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The impact of the aging of populations on consumption and savings

Executive summary

The aging of populations has been a demographic phenomenon in advanced economies for over two decades. Aging will continue over the next decades and increasingly be a topic also for selected emerging economies, notably China.

Consumption and savings differ with age, and aging has therefore an impact on the composition of consumption as well as on an economy's aggregate savings rate. On the following pages we first summarize key findings of academic research. Then, we look at age-dependent consumption and savings data from Germany and the USA and conduct simulations for the impact of aging on consumption and savings through 2050.

Our calculations illustrate mostly well-known results: income rises steadily during people's careers and declines during retirement with savings falling sharply for people aged over 65. Sectors that are going to see strong growth due to aging are health care, package tours, personal care and reading materials. Below average growth our outright declines will be seen in education, transportation (e.g. demand for vehicles), alcoholic beverages and insurance. As savings rates drop, a decline in the demand for financial services is likely.

It is noteworthy that the aging of populations will have a major impact on government finances with health care and pension costs rising strongly. The impact on public finances will differ vastly among countries, depending on how health care and pension systems are financed. Cecchetti et al note (The future of public debt: prospects and implications, BIS, 2010) that "drastic measures are necessary to check the rapid growth of current and future liabilities of governments and reduce their adverse consequences for long-term growth and monetary stability." This aspect of aging - which may turn out to be the major economic and political challenge for countries with aging populations starting in the middle of the next decade – is not the topic of this paper, however.

Findings of selected academic research

Gourinchas, P., Parker, J. (1999): Consumption over the life cycle, National Bureau of economic research, Cambridge, MA:

❑ The trend of consumption over the lifecycle is hump-shaped for individuals.

❑ Consumption depends on current and expected future income.

❑ Households expect their income to grow from age 20 to 50.

❑ People consume the most at age 40 to 50.

❑ Older households save actively for retirement.

Dynan, K., Edelberg, W., Palumbo, M. (2009): The Effects of Population Aging on the Relationship between

Aggregate Consumption, Saving, and Income., American Economic Review, Vol. 99, S. 380-86.:

❑ Population aging has had a material effect on the pattern of the aggregate saving rate over time.

❑ Individuals smooth consumption over their lifetimes given expected lifetime resources.

❑ Because income tends to rise steeply during working years and decline significantly during retirement, the theory predicts that saving will tend to be negative in the early working years (as young households borrow in advance of higher earnings), become positive and large in middle age, and then turn negative again in retirement.

❑ In future, there will be a greater ability to smooth consumption because of financial innovation.

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Findings of selected academic research (cont'd)

Yang, F. (2006) Consumption Over the Life Cycle: How Different Is Housing?, Federal Reserve Bank of Minneapolis, Working Paper 635:

❑ Consumption expenditure of non-housing goods is hump-shaped over the life cycle: it starts low early in life, rises considerably around middle age, and then falls at more advanced ages, even after controlling for the demographic characteristics of the households.

❑ The ratio of housing and non-housing consumption should not be age-dependent. The high transaction costs for trading houses prevent households from decreasing their housing stock quickly later in life.

❑ In the US, young households virtually own no liquid financial assets, but hold a major fraction of their wealth as housing. Later in life, households shift their portfolios to financial assets.

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Age-dependent expenditures per capita (Germany)

Expenditures rise steadily during people's careers and decline only slightly in the age group over 60.

Change in consumption patterns of older people (60 years and over) vs. 45-59 year olds:

❑ Growth in expenditure: Health care (+53%), package tours (+43%), personal care (+16%).

❑ Falling expenditures: Education (-74%), insurance (-37%), transportation (vehicles -39%), alcoholic beverages (-32%), communications (-30%),
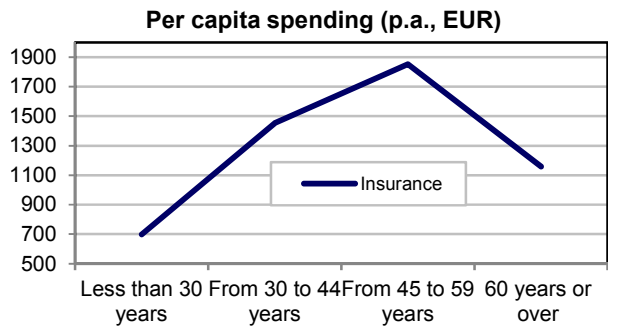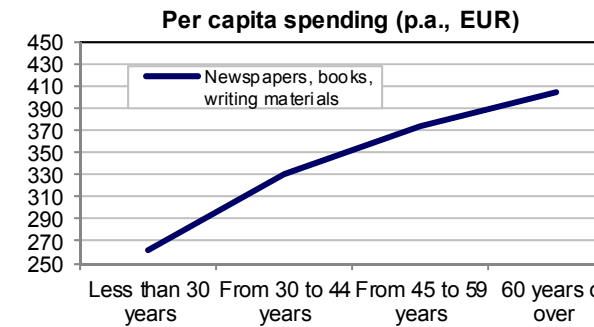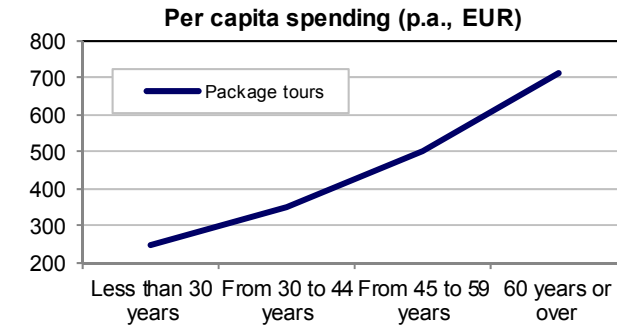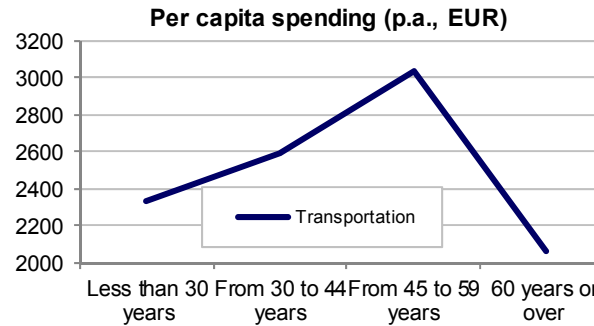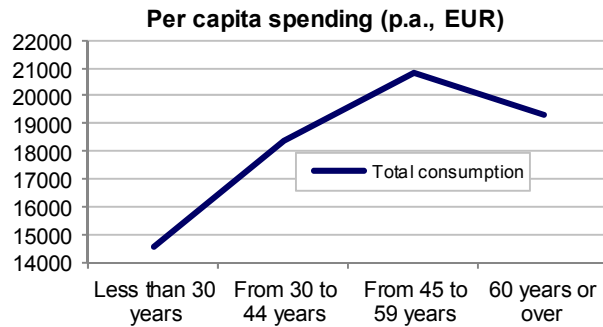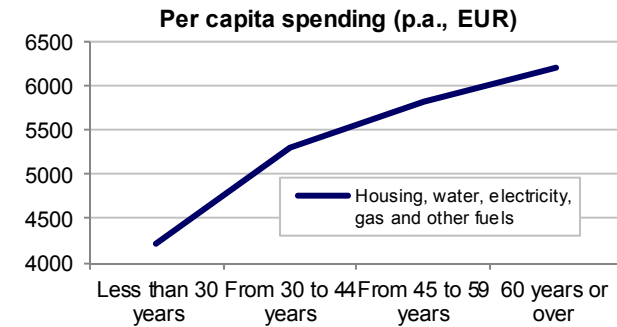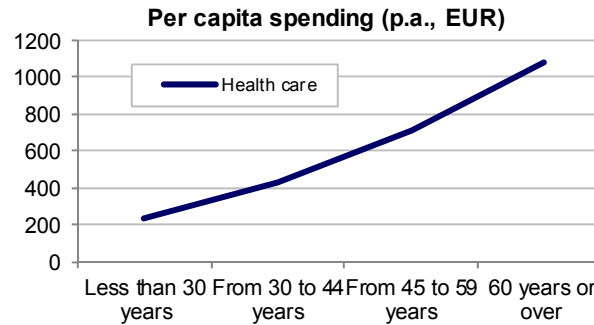
Per capita spending by age group (Germany)

	Less than 30 years	in %	From 30 to 44 years	in %	From 45 to 59 years	in %	60 years or over	in %	60+ in % of 45 to 59
Total consumption(Euro)	14'548	100%	18'394	100%	20'806	100%	19'290	100%	-7%
Food and non-alcoholic beverages	1'542	11%	2'115	12%	2'289	11%	2'141	11%	-6%
Alcoholic beverages, tobacco and narcotics	306	2%	313	2%	395	2%	270	1%	-32%
Clothing and footwear	786	5%	938	5%	978	5%	829	4%	-15%
Housing, water, electricity, gas and other fuels	4'204	29%	5'297	29%	5'826	28%	6'211	32%	7%
Furnishings, household equipment and routine maintenance of	742	5%	993	5%	1'124	5%	1'080	6%	-4%
Health care	233	2%	423	2%	707	3%	1'080	6%	53%
Transportation	2'328	16%	2'594	14%	3'038	15%	2'064	11%	-32%
Purchase of vehicles	800	6%	920	5%	1'165	6%	714	4%	-39%
Communications	742	5%	570	3%	603	3%	424	2%	-30%
Recreation and culture	1'557	11%	2'005	11%	2'205	11%	2'276	12%	3%
Newspapers, books, writing materials	262	2%	331	2%	375	2%	405	2%	8%
Package tours	247	2%	349	2%	499	2%	714	4%	43%
Education	189	1%	258	1%	146	1%	39	0%	-74%
Restaurants and hotels	655	5%	773	4%	853	4%	849	4%	-1%
Miscellaneous goods and services	1'251	9%	2'115	12%	2'642	13%	2'006	10%	-24%
Personal care	349	2%	368	2%	416	2%	482	3%	16%
Insurance	698	5%	1'453	8%	1'852	9%	1'157	6%	-37%

Note: Age of the household reference person. Consumption per adult equivalent. Source: Eurostat (data 2005).

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Age-dependent expenditures per capita: Graphs for Germany

Source: Eurostat.

Per capita spending (p.a., EUR) — Health care

Per capita spending (p.a., EUR) — Housing, water, electricity, gas and other fuels

Per capita spending (p.a., EUR) — Total consumption

Per capita spending (p.a., EUR) — Transportation

Per capita spending (p.a., EUR) — Package tours

Per capita spending (p.a., EUR) — Newspapers, books, writing materials

Per capita spending (p.a., EUR) — Insurance

Age-dependent expenditures per capita (USA)

Income rises steadily during people's careers, on average, and declines during retirement.

The amount of savings correlates with income. Savings fall sharply during retirement.

Spending in most categories moves in line with disposable income. Major exception: Health care expenditures rise steadily with age.

Spending patterns of elderly people: High and rising share of health care expenditure, high and rising spending for reading materials; comparatively high spending for housing; reduced spending for eating out of home, apparel, education (in addition: strong drop in savings during retirement).

Per capita spending by age group (USA)

	Age of householder						
	Under 25 years	25 to 34 years	35 to 44 years	45 to 54 years	55 to 64 years	65 to 74 years	75 years and over
Income after taxes	12761	20443	22697	27664	32184	24288	19545
Difference income and expenditures	-1299	3838	5333	6697	7201	1679	-253
Average annual expenditures (dollars)	14060	16605	17364	20967	24982	22609	19798
Food	2090	2203	2352	2659	3001	2927	2618
Food away from home	866	961	1004	1108	1250	1049	836
Housing	4868	6164	6274	6787	8091	7612	7382
Apparel and services	698	668	711	673	758	696	496
Transportation	2667	2740	2535	3360	3963	3702	2269
Health care	338	645	764	1133	1855	2582	2987
Entertainment	617	894	1005	1134	1384	1315	992
Personal care products and services	180	198	208	238	294	316	285
Reading	21	25	26	43	70	81	84
Education	955	289	283	734	478	95	88

Note: the data lists household income and expenditures by age of householder. Per capita spending is derived by dividing household expenditure by the number of persons in households. Source: U.S. Bureau of Labor Statistics (Consumer Expenditures in 2009)

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Age-dependent expenditures per capita USA (cont'd)

The table shows the %-distribution of household spending by age groups.

**Per capita spending by age group in % of total expenditures (USA)**

	Age of householder						
	Under 25 years	25 to 34 years	35 to 44 years	45 to 54 years	55 to 64 years	65 to 74 years	75 years and over
Income after taxes	90.8%	123.1%	130.7%	131.9%	128.8%	107.4%	98.7%
Difference income and expenditures	-9.2%	23.1%	30.7%	31.9%	28.8%	7.4%	-1.3%
Average annual expenditures (dollars)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Food	14.9%	13.3%	13.5%	12.7%	12.0%	12.9%	13.2%
Food away from home	6.2%	5.8%	5.8%	5.3%	5.0%	4.6%	4.2%
Housing	34.6%	37.1%	36.1%	32.4%	32.4%	33.7%	37.3%
Apparel and services	5.0%	4.0%	4.1%	3.2%	3.0%	3.1%	2.5%
Transportation	19.0%	16.5%	14.6%	16.0%	15.9%	16.4%	11.5%
Health care	2.4%	3.9%	4.4%	5.4%	7.4%	11.4%	15.1%
Entertainment	4.4%	5.4%	5.8%	5.4%	5.5%	5.8%	5.0%
Personal care products and services	1.3%	1.2%	1.2%	1.1%	1.2%	1.4%	1.4%
Reading	0.1%	0.1%	0.1%	0.2%	0.3%	0.4%	0.4%
Education	6.8%	1.7%	1.6%	3.5%	1.9%	0.4%	0.4%

Note: the data lists household income and expenditures by age of householder in % of expsndeitures. Per capita spending is derived by dividing household expenditure by the number of persons in households. Source: U.S. Bureau of Labor Statistics (Consumer Expenditures in 2009)

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Age-dependent expenditures per capita: Graphs for the USA
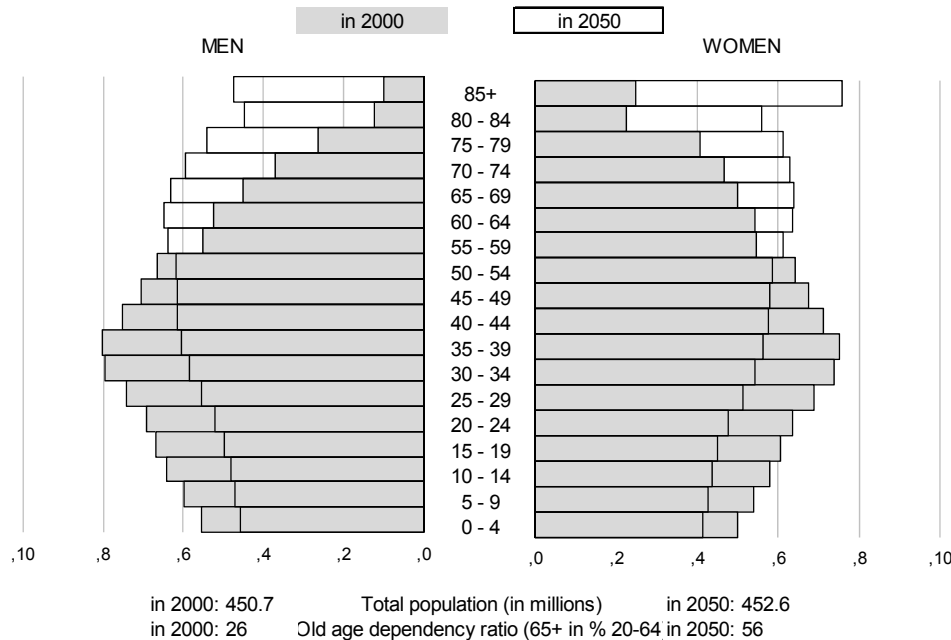
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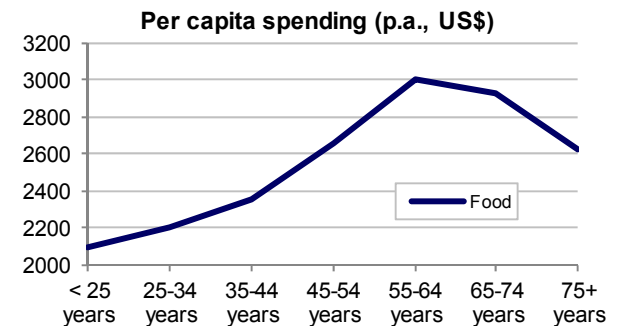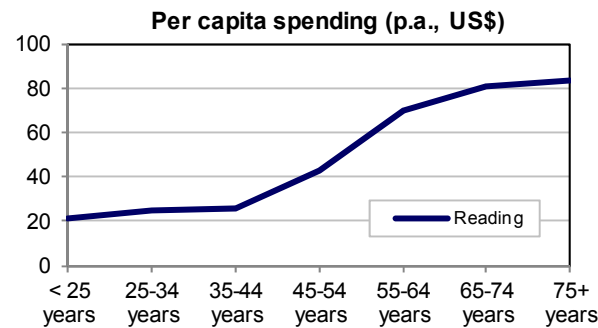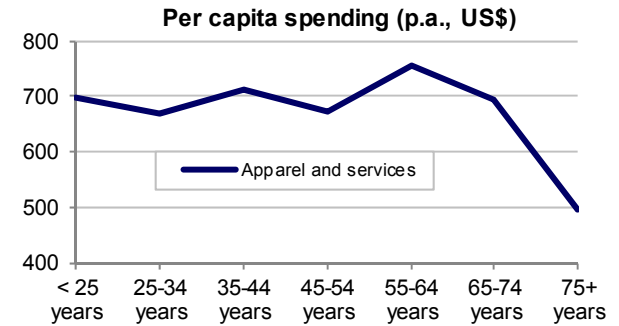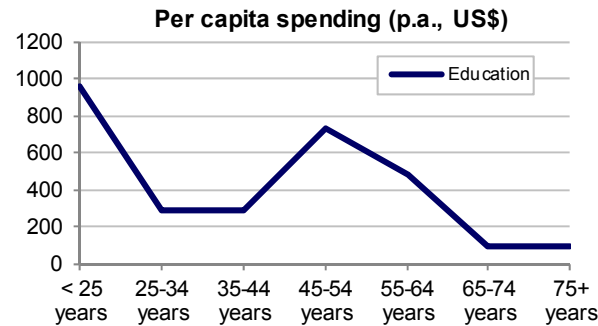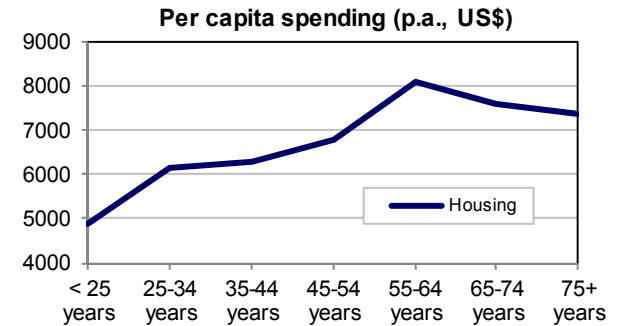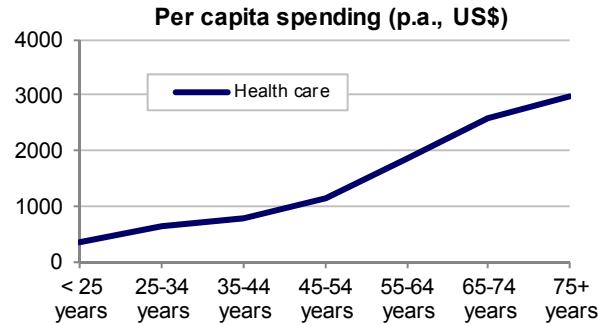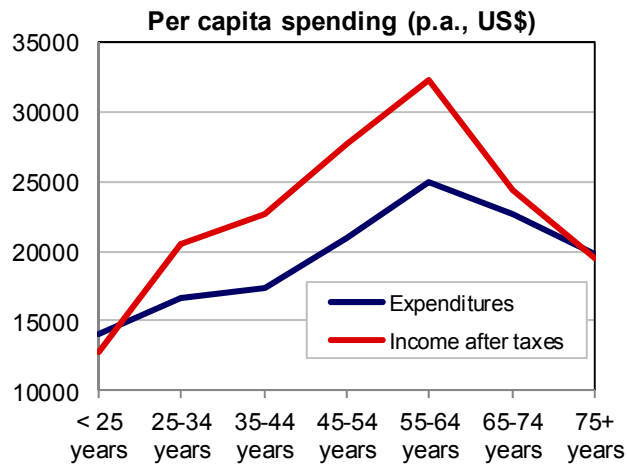
Population pyramids

The graphs show populations by age group and gender in 2000 and 2050 (source: OECD).

In 2050, there are generally fewer young people and more elderly people. Given higher fertility rates, the shrinking of the number of young people is less pronounced in the USA.
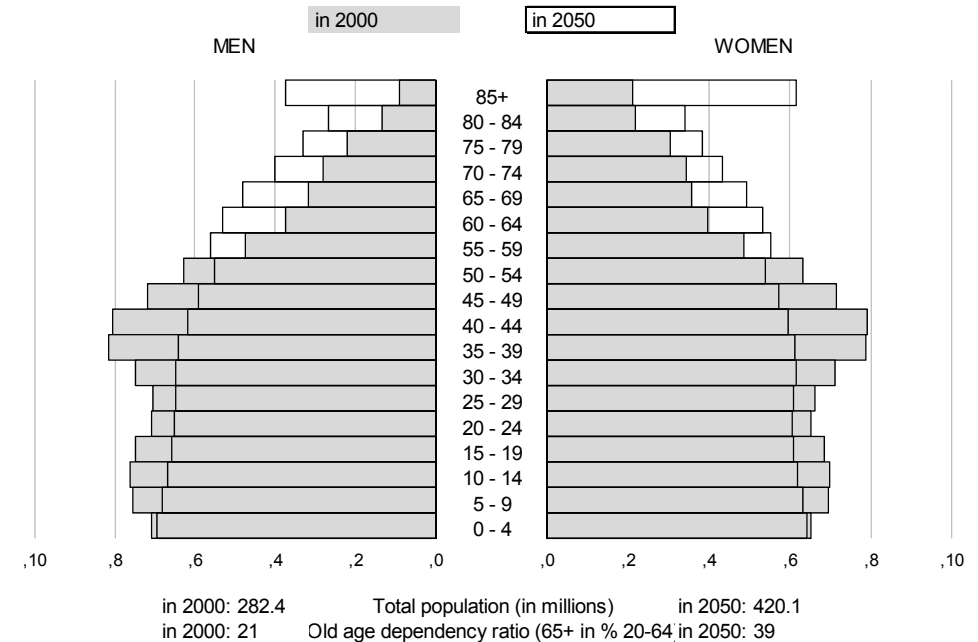
EU25-total

Population by age group, gender, in 2000 and 2050, in percentage of total population in each group

in 2000   in 2050

MEN   WOMEN

in 2000: 450.7   Total population (in millions)   in 2050: 452.6
in 2000: 26   Old age dependency ratio (65+ in % 20-64 in 2050: 56

UNITED STATES

Population by age group, gender, in 2000 and 2050, in percentage of total population in each group

in 2000   in 2050

MEN   WOMEN

in 2000: 282.4   Total population (in millions)   in 2050: 420.1
in 2000: 21   Old age dependency ratio (65+ in % 20-64 in 2050: 39

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Simulation of expenditures in an aging population (Europe)

Europe's population (OECD data for 25 European Union countries) is forecast to grow by 7% between 2000 and 2050. At the same time, the population ages (higher share of above 65-year olds, smaller share of young people).

Strongest growth will be seen in health care, package tours, personal care and reading materials.

Below average growth our outright declines: education, communication, transportation (e.g. demand for vehicles), alcoholic beverages, insurance.

Germany: Personal spending and aging (simulation)

	2000	2050	Change	
	Total (bn euro)	**Total** (bn euro)	bn euro	% 2050 vs. 2000
Total consumption(Euro)	6'400.8	6'979.0	578.2	9.0%
Food and non-alcoholic beverages	711.7	775.4	63.6	8.9%
Alcoholic beverages, tobacco and narcotics	110.4	115.4	4.9	4.5%
Clothing and footwear	307.3	326.0	18.7	6.1%
Housing, water, electricity, gas and other fuels	1'892.8	2'103.5	210.7	11.1%
Furnishings, household equipment and routine	346.6	381.1	34.5	9.9%
Health care	221.1	278.1	56.9	25.7%
Transportation	865.9	899.0	33.0	3.8%
Purchase of vehicles	311.3	321.9	10.6	3.4%
Communications	196.4	198.3	1.9	1.0%
Recreation and culture	707.1	782.4	75.3	10.6%
Newspapers, books, writing materials	120.7	135.0	14.3	11.8%
Package tours	161.8	196.2	34.4	21.3%
Education	54.2	47.4	-6.8	-12.5%
Restaurants and hotels	273.5	299.7	26.3	9.6%
Miscellaneous goods and services	710.9	769.0	58.0	8.2%
Personal care	140.8	158.0	17.1	12.2%
Insurance	460.4	487.8	27.4	6.0%

Note: Calculations based on age-dependent spending (Germany, 2005), simulated using populations in age groups in 2000 and 2050 for the EU. Source: Eurostat (data 2005), OECD, R & A Group calculations

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Simulation of expenditures in an aging population (USA)

The U.S. population is forecast to grow by over 50% between 2000 and 2050. At the same time, the population ages (cf. population pyramids : higher share of above 65-year olds, smaller share of young people).

Consumption is set to grow more strongly than incomes as older people save less.

Most consumption items grow about in line with the change in population based on U.S. population dynamics and the assumption the age-specific consumption patterns stay the same in the coming decades.

Above average growth sectors: health care, reading, personal care products.

Weak growth: demand for education grows much less than average consumer spending.

USA: Personal spending and aging (simulation)

	2000	2050	Change	
	Total	**Total**		% 2050
	(bn US$)	(bn US$)	(bn US$)	vs. 2000
Income after taxes	4699.5	7251.5	2552.1	54%
Difference income and expenditures	826.9	1143.2	316.4	38%
Average annual expenditures (dollars)	3872.6	6108.3	2235.7	58%
Food	506.5	795.5	289.0	57%
Food away from home	206.4	316.0	109.6	53%
Housing	1342.4	2120.0	777.5	58%
Apparel and services	137.4	207.7	70.3	51%
Transportation	605.9	938.2	332.3	55%
Health care	252.5	464.7	212.2	84%
Entertainment	210.7	330.9	120.2	57%
Personal care products and services	47.6	76.6	29.0	61%
Reading	8.8	15.6	6.8	78%
Education	85.5	119.7	34.2	40%

Note: Calculations based on age-dependent spending (2009), simulated using populations in age groups in 2000 and 2050. Source: U.S. Bureau of Labor Statistics (Consumer Expenditures in 2009), OECD

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