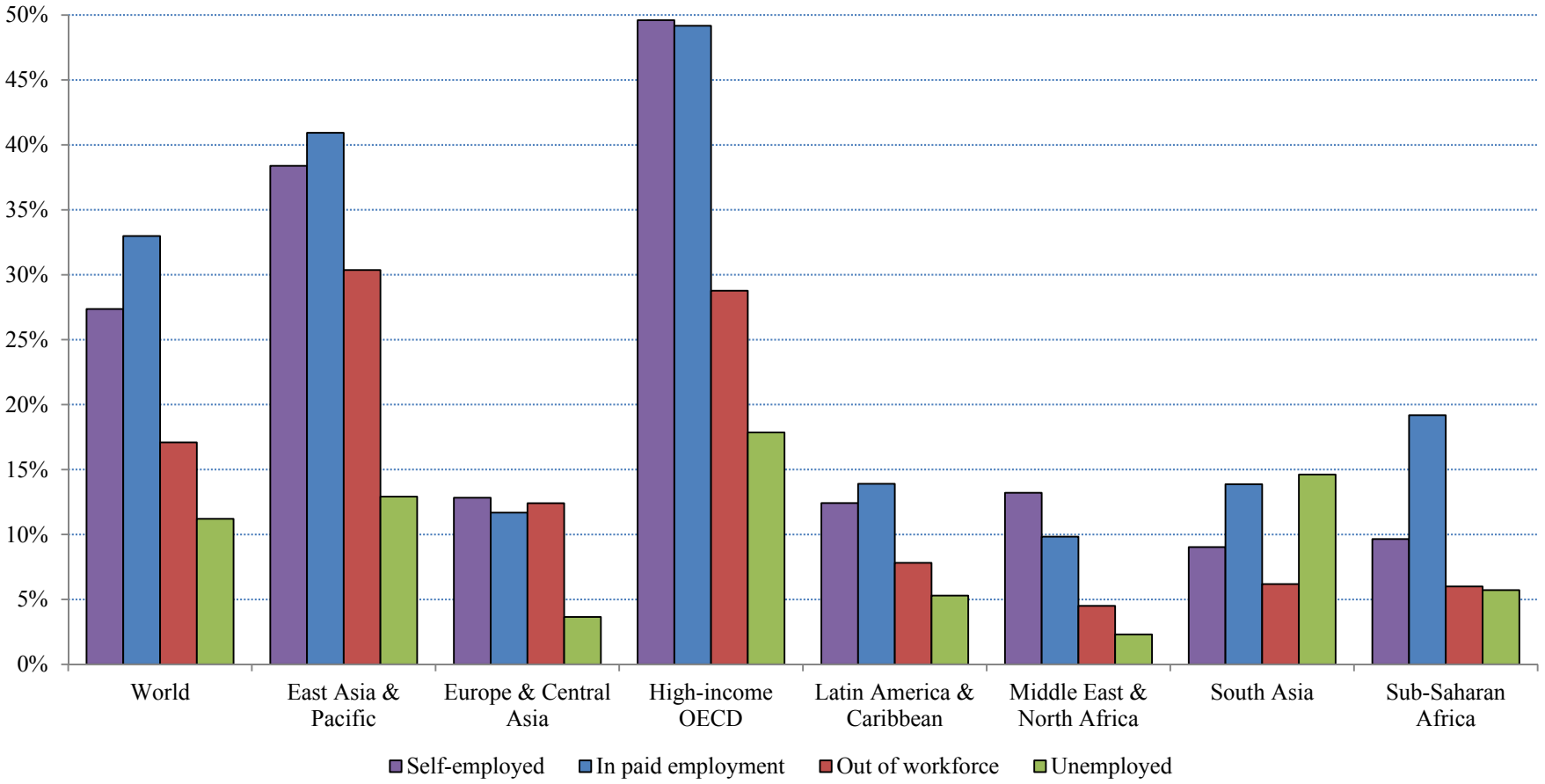


Panel B: Local (5th order) polynomial regressions on real (PPP-divided) equivalized household income percentile (ranking by country)



Notes: Global FINDEX (2015) data

Figure 8
Saving for old age around the world and labor market status



Notes: Weighted averages from the Global FINDEX (2015) data

Table 1
Summary statistics

	(1)	(2)	(3)	(4)	
	All countries	SavingOA	Not SavingOA	Diff.	[Sig.]
#Observations	*147,692*	*30,395*	*117,297*		
Male	49.0%	52.3%	48.3%	0.0397	***
Urban region	37.3%	41.8%	36.2%	0.0561	***
Education: Tertiary	12.4%	21.8%	10.2%	0.1160	***
" : Secondary	59.9%	73.0%	56.9%	0.1614	***
" : Primary or less	39.4%	26.2%	42.5%	-0.1626	***
Age: 65+	9.6%	14.3%	8.5%	0.0580	***
" : 56 to 65	10.7%	16.8%	9.2%	0.0756	***
" : 46 to 55	14.1%	19.1%	13.0%	0.0610	***
" : 36 to 45	17.5%	20.7%	16.8%	0.0387	***
" : 26 to 35	21.0%	17.8%	21.8%	-0.0399	***
" : 18 to 25	19.4%	9.4%	21.8%	-0.1242	***
Married	57.7%	68.8%	55.1%	0.1370	***
Widowed/divorced/separated	10.5%	11.4%	10.3%	0.0116	***
Single	31.8%	19.8%	34.6%	-0.1486	***
Has children under 15	45.6%	36.8%	47.7%	-0.1094	***
Household income per capita centile: Top	16.9%	23.7%	15.3%	0.0837	***
" : 4^{th}	17.0%	20.3%	16.2%	0.0408	***
" : 3^{rd}	17.2%	17.9%	17.1%	0.0077	**
" : 2^{nd}	17.3%	14.8%	17.9%	-0.0305	***
" : Bottom	17.4%	12.2%	18.6%	-0.0637	***
" : missing	14.2%	11.1%	15.0%	-0.0380	***
Self-employed	23.3%	22.3%	23.5%	-0.0114	***
Employed	30.1%	43.5%	26.9%	0.1657	***
Unemployed	39.8%	31.3%	41.8%	-0.1053	***
Inactive	6.9%	2.9%	7.8%	-0.0490	***
Has any account	55.5%	83.9%	48.8%	0.3509	***
Any savings last year (country average)	54.6%	64.4%	52.3%	0.1212	***
Outstanding mortgage	13.2%	25.0%	10.5%	0.1453	***
Log(GDP per capita - PPP divided)	9.27	9.85	9.14	0.7108	***
GDP per capita growth	2.30	2.26	2.31	-0.0511	**
WDR legal rights index	5.10	5.53	5.00	0.5320	***
Legal origin: English	25.1%	28.9%	24.2%	0.0461	***
" : French	16.0%	26.2%	13.7%	0.1249	***
" : German	52.1%	36.9%	55.6%	-0.1873	***
" : Other	9.5%	14.1%	8.4%	0.0575	***
Real interest rate (‡ 146,692)	4.34	3.15	4.62	-1.4614	***
Deposit insurance	66.5%	73.3%	64.9%	0.0840	***
Moral hazard index (‡ 96,832)	0.17	0.71	0.03	0.6808	***
Life expectancy (‡ 146,692)	71.11	75.11	70.19	4.9177	***
Benefit in PPP USD (‡ 82,425)	254.47	350.85	225.38	125.4671	***
Benefit as a % of GDP per capita (‡ 81,425)	14.1%	14.5%	13.9%	0.0060	***
Benefit as % of $1.25 a day poverty line (‡ 81,425)	669.3%	922.9%	592.8%	3.3003	***
Cost of pension spending as % GDP (‡ 129,660)	4.5%	5.4%	4.3%	0.0107	***
% population 60+ covered (‡ 127,629)	76.4%	90.6%	73.0%	0.1764	***
Age of eligibility (‡ 125,610)	60.23	61.39	59.93	1.4589	***
Employer/employee contribution ratio (‡ 112,949)	3.38	2.92	3.49	-0.5742	***
% Contribution rate (‡ 115,951)	23.6%	24.8%	23.3%	0.0143	***

Notes: Weighted mean differences in Column 4 and levels of significance of the differences are from a t-test for weighted mean differences (in Columns 1-3) with unequal variances, produced using the parmby and metaparm commands in Stata. Variables marked with (‡) have the reported non-missing observations in parentheses.

Table 2

Saving for old age and financial inclusion, probit regressions

	(1)	(2)	(3)	(4)	(5)
Male	0.008**	0.006*	0.006*	0.006**	0.006***
	[0.003]	[0.003]	[0.003]	[0.003]	[0.002]
Urban region	0.001	-0.004	-0.003	-0.002	-0.005**
	[0.007]	[0.006]	[0.006]	[0.005]	[0.002]
Education: Tertiary	0.047***	0.038***	0.036***	0.036***	0.039***
	[0.006]	[0.006]	[0.006]	[0.005]	[0.003]
" : Secondary	0.053***	0.031***	0.029***	0.021***	0.026***
	[0.008]	[0.006]	[0.006]	[0.005]	[0.003]
" : Primary of less	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]
Age: 65 or more	0.179***	0.161***	0.162***	0.163***	0.160***
	[0.013]	[0.013]	[0.013]	[0.012]	[0.005]
" : 56 to 65	0.164***	0.149***	0.147***	0.146***	0.141***
	[0.011]	[0.011]	[0.011]	[0.011]	[0.005]
" : 46 to 55	0.116***	0.105***	0.100***	0.101***	0.096***
	[0.010]	[0.010]	[0.010]	[0.009]	[0.004]
" : 36 to 45	0.097***	0.083***	0.078***	0.079***	0.074***
	[0.010]	[0.010]	[0.010]	[0.009]	[0.004]
" : 26 to 35	0.051***	0.039***	0.036***	0.038***	0.035***
	[0.007]	[0.007]	[0.007]	[0.007]	[0.004]
" : 18 to 25	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]
Married	0.031***	0.027***	0.023***	0.025***	0.029***
	[0.006]	[0.005]	[0.005]	[0.005]	[0.003]
Widowed/Divorced/Separated	0.002	0.002	0.001	0.008	0.016***
	[0.008]	[0.007]	[0.007]	[0.006]	[0.004]
Single	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]
Has children under 15	-0.002	0.006	0.003	0.009*	0.009***
	[0.006]	[0.006]	[0.006]	[0.005]	[0.003]
Household income per capita	0.045***	0.039***	0.038***	0.043***	0.042***
centile by county: Top	[0.005]	[0.005]	[0.005]	[0.005]	[0.003]
" : 4th	0.020***	0.019***	0.018***	0.020***	0.019***
	[0.005]	[0.005]	[0.005]	[0.004]	[0.004]
" : 3rd	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]
" : 2nd	-0.024***	-0.022***	-0.021***	-0.023***	-0.023***
	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]
" : Bottom	-0.044***	-0.040***	-0.038***	-0.042***	-0.041***
	[0.007]	[0.007]	[0.007]	[0.006]	[0.004]
Self-employed	0.054***	0.049***	0.047***	0.046***	0.050***
	[0.007]	[0.007]	[0.007]	[0.006]	[0.003]
Wage employed	0.080***	0.062***	0.058***	0.059***	0.060***
	[0.010]	[0.010]	[0.009]	[0.007]	[0.003]
Unemployed	-0.024**	-0.026**	-0.026**	-0.017*	-0.016***
	[0.011]	[0.011]	[0.011]	[0.009]	[0.006]
Out of workforce	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]
Has any account	–	0.121***	0.116***	0.101***	0.108***
		[0.009]	[0.009]	[0.008]	[0.003]
Outstanding mortgage	–	–	0.052***	0.044***	0.046***
			[0.007]	[0.006]	[0.003]
Saved any money last year	–	–	–	0.470***	–
[country average]				[0.040]	
Country FE	–	–	–	–	+
Predicted probability	*0.1891*	*0.1892*	*0.1891*	*0.1891*	*0.1891*
No. of Observations	*147,692*	*147,692*	*147,692*	*147,692*	*147,692*
Pseudo R^2	*0.149*	*0.167*	*0.170*	*0.194*	*0.214*

Notes: Marginal effects from weighted probit regressions are presented along with robust standard errors in brackets, clustered at the country level (except column 5). The specifications also incorporate a control dummy variable for missing income centile and 7 region dummies. Asterisks denote the following levels of significance: * p<0.10, ** p<0.05, *** p<0.01

Table 3

Saving for old age and financial inclusion, multinomial probit regressions

	(A) Saving for old age & financial inclusion			(B) Saving for old age & type of savings		
	(1)	(2)	(3)	(4)	(5)	(6)
	Fin. Included	Fin. Excluded	No Saving OA	Formal Savings	Informal Savings	No Saving OA
Male	0.007***	0.002	-0.009***	0.005***	-0.001	-0.004**
	[0.002]	[0.001]	[0.002]	[0.002]	[0.001]	[0.002]
Urban region	0.006***	-0.005***	-0.002	0.004**	0.003***	-0.007***
	[0.002]	[0.001]	[0.002]	[0.002]	[0.001]	[0.002]
Education: Tertiary	0.045***	-0.008***	-0.037***	0.040***	0.004***	-0.044***
	[0.003]	[0.002]	[0.003]	[0.002]	[0.001]	[0.003]
" : Secondary	0.068***	-0.009***	-0.059***	0.051***	0.008***	-0.060***
	[0.003]	[0.001]	[0.003]	[0.003]	[0.001]	[0.003]
" : Primary of less	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]
Age: 65 or more	0.156***	0.029***	-0.184***	0.112***	0.018***	-0.130***
	[0.005]	[0.002]	[0.005]	[0.004]	[0.002]	[0.005]
" : 56 to 65	0.149***	0.018***	-0.168***	0.113***	0.015***	-0.127***
	[0.004]	[0.002]	[0.005]	[0.004]	[0.002]	[0.004]
" : 46 to 55	0.112***	0.009***	-0.120***	0.087***	0.011***	-0.098***
	[0.004]	[0.002]	[0.005]	[0.004]	[0.002]	[0.004]
" : 36 to 45	0.100***	0.002	-0.101***	0.078***	0.010***	-0.087***
	[0.004]	[0.002]	[0.004]	[0.004]	[0.002]	[0.004]
" : 26 to 35	0.058***	-0.001	-0.056***	0.043***	0.006***	-0.049***
	[0.004]	[0.002]	[0.004]	[0.004]	[0.002]	[0.004]
" : 18 to 25	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]
Married	0.027***	0.002	-0.029***	0.021***	0.004***	-0.025***
	[0.003]	[0.002]	[0.003]	[0.003]	[0.001]	[0.003]
Widowed/Divorced/Separated	-0.004	0.004*	0.001	-0.009**	0.004**	0.005
	[0.004]	[0.002]	[0.005]	[0.004]	[0.002]	[0.004]
Single	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]
Has children under 15	-0.007***	0.003**	0.004	0.001	0.003**	-0.004
	[0.003]	[0.001]	[0.003]	[0.002]	[0.001]	[0.003]
Household income per capita	0.041***	0.003	-0.044***	0.034***	0.008***	-0.042***
centile by county: Top	[0.003]	[0.002]	[0.004]	[0.003]	[0.001]	[0.003]
" : 4th	0.018***	0.002	-0.020***	0.018***	0.003**	-0.021***
	[0.003]	[0.002]	[0.004]	[0.003]	[0.002]	[0.003]
" : 3rd	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]
" : 2nd	-0.022***	-0.001	0.024***	-0.017***	-0.005***	0.022***
	[0.004]	[0.002]	[0.004]	[0.003]	[0.002]	[0.004]
" : Bottom	-0.041***	-0.003*	0.044***	-0.039***	-0.009***	0.048***
	[0.004]	[0.002]	[0.004]	[0.004]	[0.002]	[0.004]
" : Missing	-0.006	0.005***	0.001	-0.003	0.006***	-0.003
	[0.004]	[0.002]	[0.004]	[0.004]	[0.002]	[0.004]
Self-employed	0.044***	0.009***	-0.053***	0.032***	0.012***	-0.044***
	[0.003]	[0.001]	[0.003]	[0.003]	[0.001]	[0.003]
In paid employment	0.078***	-0.001	-0.076***	0.053***	0.017***	-0.069***
	[0.003]	[0.002]	[0.003]	[0.002]	[0.001]	[0.003]
Unemployed	-0.024***	-0.001	0.025***	-0.031***	-0.001	0.032***
	[0.006]	[0.003]	[0.006]	[0.005]	[0.002]	[0.006]
Out of workforce	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]
Predicted probability	*0.1585*	*0.0303*	*0.8112*	*0.1108*	*0.0206*	*0.8686*
No. of Observations		*147,366*			*137,209*	

Notes: Marginal effects from weighted multinomial probit regressions are presented along with robust standard errors in brackets, clustered at the country level. The remaining specification is that of Column 1 of Table 2. Asterisks denote the following levels of significance: * p<0.10, ** p<0.05, *** p<0.01

Table 4

Saving for old age and country macroeconomic characteristics, probit regressions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Log of life expectancy	0.050	-0.086	-0.110	-0.121	-0.093	-0.088	-0.090	-0.071
	[0.128]	[0.129]	[0.132]	[0.131]	[0.118]	[0.118]	[0.119]	[0.116]
Legal origin: English	0.052***	0.041**	0.038**	0.034**	0.034*	0.033*	0.033*	0.03
	[0.017]	[0.017]	[0.017]	[0.017]	[0.018]	[0.019]	[0.019]	[0.019]
" : French	0.01	0.008	0.007	0.005	0.006	0.005	0.004	0.002
	[0.018]	[0.018]	[0.019]	[0.018]	[0.019]	[0.019]	[0.020]	[0.019]
" : German	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]
" : Other	0.006	0.014	0.014	0.010	0.008	0.009	0.009	0.011
	[0.022]	[0.023]	[0.023]	[0.022]	[0.022]	[0.022]	[0.022]	[0.022]
Log(GDP per capita)	–	0.042***	0.045***	0.046***	0.047***	0.046***	0.046***	0.045***
- PPP constant 2011		[0.010]	[0.010]	[0.010]	[0.011]	[0.012]	[0.012]	[0.011]
GDP per capita growth	–	–	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
			[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]
WDI Legal Rights Index	–	–	–	0.002	0.002	0.002	0.002	0.001
				[0.002]	[0.002]	[0.002]	[0.002]	[0.002]
Housing affordability index	–	–	–	–	0.003	0.003	0.003	0.001
					[0.010]	[0.010]	[0.010]	[0.010]
Missing affordability index	–	–	–	–	0.015	0.015	0.015	0.011
					[0.031]	[0.031]	[0.032]	[0.031]
Real interest rate	–	–	–	–	–	0.001	0.001	0.001
						[0.001]	[0.001]	[0.001]
Missing real interest rate	–	–	–	–	–	-0.005	-0.005	-0.010
						[0.017]	[0.017]	[0.017]
Deposit insurance dummy	–	–	–	–	–	–	-0.004	–
							[0.017]	
Moral hazard index	–	–	–	–	–	–	–	0.007*
								[0.004]
Missing moral hazard index	–	–	–	–	–	–	–	0.008
								[0.017]
Has any account	0.108***	0.100***	0.100***	0.101***	0.101***	0.101***	0.101***	0.100***
	[0.008]	[0.009]	[0.009]	[0.009]	[0.009]	[0.009]	[0.009]	[0.009]
Outstanding mortgage	0.051***	0.048***	0.048***	0.047***	0.047***	0.048***	0.047***	0.048***
	[0.007]	[0.007]	[0.007]	[0.007]	[0.007]	[0.007]	[0.007]	[0.007]
Predicted probability	*0.1875*	*0.1896*	*0.1906*	*0.1906*	*0.1906*	*0.1906*	*0.1906*	*0.1906*
No. of Observations	*146,692*	*141,657*	*140,657*	*140,657*	*140,657*	*140,657*	*140,657*	*140,657*
Pseudo R^2	*0.173*	*0.178*	*0.177*	*0.177*	*0.178*	*0.178*	*0.178*	*0.178*

Notes: * p<0.10, ** p<0.05, *** p<0.01. The remaining specification is identical to Column 3 of Table 2 and the comments in that table apply.

Table 5

Saving for old age and country pension-system characteristics: Probit regressions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Log Benefit in PPP USD	-0.019	–	–	–	–	–	–	–
	[0.016]							
Benefit as a % of GDP per capita	–	-0.086	–	–	–	–	–	–
		[0.124]						
Benefit as % of the $1.25/day	–	–	-0.001	–	–	–	–	–
poverty line			[0.002]					
Cost of pension spending as	–	–	–	-0.005	–	–	–	–
%GDP				[0.003]				
% population over 60 covered	–	–	–	–	-0.035*	–	–	–
					[0.021]			
Log(age of eligibility)	–	–	–	–	–	0.049	–	–
						[0.086]		
% Contribution rate	–	–	–	–	–	–	0.028	–
							[0.072]	
Employer/employee contribution	–	–	–	–	–	–	–	0.002
ratio								[0.002]
Has any account	0.105***	0.103***	0.105***	0.108***	0.105***	0.100***	0.110***	0.120***
	[0.011]	[0.011]	[0.012]	[0.008]	[0.008]	[0.011]	[0.009]	[0.010]
Outstanding mortgage	0.049***	0.046***	0.048***	0.043***	0.046***	0.047***	0.049***	0.048***
	[0.008]	[0.008]	[0.008]	[0.006]	[0.007]	[0.007]	[0.006]	[0.006]
Predicted probability	*0.2344*	*0.2352*	*0.2343*	*0.1967*	*0.1933*	*0.202*	*0.1936*	*0.1933*
No. of Observations	*81,425*	*80,424*	*81,425*	*126,627*	*124,596*	*123,597*	*113,938*	*110,936*
Pseudo R^2	*0.155*	*0.158*	*0.155*	*0.183*	*0.188*	*0.177*	*0.181*	*0.177*

Notes: * p<0.10, ** p<0.05, *** p<0.01. The remaining specification is identical to Column 3 of Table 2 and the comments in that table apply.

Table 6
Saving for old age and regional differences I: Probit regressions

	EAP	ECA	OECD[HI]	LAC	MENA	South Asia	Sub-Saharan Africa
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Log of life expectancy	1.739***	-1.395***	1.714**	0.947***	-3.316***	-0.063	-0.141**
	[0.233]	[0.269]	[0.690]	[0.329]	[0.260]	[0.096]	[0.062]
Legal origin: English	-0.487***	–	-0.042	-0.173***	–	0.035	0.001
	[0.054]		[0.045]	[0.052]		[0.038]	[0.019]
" : French							
" : German	-0.231***	-0.052***	0.074**	–	–	–	–
	[0.016]	[0.013]	[0.037]				
" : Other	–	–	0.013	–	–	–	–
			[0.043]				
Log(GDP per capita)	0.456***	0.043***	0.081	-0.037	1.400***	0.040***	0.025***
- PPP constant 2011	[0.023]	[0.011]	[0.050]	[0.023]	[0.120]	[0.013]	[0.006]
GDP per capita growth	-0.059***	-0.002	-0.003	-0.003	0.007***	-0.014***	0.001
	[0.010]	[0.005]	[0.009]	[0.003]	[0.001]	[0.005]	[0.002]
WDI Legal Rights Index	0.011***	-0.008***	0.019***	0.014***	0.221***	0.014***	-0.004*
	[0.002]	[0.003]	[0.006]	[0.003]	[0.023]	[0.004]	[0.002]
Real interest rate	-0.081***	-0.009***	-0.009	0.001	-0.026***	-0.002***	0.001
	[0.005]	[0.002]	[0.006]	[0.001]	[0.003]	[0.001]	[0.001]
Missing real interest rate	–	-0.187***	-0.024	0.024	0.009	–	-0.002
		[0.047]	[0.028]	[0.023]	[0.009]		[0.018]
Housing affordability index	–	0.135***	0.020	0.121***	1.025***	–	0.001
		[0.044]	[0.015]	[0.017]	[0.107]		[0.009]
Missing affordability index	–	-0.027	–	0.066**	1.501***	–	-0.013
		[0.021]		[0.033]	[0.138]		[0.016]
Outstanding mortgage	0.035***	0.018	0.054***	0.033***	0.022	0.058	0.057***
	[0.013]	[0.012]	[0.011]	[0.012]	[0.014]	[0.038]	[0.009]
Has any account	0.139***	0.059***	0.101***	0.116***	0.050***	0.087***	0.098***
	[0.023]	[0.007]	[0.023]	[0.008]	[0.006]	[0.015]	[0.006]
Male	-0.004	0.006	0.008	0.026***	-0.006	-0.007	0.006
	[0.010]	[0.004]	[0.007]	[0.007]	[0.011]	[0.016]	[0.004]
Urban region	-0.041**	0.004	-0.023**	-0.003	0.004	0.012	0.017***
	[0.020]	[0.007]	[0.011]	[0.009]	[0.007]	[0.017]	[0.006]
Education: Tertiary	0.014	0.032***	0.058***	0.033***	0.027***	0.014	0.027***
	[0.041]	[0.012]	[0.009]	[0.012]	[0.006]	[0.011]	[0.010]
" : Secondary	0.026*	-0.002	0.065***	0.025***	-0.001	0.024**	0.01
	[0.015]	[0.011]	[0.015]	[0.009]	[0.003]	[0.012]	[0.007]
" : Primary or less	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]
Age: 65 or more	0.272***	0.174***	0.203***	0.101***	0.082***	0.097***	0.098***
	[0.063]	[0.027]	[0.031]	[0.025]	[0.011]	[0.012]	[0.010]
" : 56 to 65	0.252***	0.128***	0.223***	0.087***	0.083***	0.073***	0.077***
	[0.076]	[0.029]	[0.025]	[0.018]	[0.008]	[0.018]	[0.010]
" : 46 to 55	0.191***	0.074***	0.164***	0.071***	0.054***	0.051***	0.050***
	[0.051]	[0.027]	[0.022]	[0.016]	[0.004]	[0.015]	[0.011]
" : 36 to 45	0.157***	0.032	0.140***	0.060***	0.023*	0.055***	0.027***
	[0.054]	[0.027]	[0.023]	[0.015]	[0.012]	[0.011]	[0.008]
" : 26 to 35	0.072**	-0.006	0.072***	0.033**	0.001	0.029	0.011
	[0.031]	[0.019]	[0.020]	[0.014]	[0.010]	[0.018]	[0.008]
" : 18 to 25	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]
Married	0.064***	0.043***	0.055***	0.014*	-0.004	0.027***	0.022***
	[0.024]	[0.009]	[0.011]	[0.008]	[0.013]	[0.010]	[0.006]
Widowed/Divorced/Separated	0.002	0.036***	-0.013	0.021	-0.012	0.064***	0.018**
	[0.030]	[0.011]	[0.013]	[0.020]	[0.008]	[0.024]	[0.008]
Single	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]
Has children under 15	0.030**	-0.024	0.026***	-0.004	0.019	0.006	0.012**
	[0.012]	[0.015]	[0.009]	[0.008]	[0.014]	[0.010]	[0.006]

Table 6 continued in next page

Table 6 continued from last page

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Household income per capita	0.032***	0.023*	0.074***	0.050***	0.032***	0.025**	0.035***
centile by county: Top	[0.007]	[0.013]	[0.011]	[0.010]	[0.006]	[0.011]	[0.007]
" : 4th	0.011	0.008	0.043***	0.026*	0.024**	0.01	0.005
	[0.015]	[0.009]	[0.012]	[0.016]	[0.012]	[0.010]	[0.009]
" : 3rd	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]
" : 2nd	-0.081***	-0.008	-0.037***	-0.014	-0.018*	-0.004	-0.006
	[0.009]	[0.010]	[0.011]	[0.014]	[0.011]	[0.012]	[0.007]
" : Bottom	-0.126***	-0.019*	-0.065***	-0.003	-0.02	-0.024**	-0.020***
	[0.033]	[0.011]	[0.012]	[0.014]	[0.013]	[0.012]	[0.007]
" : Missing	–	-0.005	-0.029	0.172***	–	–	-0.026
		[0.019]	[0.064]	[0.038]			[0.024]
Self-employed	0.059**	0.026**	0.101***	0.044***	0.043***	0.038***	0.032***
	[0.023]	[0.013]	[0.019]	[0.007]	[0.009]	[0.012]	[0.006]
In paid employment	0.074***	0.004	0.122***	0.040**	0.025***	0.067***	0.064***
	[0.015]	[0.011]	[0.014]	[0.016]	[0.008]	[0.014]	[0.009]
Unemployed	-0.02	-0.001	-0.040*	-0.014	-0.027	0.061**	-0.01
	[0.057]	[0.019]	[0.022]	[0.012]	[0.017]	[0.024]	[0.009]
Out of workforce	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]
Predicted probability	0.3470	0.1129	0.3626	0.1399	0.0667	0.0916	0.0914
No. of Observations	11,184	21,040	30,119	15,536	9,069	9,132	32,044
Pseudo R^2	0.137	0.149	0.114	0.128	0.171	0.132	0.206

Notes: * p<0.10, ** p<0.05, *** p<0.01. Comments in Table 2 apply.

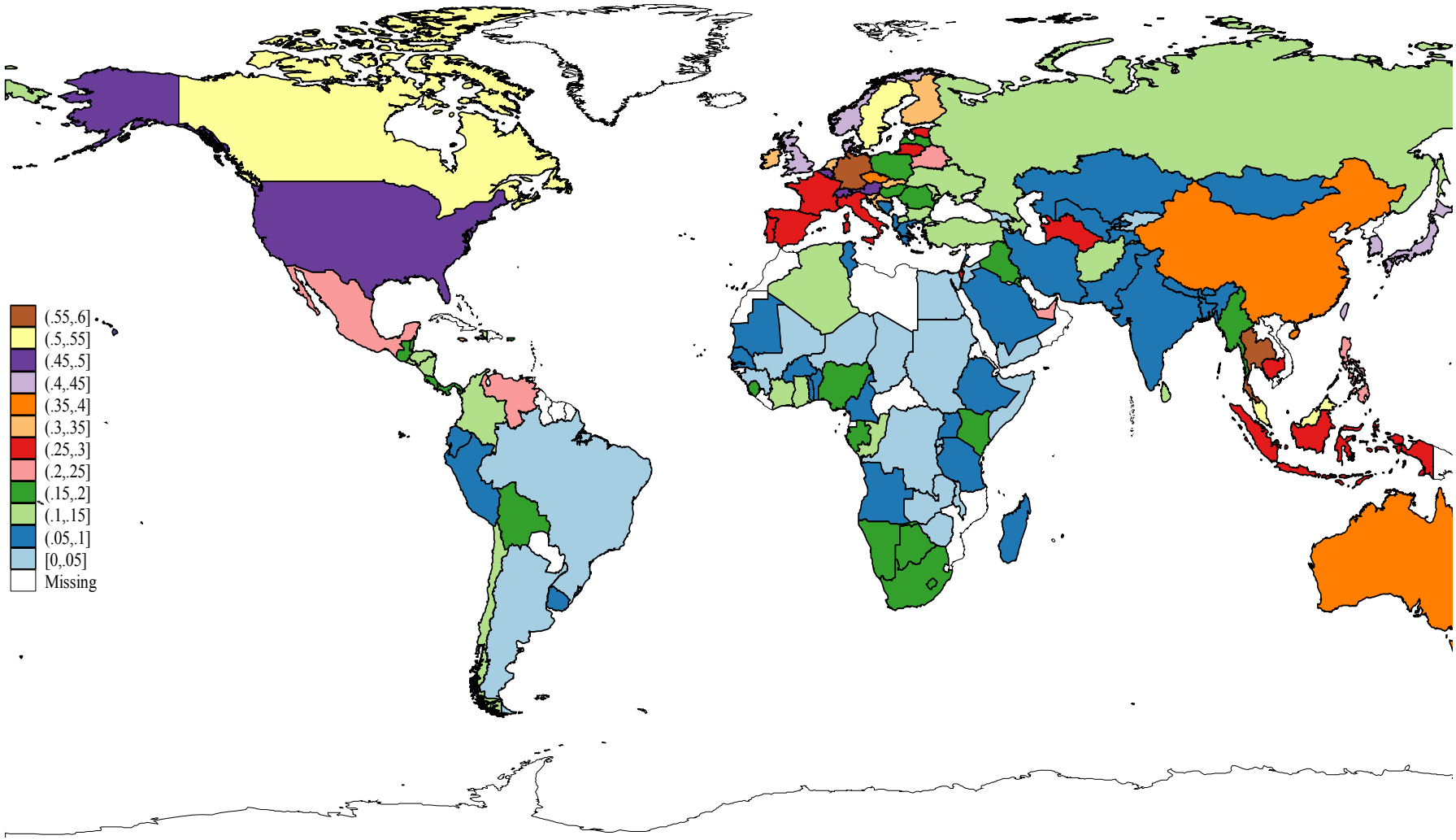
Table 7: Saving for old age and regional differences II, Probit regressions

	EAP	ECA	OECD^{HI}	LAC	MENA	South Asia	Sub-Saharan Africa
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Deposit insurance	–	0.055	-0.036	-0.021	–	–	-0.012
		[0.079]	[0.031]	[0.019]			[0.012]
Predicted probability	*0.3470*	*0.1129*	*0.3626*	*0.1399*	*0.0667*	*0.0916*	*0.0913*
No. of Observations	*11,184*	*21,040*	*30,119*	*15,536*	*9,069*	*9,132*	*32,044*
	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Moral hazard index	–	0.002	0.019**	0.049***	–	–	0.011***
		[0.006]	[0.009]	[0.009]			[0.004]
Missing moral hazard index	–	-0.05	0.053*	-0.097***	–	–	0.012
		[0.077]	[0.031]	[0.025]			[0.012]
Predicted probability	*0.3470*	*0.1129*	*0.3626*	*0.1400*	*0.0667*	*0.0916*	*0.0914*
No. of Observations	*11,184*	*21,040*	*30,119*	*15,536*	*9,069*	*9,132*	*32,044*
	(15)	(16)	(17)	(18)	(19)	(20)	(21)
Log(benefit in $\$^{PPP}$)	-0.207***	0.036	-0.028	-0.002	–	0.035***	0.002
	[0.010]	[0.026]	[0.040]	[0.007]		[0.002]	[0.013]
Predicted probability	*0.3526*	*0.114*	*0.3629*	*0.1493*	*0.1129*	*0.0894*	*0.1484*
No. of Observations	*10,184*	*15,042*	*24,105*	*12,032*	*1,002*	*5,050*	*8,000*
	(22)	(23)	(24)	(25)	(26)	(27)	(28)
Cost of pension spending as %GDP	-0.052***	0.002	-0.004	0.009	0.096***	-0.002	-0.002
	[0.003]	[0.002]	[0.005]	[0.011]	[0.009]	[0.003]	[0.006]
Predicted probability	*0.3470*	*0.1054*	*0.3626*	*0.1420*	*0.0667*	*0.096*	*0.0959*
No. of Observations	*11,184*	*20,040*	*30,119*	*13,032*	*9,069*	*8,132*	*26,036*
	(29)	(30)	(31)	(32)	(33)	(34)	(35)
% population over 60 covered	-0.234***	0.048*	-0.087	0.076*	0.340***	0.081***	-0.027
	[0.013]	[0.028]	[0.073]	[0.039]	[0.031]	[0.030]	[0.021]
Predicted probability	*0.3470*	*0.1076*	*0.3602*	*0.1408*	*0.0667*	*0.0916*	*0.087*
No. of Observations	*11,184*	*18,039*	*27,109*	*15,032*	*9,069*	*9,132*	*25,016*
	(36)	(37)	(38)	(39)	(40)	(41)	(42)
Log(age of eligibility)	0.055	-0.198*	-0.225	0.071	0.121	0.115	0.022
	[0.131]	[0.102]	[0.271]	[0.125]	[0.207]	[0.186]	[0.062]
Predicted probability	*0.3526*	*0.1151*	*0.3710*	*0.1427*	*0.0710*	*0.0993*	*0.0887*
No. of Observations	*10,184*	*20,040*	*29,087*	*14,032*	*7,069*	*7,112*	*25,040*
	(43)	(44)	(45)	(46)	(47)	(48)	(49)
% Contribution rate	-0.095	0.035	-0.099	-0.217	0.123	0.088	-0.298*
	[1.007]	[0.126]	[0.188]	[0.188]	[0.300]	[0.130]	[0.154]
Predicted probability	*0.3755*	*0.1313*	*0.3539*	*0.1332*	*0.0703*	*0.0969*	*0.0907*
No. of Observations	*5,000*	*16,039*	*28,117*	*15,528*	*8,069*	*6,112*	*27,040*
	(50)	(51)	(52)	(53)	(54)	(55)	(56)
Employer/employee contribution ratio	-0.129**	0.004***	-0.012	0.006***	0.001	-0.007***	-0.004
	[0.051]	[0.001]	[0.015]	[0.002]	[0.003]	[0.001]	[0.003]
Predicted probability	*0.3765*	*0.1323*	*0.3522*	*0.1332*	*0.0703*	*0.0969*	*0.0907*
No. of Observations	*5,000*	*14,039*	*27,115*	*15,528*	*8,069*	*6,112*	*27,040*

Notes: The remaining specification is that of Column 3 of Table 2, excluding region dummies. The comments in that table apply.

Appendix

Appendix Figure A1
Saving for old age around the world



Notes: Global FINDEX data 2015 − Weighted averages

Appendix Table A1

Summary statistics by region

	EAP	ECA	OECD[HI]	LAC	MENA	South Asia	Sub-Saharan Africa
Male	49.1%	47.7%	48.5%	48.6%	49.8%	50.3%	49.2%
Urban region	29.2%	35.7%	44.7%	38.7%	62.0%	14.9%	23.1%
Education: Tertiary	8.6%	13.9%	21.1%	12.2%	8.1%	3.4%	3.0%
" : Secondary	47.3%	72.2%	82.5%	63.2%	53.1%	37.1%	34.3%
" : Primary or less	52.4%	27.3%	15.8%	36.5%	46.7%	62.9%	65.3%
Age: 65+	6.6%	11.7%	17.0%	8.2%	3.8%	5.9%	4.9%
" : 56 to 65	10.8%	12.7%	15.6%	9.0%	7.3%	9.5%	6.6%
" : 46 to 55	15.8%	16.1%	17.6%	13.0%	11.9%	11.1%	10.3%
" : 36 to 45	21.0%	17.5%	17.2%	17.3%	17.5%	16.6%	16.4%
" : 26 to 35	21.9%	18.3%	15.7%	22.5%	23.9%	23.4%	24.7%
" : 18 to 25	18.1%	16.3%	12.1%	22.0%	26.9%	25.3%	25.9%
Married	70.1%	60.3%	57.6%	51.8%	54.3%	67.8%	51.3%
Widowed/divorced/separated	6.0%	13.3%	12.9%	10.3%	4.6%	6.4%	10.6%
Single	23.9%	26.4%	29.6%	38.0%	41.1%	25.8%	38.1%
Has children under 15	49.9%	40.4%	28.8%	38.9%	45.9%	69.6%	66.3%
HH income p.c. centile by country: Top	18.0%	16.9%	19.0%	12.9%	15.4%	19.8%	16.9%
" : 4th	18.1%	16.8%	19.1%	13.5%	15.3%	19.4%	17.1%
" : 3rd	18.8%	17.5%	19.4%	13.4%	15.5%	19.9%	17.0%
" : 2nd	18.6%	17.3%	19.5%	13.3%	15.9%	20.6%	17.1%
" : Bottom	18.7%	17.4%	19.5%	13.6%	15.8%	20.3%	17.3%
" : missing	7.9%	14.3%	3.4%	33.3%	22.2%	0.0%	14.7%
Self-employed	40.9%	17.7%	10.5%	23.1%	16.7%	27.9%	38.8%
Employed	27.5%	32.2%	45.3%	30.2%	21.5%	19.1%	18.2%
Unemployed	29.0%	43.2%	38.7%	37.8%	51.0%	48.0%	34.0%
Inactive	2.6%	6.9%	5.6%	8.9%	10.7%	5.0%	8.9%
Has any account	60.2%	45.8%	93.5%	44.5%	33.0%	40.6%	30.0%
Any savings last year (country average)	66.4%	37.1%	70.1%	47.4%	38.6%	39.1%	58.0%
Outstanding mortgage	9.2%	11.2%	27.6%	10.4%	9.6%	5.4%	5.2%
Log(GDP per capita - PPP divided)	9.24	9.25	10.53	9.18	9.22	8.41	7.92
GDP per capita growth	5.38	2.69	1.34	1.71	0.03	3.93	2.77
WDR legal rights index	4.78	6.19	5.87	4.49	1.23	5.54	5.30
Legal origin: English	15.7%	0.0%	23.3%	6.1%	0.0%	89.1%	38.2%
Legal origin: French	44.8%	24.0%	33.3%	0.0%	0.0%	0.0%	0.0%
Legal origin: German	31.5%	61.8%	30.1%	93.9%	89.0%	11.0%	58.8%
Legal origin: Other	8.0%	14.3%	26.6%	0.0%	11.0%	0.0%	2.9%
Real interest rate	3.96	8.10	1.12	5.56	3.94	5.08	5.09
Missing real interest rate	47.2%	95.3%	90.0%	67.9%	44.1%	77.9%	32.4%
Deposit insurance	0.59	0.81	1.07	-2.32	-0.07	-0.52	-0.34
Safety net/Moral hazard index‡	72.68	72.50	80.68	74.16	72.19	67.66	57.90
Life expectancy	33.75	86.84	614.85	144.21	62.00	9.25	96.75
Benefit in PPP USD‡	4.1%	11.7%	20.3%	13.5%	21.0%	4.7%	18.6%
Benefit as a % of GDP per capita‡	88.9%	228.6%	1617.2%	379.2%	162.0%	24.9%	254.4%
Benefit as a % of $1.25/day pov. line‡	2.6%	7.7%	7.9%	2.6%	2.9%	0.9%	1.2%
Cost of pension spending as % GDP‡	96.6%	124.2%	110.5%	44.5%	43.2%	39.7%	34.1%
% population 60+ covered‡	56.42	60.58	64.67	60.91	58.23	55.77	58.01
Age of eligibility‡	1.90	7.17	1.94	2.70	3.33	3.03	4.01
Employer/employee contribution ratio‡	16.9%	26.3%	28.7%	22.9%	24.0%	26.6%	17.0%
% Contribution rate	12,204	21,040	30,119	16,536	9,069	9,132	34,044

Appendix Table 2
Weighted pairwise correlation matrix

	Saving for old age	Financial inclusion	Log(GDPpc)	GDPpc growth	Legal rights index	English leg. origin	German leg. origin	French leg. origin	Other leg. origin	Real interest rate	Deposit insurance	Moral hazard index	Life expectancy	Benefit	Benefit (%GDPpc)	Benefit (%1.25 pl)	Cost pension	Benefit coverage	Age of eligibility	Employer/employee ratio	Contribution rate
Saving for old age	1.00																				
Financial inclusion	0.27*	1.00																			
Log(GDPpc)	0.24*	0.50*	1.00																		
GDPpc growth	0.00	-0.08*	-0.23*	1.00																	
Legal rights index	0.07*	0.08*	0.01*	0.12*	1.00																
English leg. origin	0.04*	0.08*	0.00	0.06*	0.16*	1.00															
German leg. origin	0.13*	0.23*	0.24*	0.15*	0.10*	-0.25*	1.00														
French leg. origin	-0.14*	-0.27*	-0.24*	-0.09*	-0.26*	-0.60*	-0.45*	1.00													
Other leg. origin	0.02*	0.06*	0.13*	-0.16*	0.07*	-0.15*	-0.11*	-0.28*	1.00												
Real interest rate	-0.08*	-0.16*	-0.28*	0.03*	0.03*	0.00	-0.03*	0.05*	-0.06*	1.00											
Deposit insurance	0.07*	0.17*	0.33*	-0.14*	0.14*	-0.04*	0.04*	-0.01	0.02*	-0.01	1.00										
Moral hazard index	0.12*	0.15*	0.26*	0.15*	0.20*	0.01*	0.16*	-0.16*	0.05*	-0.12*	-	1.00									
Life expectancy	0.21*	0.43*	0.81*	-0.21*	0.05*	-0.12*	0.27*	-0.12*	0.08*	-0.14*	0.38*	0.07*	1.00								
Benefit	0.17*	0.37*	0.70*	-0.44*	0.10*	0.04*	-0.15*	-0.04*	0.26*	-0.31*	0.18*	0.13*	0.58*	1.00							
Benefit (%GDPpc)	0.02*	0.16*	0.23*	-0.46*	-0.02*	0.07*	-0.32*	0.13*	0.12*	-0.03*	0.18*	0.07*	0.14*	0.69*	1.00						
Benefit (%1.25 pl)	0.17*	0.37*	0.70*	-0.44*	0.10*	0.04*	-0.15*	-0.04*	0.26*	-0.31*	0.18*	0.13*	0.58*	1.00*	0.69*	1.00					
Cost pension	0.10*	0.32*	0.54*	-0.29*	0.08*	-0.36*	0.36*	-0.04*	0.14*	-0.08*	0.44*	0.18*	0.55*	0.40*	0.30*	0.40*	1.00				
Benefit coverage	0.12*	0.32*	0.51*	0.04*	-0.01*	-0.20*	0.42*	-0.17*	0.06*	0.00	0.19*	0.25*	0.40*	0.12*	0.04*	0.12*	0.61*	1.00			
Age of eligibility	0.12*	0.23*	0.36*	-0.16*	0.21*	-0.05*	0.05*	-0.12*	0.28*	-0.05*	0.20*	0.10*	0.43*	0.59*	0.31*	0.59*	0.34*	0.14*	1.00		
Employer/employee	-0.05*	-0.16*	-0.14*	0.14*	-0.12*	-0.21*	0.02*	0.19*	-0.06*	0.06*	0.03*	0.25*	-0.17*	-0.16*	-0.12*	-0.16*	0.10*	0.04*	-0.13*	1.00	
Contribution rate	0.06*	0.18*	0.32*	-0.06*	-0.03*	-0.29*	0.30*	0.03*	0.02*	-0.14*	0.34*	0.03*	0.38*	0.21*	0.10*	0.21*	0.65*	0.43*	0.16*	0.07*	1.00

Notes: The asterisk denotes levels of significance greater than 1%. The matrix has been computed using the corr_svy command in Stata.