

Notes on 2010/5/4

1. Nigeria is included.
2. Section 1 and section 2 are slightly modified and rephrased to improve readability.
3. Section 3 is much revised.
 - The sub-sections are reorganized; education and health care goes into section 3.3, and section 3.4 has more discussion on the shape of CFX and CF.
 - Accordingly, Figure 13 is adjusted and Figure 14 is added, to replace the old Figure 13 that has low information content.
 - The scale of the three panels of Figure 11 is adjusted.
 - More is discussed about the relative height of the C curves in Figure 1, as per Andy's suggestion. The interpretation of other graphs are also revised.
 - I have kept Figure 2 on C/LY and Figure A1 showing the real income of the 23 countries. If they should be deleted or moved to other chapters, I could say a little more on all other figures.
4. Section 4 is revised and somewhat expanded.
5. The text itself is 3970 words (including those "Figure 1 about here"...), and I have fourteen graphs plus Figure A1 (Fig 1 and Fig 7 are full-page size, others take half a page each).
6. An excel file is prepared with all the graphs and data.

Consumption over the Life Cycle: An International Comparison

An-Chi Tung

Institute of Economics, Academia Sinica

1. Introduction

Although consumption is not equivalent to utility and welfare, it is a major determinant of the latter two, and is therefore of utmost research interest and policy relevance. One of the most influential models of consumption is the lifecycle hypothesis (e.g., Modigliani and Brumberg 1954), which postulates that people smooth consumption over the life cycle to maximize expected intertemporal utility. To be specific, people borrow against future earnings in the early life when income is low (or zero), save during the productive working years, and consume accumulated assets after retirement.

Observed age profiles of household consumption often exhibit a hump shape, rather than staying flat as predicted by the simplest textbook example of the pure lifecycle theory. Classical explanations for the discrepancy begin with the notions of liquidity constraint and precautionary saving, and extend to myopia, bequest motive, leisure choice, and so on (Deaton, 1992). Further refinements include the consideration of family size and structure, cohort effect, and heterogeneity over commodities, such as durable vs. non-durable and work-related vs. non-work-related expenses (Attanasio, 1999). Thus the retirement puzzle (Hamermesh, 1984), and other observed oddities, seem to have been demystified (Battistin et al., 2009).

Yet some important aspects of consumption remain little understood. A critical issue is that the age profile of individual consumption has hardly been estimated. Most studies,

except Lee (1994) and a few more, construct measures of household consumption, rather than individual consumption, by the age of the household head. One conceptual difficulty of attributing consumption to individuals is that some consumption is public good or joint consumption in nature, and there may be scale economies within the household. Moreover, family expenditure surveys, which are the main sources of micro data, usually do not report individual consumption.

Related is the problem that little is known about the consumption pattern of the very old and the very young. The bulk of the literature, including those on retirement puzzles, looks at households in the middle of the lifecycle of the head, say from age 20 to age 70. Very few studies in this area (e.g., Borsch-Supan, 1992) focus on the elderly. The literature on children has been rich, but most of which discuss the cost of children to parents (Deaton and Muellbauer, 1986), rather than the consumption of children, while the latter, with a broader coverage than the former, is a more relevant concept in analyzing children welfare (Bradbury, 2004). Additional work is in need in the estimation of the consumption of both children and elders.

The NTA methodology is an effective and powerful tool to address the above issues. It separates out the consumption by each member within the household, and constructs the age profiles from age 0 to age 90 plus. This new information opens up opportunities for re-examining the allocation of consumption across all age groups and over the lifecycle, and for re-assessing the policy implications.

The evidence of twenty-three economies is presented in this chapter, covering both developed and developing countries, from the most populous (China and India) to the very small (e.g., Slovenia). Although each country only reports the results of one year, the

international comparison sheds light on a host of important policy issues from equity between age groups to the adequacy of human capital investment and many more.

The rest of the chapter is organized as follows. Section 2 highlights the special features of the NTA methodology concerning consumption. Section 3 looks into the similarity and dissimilarity of the consumption age profiles across countries. Both public and private consumption and their various components are examined. By way of concluding the chapter, Section 4 summarizes the main findings and discusses what can be done next.

2. Consumption in the NTA framework

In NTA, the consumption of an individual is defined as the sum of private and public consumption, each of which is further disaggregated into education, health care and other consumption. Leaving the details of the methodology to [Chapter 3](#) and a manual on the NTA website www.ntaccounts.org, this section discusses two special features of the NTA method regarding consumption.

Firstly, in the NTA framework, public consumption, with social insurances included, is added to private consumption, while these two expenditures are ordinarily treated separately in the literature. Note that there are essentially two types of public consumption (Musgrave, 1959), merit goods (health care and education) and public goods (e.g., defense, public order, justice). The inclusion of merit goods, which could have been provided privately, is particularly important. For example, while 8.5% of private consumption is allocated to education in Mexico in 2004, the ratio is merely 0.66% in Sweden in 2003. Yet public education spending in Sweden is so large that the percentage share of education in total consumption (12.66%), public and private combined, is almost

the same as Mexico (12.92%). Simultaneous consideration of both public and private consumption is therefore necessary. As for the public goods and services, they can be either substitutes or complements to private goods in nature (Ni, 1995; Fiorito and Kollintzas, 2004). By ex-post accounting in the NTA framework, both public goods and merit goods are summed up to private consumption to arrive at total consumption.

A second feature is the emphasis on education and health care, both being major determinants of human capital and thus carrying great policy significance regarding future growth potential (Schultz, 1962; Grossman, 1972). Education consumption is mostly concentrated in children and young adults. Health expenditure is usually high for babies, moderate for older children and prime age adults, and very high for the elderly, especially in rich economies and when long-term care spending is included. Given their distinct age patterns, education and health care spendings are estimated separately from other spending.

3. International Comparison

The results of twenty-three economies from four continents are presented. The real per-capita income and population structure of each country are summarized in Figure A1.

3.1 Twenty-three countries at a glance

The age profiles of mean labor income and consumption of the twenty-three economies are presented in Figure 1. Illustrated in the center of each panel is mean labor income (YL), which is the subject of **Chapter ?**. Three curves cross through the labor income hump. The dotted line in the bottom represents mean public consumption (CG), the broken line in the middle is mean private consumption (CF), and the thick line on top is mean total consumption (C). The countries are ranked by the PPP-adjusted GDP per

capita in 2005 international dollars, and are listed from left to right and top to bottom. All panels are presented by the same scale, and all series are normalized by mean labor income of age 30-49 of each economy.

(Figure 1 about here.)

There is an interesting variety across nations regarding the shape and relative height of the curves. The mean private consumption curve, for example, does not always show the classical single hump shape. Some countries have multiple humps, and some humps are rather skewed. We shall come back to the shape of consumption age profile after reviewing each of the components.

The relative height of consumption to labor income is quite different across countries, and the ratio between aggregate consumption and labor income expands widely from 0.78 (China) to 1.69 (Mexico). Factors that could account for a high consumption-labor income ratio include high non-labor income from natural resources (e.g., Mexico) or remittances from the rest of the world (e.g., the Philippines), low savings rate (e.g., Brazil), unfavorable age structure with heavy concentration in children (e.g., Nigeria), or a combination of these factors. Nigeria, for example, has both large non-labor income from oil exports and high dependency ratio. Consequently, its aggregate total consumption is 1.67 times as high as labor income. In contrast, the ratio is merely 1.02 in Kenya, which has similar population age structure as Nigeria, but without the large oil income.

Figure 2 shows both the “average” ages of consumption and labor income, and the

age groups with positive or negative lifecycle deficit (LCD). The average ages of consumption and labor income are denoted by squares and crosses, respectively, and the countries are sorted by the average age of consumption. In high-income countries, these two average ages are rather close, but the average consumption age declines faster than the labor income age in lower-income countries. This is mainly due to a younger population structure in the latter economies, though labor market conditions and other social and economic factors also matter. With little surprise, both ages are the lowest in Kenya (age 24.8 for consumption and age 36.3 for labor income), and the highest in Japan (age 46.3 for consumption and age 45.5 for labor income), which happen to be the two countries with the youngest and oldest population in our sample.

The lifecycle deficit can be seen as a measure of dependency. The age groups when LCD has a negative value (shown by the white area in Figure 2) are sandwiched by the age groups when LCD is positive (the grey and dark grey areas). The first age when LCD turns into negative is usually around 24-27, and the last age is around 53-59. Exceptions include Austria and China, where the first age of independency is age 21, likely because of an early entry in the labor market in the former and high savings rate in the latter. In Mexico and Brazil (age 29), the first age of independency is the highest of all countries (age 29), and the last age is the lowest (age 49 and age 52, respectively), echoing the high consumption-labor income ratio in both countries. In Sweden, people between age 25 to 62 are self-sufficient, spanning the longest years of independency of all countries.

(Figure 2 about here)

3.2 Public and private consumption

At the aggregate level, the percentage share of public spending in total consumption ranges from 9.08% (Nigeria) to 42.33% (Sweden), with a simple average of 23.60%. The richer countries tend to have a higher public share in total consumption (Figure 3). A simple regression of the public consumption share on real per-capita income yields a coefficient of 0.186.¹ Among all countries, Brazil, China, Hungary and Sweden have disproportionately high public expenditures, and Indonesia, Nigeria and USA have disproportionately high private spending.

(Figure 3 about here.)

To facilitate analysis, we calculate the mean consumption of three broad groups, children (0-19), the working age adults (20-64), and the elderly (65+), for private, public and total consumption. Take private consumption for example, the three variables are denoted as CF_{0-19} , CF_{20-64} , and CF_{65+} , respectively. In Figure 4, the ratio CF_{0-19}/CF_{20-64} is plotted against CF_{65+}/CF_{20-64} to show the relative size of these three variables. Three thick broken lines are drawn for reference, each representing $CF_{0-19} = CF_{65+}$ (a 45-degree line), $CF_{20-64} = CF_{0-19}$ (a vertical line), and $CF_{20-64} = CF_{65+}$ (a horizontal line). A solid circle indicates the perfect equality point.

In all of the twenty-three countries, child consumption is the lowest of the three age groups, as all points lie above the 45-degree line and to the left of the vertical reference line in Figure 4. In eight countries (Brazil, Germany, Japan, Kenya, Nigeria, Philippines,

¹ A linear regression can be modeled as follows: $CG/C = 0.1632 + 0.1860 \text{ gdp}$, $\text{adj } R^2=0.4758$
(0.0199)*** (0.0406)***

Uruguay, USA) that are also located above the horizontal reference line, an average elderly consumes the most, so that $CF_{0-19} < CF_{20-64} < CF_{65+}$. In the other fifteen countries, a person aged 20-64 has the highest spending, and $CF_{0-19} < CF_{65+} < CF_{20-64}$.

Two additional thin broken lines are drawn to single out the extreme cases. In Brazil, per capita elderly consumption is 1.3 times that of a working-age adult, and is 2.36 times of a child. In Kenya, Hungary and USA, average child consumption is very low and is less than one half of the level of both an elderly and a working-age adult. At the other extreme is Taiwan, which is located the closest to the perfect-equality point. Its CF_{0-19} is 0.8 times of CF_{20-64} , and 0.91 time of CF_{65+} .

(Figure 4 about here)

The case for public consumption depicts a very different picture (Figure 5). Public spending on a child is the highest of the three age groups in all countries except for Nigeria, where the three groups have similar levels. Public spending on an elder is also greater than a working-age person in most countries, and is just slightly below the latter in India, Kenya and Nigeria. These results are only natural, because public education spending concentrates in children, and public health expenditures are higher for the elderly, especially in richer countries, but hardly any public spending targets at middle-age persons.

The redistribution function of the public sector is most pronounced in Japan, Slovenia and Sweden, where both CG_{65+} and CG_{0-19} are more than twice as high as CG_{20-64} . In Thailand, mean child consumption is by far the largest, whereas in USA,

average elderly consumption is the highest. Between children and elderly, an elderly receives more in Brazil, Costa Rica, Germany, Japan, Sweden and USA, but a child gets more in the other seventeen countries.

(Figure 5 about here.)

Figure 6 shows the case for total consumption, presented by the same scale as private consumption in Figure 4. In all countries, child consumption relative to that of a working-age adult is increased with the inclusion of public consumption. Elderly consumption relative to those aged 20-64 also improves in most countries, but to a lesser extent than children consumption. In Slovenia, both child and elderly consumption have risen so much that they become higher than that of a working-age adult.

(Figure 6 about here.)

3.3 Consumption on education and health care

The composition of mean consumption in each country is shown in Figure 7. All series are normalized by mean consumption of age 30-49, and all panels are presented by the same scale. Public (CGH) and private health consumption (CFH) are drawn atop, public (CGE) and private education spending (CFE) in the bottom, and public (CGX) and private other consumption (CFX) in the middle part.

A number of points worth noting. Firstly, education spending in East Asian and some European countries is so high that there appears an “education peak” in these countries.

Second, while there is a phenomenal tall tail in Sweden, resulting from high public health consumption of an elderly, a similar rising tail can be observed in USA, Japan, Germany and other European countries. Third, the spending on either education or health care is small in lower income countries. In Kenya, the combined share of education and health care in total consumption is only 7.99%, as compared with 31.12% in Sweden.

(Figure 7 about here)

Education is the major channel of human capital investment, hence it is both a consumption and investment good. Figure 8 summarizes the education share in total consumption at the aggregate level. The simple average of all countries is 7.96% (5.36% public spending and 2.60% private spending).

(Figure 8 about here)

A striking fact is that, besides Austria and Sweden, six of the eight countries with an education share higher than the grand average are middle-income or lower high-income countries (Brazil, Costa Rica, Korea, Mexico, Slovenia and Taiwan). For Brazil and Costa Rica, the result is largely due to a sizeable young population; but for the other four countries, education makes a substantial share (22.31%-28.12%) in the consumption of a young person aged 0-29, and the ratio is comparable or higher than most high-income countries. Sweden stands out in our sample, with education spending accounting for 33.94% of the mean consumption of those aged 0-29. The ratio is rather low in Germany

(17.86%), which does not even reach the level of the grand average (18.52%). For lower income countries, education consumption is low on either aggregate or per capita basis. In Kenya, education is only 8.76% in the consumption of a person aged below 30.

The allocation between school levels and the mix of public and private expenditures vary widely across countries, conceivably reflecting different social choices. Two pairs of countries are illustrated in Figure 9. The first pair is Mexico and Slovenia, both of which have high education spending. Yet the public share in education consumption is extremely large in Slovenia (90.83%), whereas it is just 44.67% in Mexico. The second pair is India and the Philippines. They both record lower-than-average education share in total consumption at the aggregate level (5.06% for India and 7.92% for the Philippines), and both give more emphasis to university education on the per capita basis. However, in the Philippines, like in many other countries, the public sector allocates more resources on primary schools, and private sector spends more on tertiary level, while it is the opposite in India.

(Figure 9 about here.)

Health care is another major determinant of human capital in addition to education (Becker, 2007). Figure 10 summarizes the percentage share of health care spending in total consumption. Unlike education, richer countries tend to have higher health spending, though Nigeria has a high percentage comparable to the richer countries, too. The simple average across countries is 9.35% for health care in total consumption (5.54% from public spending, and 3.81% from private spending), ranging from 2.01% (Kenya) to

18.46% (Sweden).

(Figure 10 about here.)

The age distribution and the private-public mix of health care consumption are far from uniform across countries. Figure 11 draws the simple averages of eight rich countries, nine middle-income countries, and six lower-income countries, normalized by mean consumption of age 30-49. The similarity of CFH among the three income groups makes a sharp contrast to CGH, in terms of both the relative size and age pattern. In richer countries, CGH is not only much larger than CFH, but also much more concentrated in the older age groups. For an elderly aged 65 or above in the rich countries, public and private health spending are 25.19% and 4.86% of total consumption, respectively; it is 9.66% and 8.55% in the middle-income countries, but only 1.67% and 5.94% in the lower-income countries.

(Figure 11 about here.)

The age distribution by the three broad age groups is presented in Figure 12. In all countries, mean elderly health consumption is the highest, and child consumption is the lowest, so that $CH_{0-19} < CH_{20-64} < CH_{65+}$. An elderly in the richer countries tend to have a higher consumption level relative to a working-age adult. The CH_{65+}/Ch_{20-64} ratio is 6.14 in Sweden, 3.84 in Japan, but only 1.30 in Nigeria. Mean child consumption relative a working-age person (CH_{0-19}/Ch_{20-64}) is normally low (0.40-0.65), it is the lowest in Austria (0.28), and the highest for Kenya, Philippines, Taiwan and Uruguay (0.88-0.99).

(Figure 12 about here.)

3.4 Public and private consumption revisited

In public consumption, what is not spent on health care and education is classified as “other” public consumption (CGX), which accounts for 6.40%-21.17% of total consumption. As the public expenditures on defense and other public goods and services are seldom age-targeted, they are allocated uniformly to every resident in the NTA framework, unless there exist age-varying data of specific public services. In Finland, for instance, day care services of children and home care of the elderly are allocated by age.

While CGX is flat across age groups, CGE and CGH are not. Therefore, total public consumption commonly shows a hump at the children’s end, and a rising tail at the elderly’s end, though the end tail is indistinct in the bottom seven countries in terms of real income (Thailand, Indonesia, China, the Philippines, India, Nigeria and Kenya) .

Private “other” consumption (CFX) comprises 55.53%-84.66% of total consumption at the aggregate level. Included in this category are the consumption of food, clothing, housing rent, transportation, recreation, the service flow of durables, and so on. The CFX always starts low, mainly because an equivalence scale is applied to children below age 20 in the NTA method. Over the entire age range, CFX usually shows a certain kind of hump shape, mirroring the changing needs and means of each age group. Quite a few countries exhibit a double-hump pattern, most of which peak around age 30 and age 60 (e.g., Costa Rica and Japan). China has multiple humps and a visible trough at age 45, which probably manifests the cohort effect due to the Cultural Revolution. Many other

countries have just one hump, either left-skewed (in the Philippines, the peak appears at age 27), right-skewed (in USA, the peak is at age 64), or very fat (in Mexico and Spain, the hump extends between age 25 to age 60). Figure 13 illustrates the case of selected countries.

(Figure 13 about here.)

The shape of the age profile of total private consumption (CF) bears much resemblance to that of CFX. Figure 14 presents the total private consumption of the same set of countries as in Figure 13. A couple of observations can be made. Firstly, in China, Mexico and Taiwan, there is an additional peak at a young age, due to large private education spending. Secondly, in USA, the declining portion in CFX after age 65+ is substantially mitigated by a large private spending on health care.

There are other patterns that are not shown in the figure – in Uruguay, for example, CFX increases all the way up to age 90. Most countries, however, do not exhibit the classic centered hump as found in the existing literature (e.g., Attanasio, 1999), even if we focus on the middle part of the age spectrum. In Taiwan, CFX is mostly on the decrease between age 20 and age 70, and CFX shows a U shape in the Philippines. Although the NTA results are not directly comparable to earlier findings because it is conducted on an individual basis, the differences certainly deserve pondering upon.

(Figure 14 about here.)

4. Concluding remarks

To recapitulate, we have presented the consumption pattern of twenty three countries computed in the NTA method. A comparison across countries indicates a number of inter-related points.

Firstly, the public spending plays an important redistributive role between age groups. In all countries, mean private consumption of a child is lower than both a working-age adult and an elderly. In many countries, the mean private consumption of an elderly is also lower than a working-age adult. Yet the public sector spends more on children and the elderly in most countries, so that the relative level of consumption is improved for both the young and the old.

Secondly, the consumption-equalization function of public spending tends to be stronger in richer economies. The public share in total consumption is in general greater in higher income countries; and a larger portion of public consumption is spent on education and health care in these countries.

Thirdly, higher income countries tend to have a larger percentage share of education in total consumption, and also a much larger public portion. However, in some middle-income countries (e.g., Taiwan and Mexico), a person below age 30 spends a larger share on education than in some high-income countries (e.g., USA and Germany).

Fourthly, the percentage share of health care in aggregate consumption is the highest in high income countries, so is the public share in health consumption. This is particularly true for the elderly, who spent more on health care than other age groups.

Fifthly, the age profile of public consumption usually exhibits a hump at the young age and a rising tail at the old age, while the age profile of private consumption shows

more heterogeneity and differs from conventional wisdom.

There are more aspects to be explored. The finance of consumption will be elaborated elsewhere in this volume. Other issues, such as the determining of the level and age distribution of consumption across countries, the estimation of time effect or cohort pattern, the interpretation of the differences with previous findings, and the policy implications, are worthy topics for serious scrutiny.

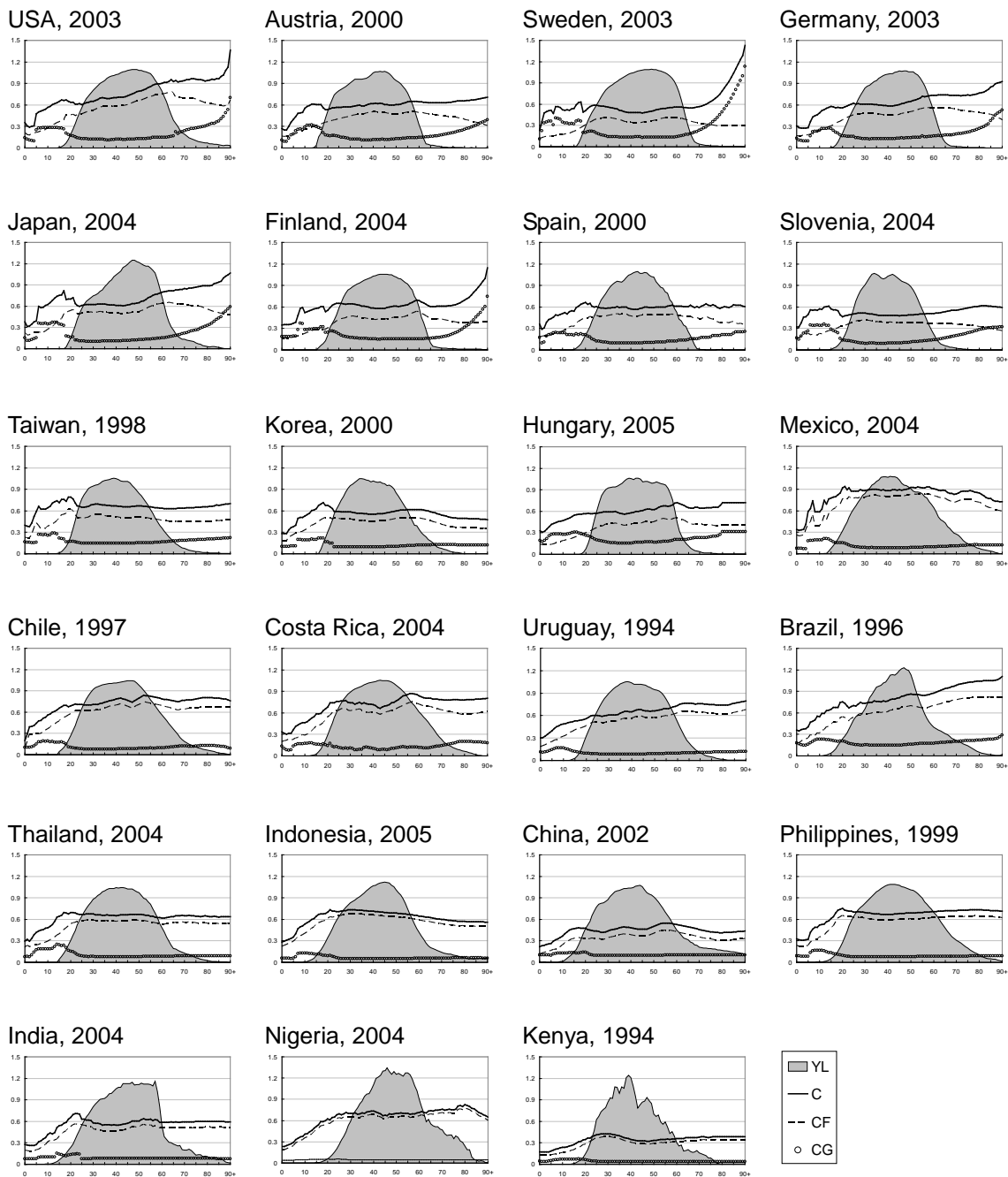
References

- Attanasio, Orazio P., 1999, "Chapter 11 Consumption", in J. B. Taylor and M. Woodford (Eds.) *Handbook of Macroeconomics*, Volume 1, Amsterdam, Holland: Elsevier Science B. V., pp.741-812.
- Battistin, Erich; Agar Brugiavini, Enrico Rettore, and Guglielmo Weber, 2009, "The Retirement Consumption Puzzle: Evidence from a Regression Discontinuity Approach"; *American Economic Review* 99(5), 2209-2226.
- Becker, Gary, 2007, "Health as Human Capital: Synthesis and Extensions," *Oxford Economic Papers* 59, 379-410.
- Borsch-Supan, A., 1992, "Saving and Consumption Patterns of the Elderly: The German Case", *Journal of Population Economics* 5, 289-303.
- Bradbury, Bruce, 2004, "The Price, Cost, Consumption and Value of Children," SPRC Discussion Paper No. 132.
- Deaton, Angus. S. and J. Muellbauer, 1986, "On Measuring Child Costs: With Applications to Poor Countries", *The Journal of Political Economy* 94(4), 720-744.
- Deaton, Angus, 1992, *Understanding Consumption*. Oxford: Clarendon Press.
- Fiorito, R., and T. Kollintzas, 2004, "Public Goods, Merit Goods, and the Relation between Private and Government Consumption", *European Economic Review* 48, 1367-1398.
- Grossman, M., 1972, "On the Concept of Health Capital and the Demand for Health," the *Journal of Political Economy* 80, 223-255.
- Hamermesh, D. S., 1984, "Consumption during Retirement: The Missing Link in the Life Cycle", *The Review of Economics and Statistics* 66(1), 1-7.
- Lee, R. D., 1994, "Population, Age Structure, Intergenerational Transfers, and Wealth: A

- New Approach, with Applications to the US. In *The Family and Intergenerational Relations*”, *Journal of Human Resources*. P. Gertler. XXIX: 1027-1063.
- Modigliani, E, and R. Brumberg, 1954, “Utility analysis and the consumption function: an interpretation of cross-section data”, in: K. K. Kufihara (ed.), *Post-Keynesian Economics*, New Brunswick, NJ: Rutgers University Press, pp.128-197.
- Musgrave, Richard, 1959, *The Theory of Public Finance: A Study in Political Economy*, New York: McGraw Hill.
- Ni, S., 1995, “An Empirical Analysis on the Substitutability between Private Consumption and Government Purchases”, *Journal of Monetary Economics* 36, 593-605.
- Schultz, T. W., 1962, *Investment in Human Beings*, University of Chicago Press, Chicago.

Appendix

(Figure A1 about here)



Note: normalized by mean labor income of age 30-49 of each country

Figure 1. Mean labor income and consumption, 23 economies

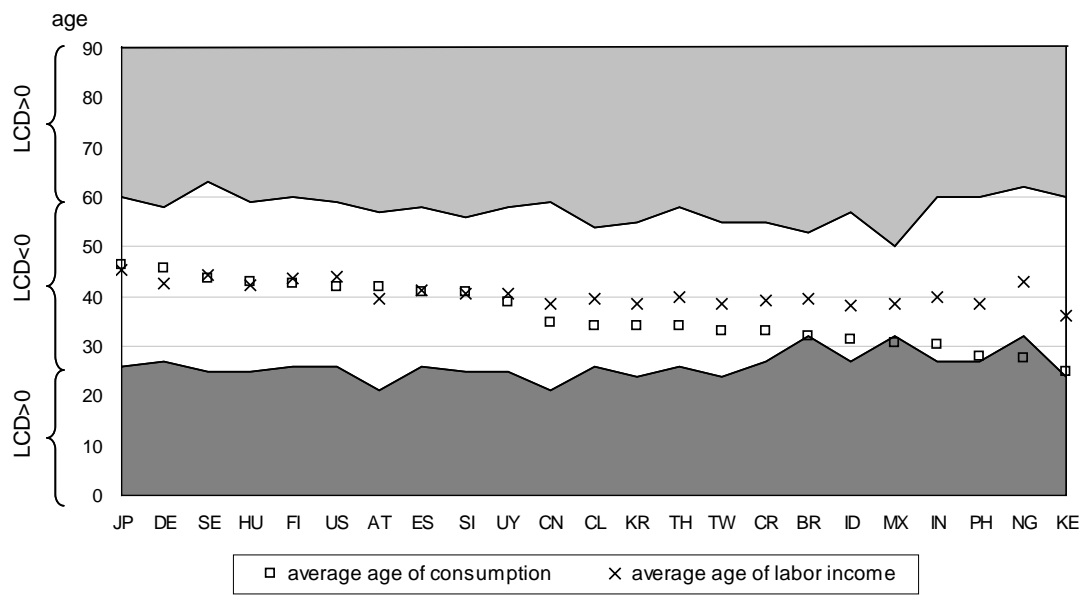


Figure 2. Average ages of consumption and labor income

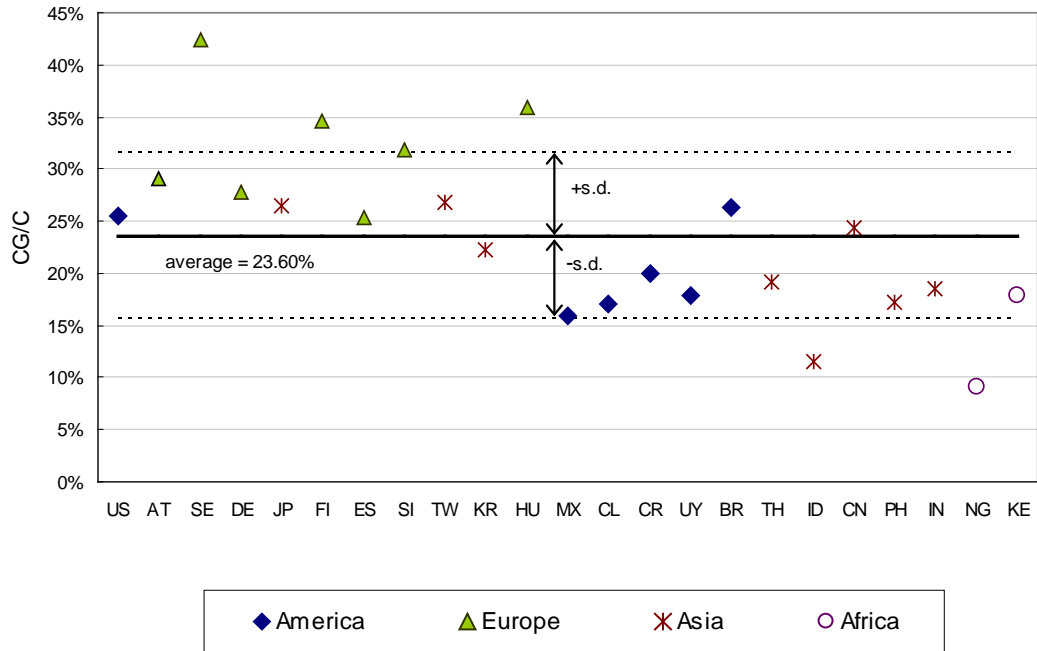


Figure 3. Percentage share of aggregate public consumption in total consumption

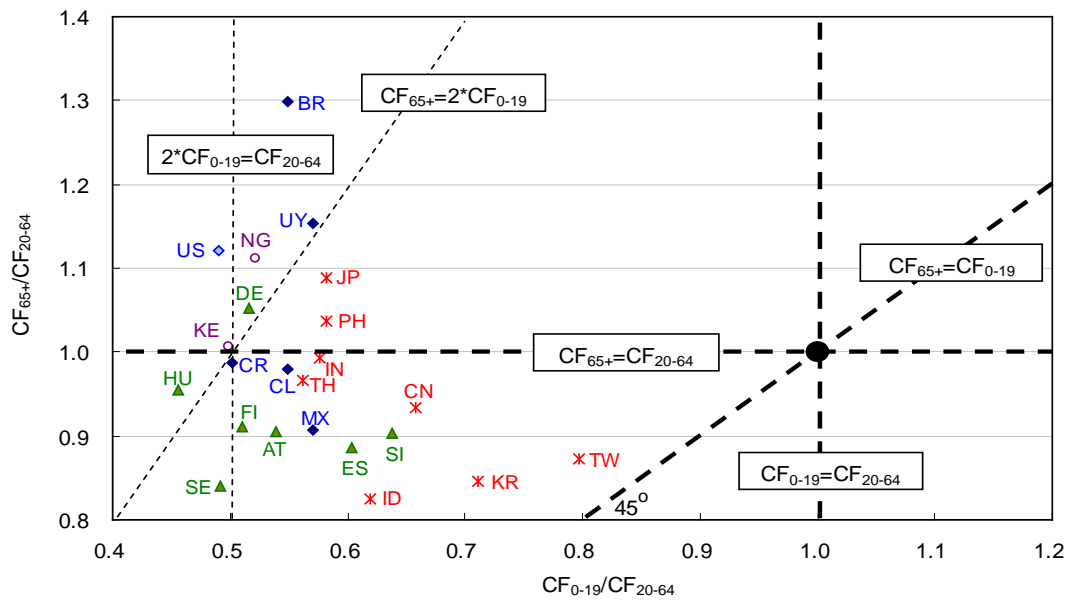


Figure 4. Mean private consumption by broad age group

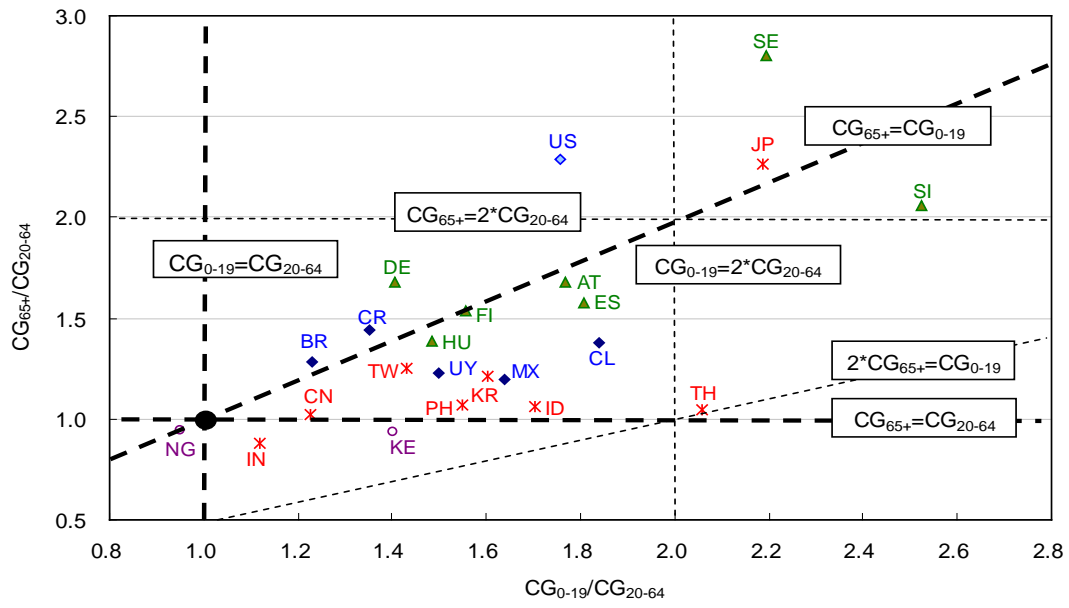


Figure 5. Mean public consumption by broad age group

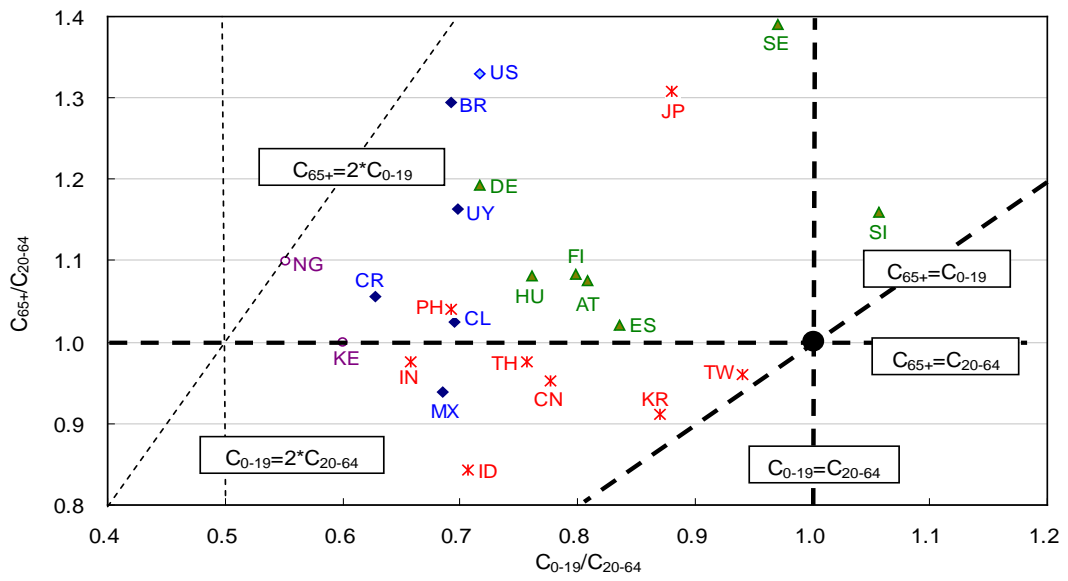
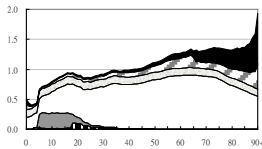
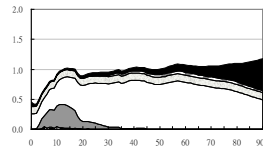


Figure 6. Mean consumption by broad age groups

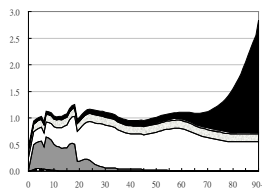
USA, 2003



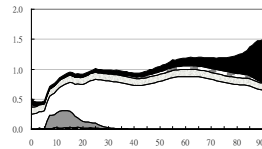
Austria, 2000



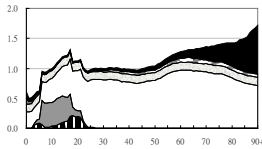
Sweden, 2003



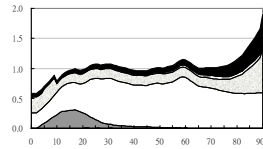
Germany, 2003



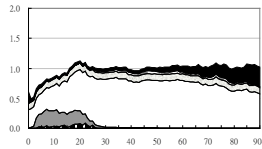
Japan, 2004



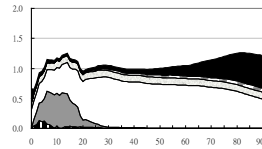
Finland, 2004



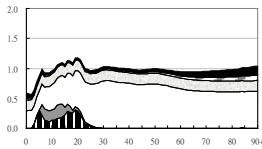
Spain, 2000



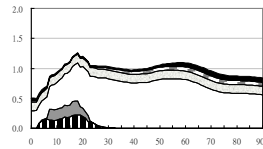
Slovenia, 2004



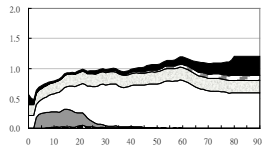
Taiwan, 1998



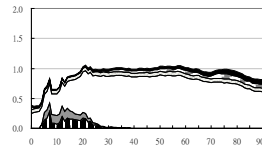
Korea, 2000



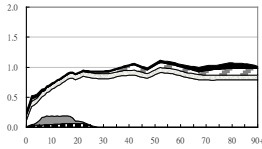
Hungary, 2005



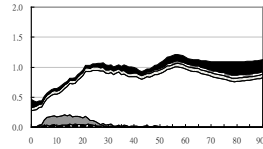
Mexico, 2004



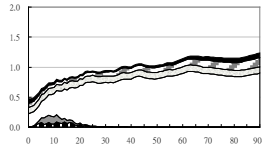
Chile, 1997



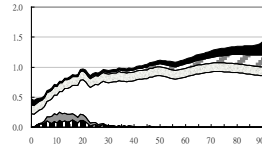
Costa Rica, 2004



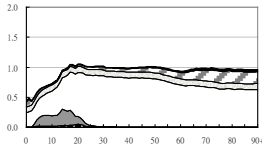
Uruguay, 1994



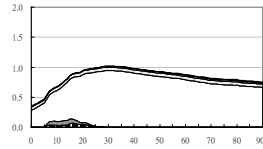
Brazil, 1996



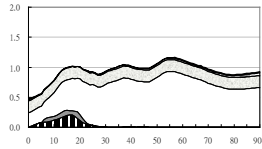
Thailand, 2004



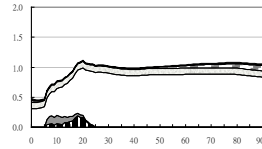
Indonesia, 2005



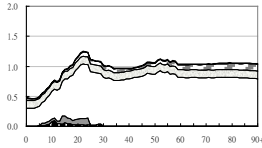
China, 2002



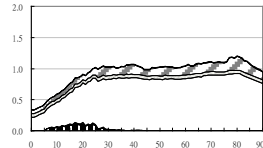
Philippines, 1999



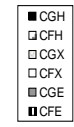
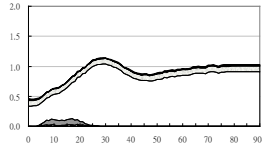
India, 2004



Nigeria, 2004



Kenya, 1994



Note: Normalized value by mean consumption of age 30-49

Figure 7. Composition of mean consumption, 23 countries

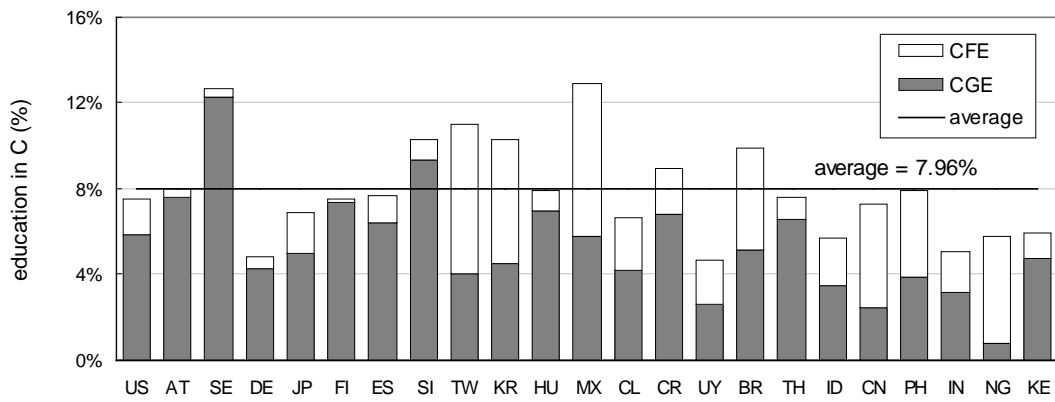
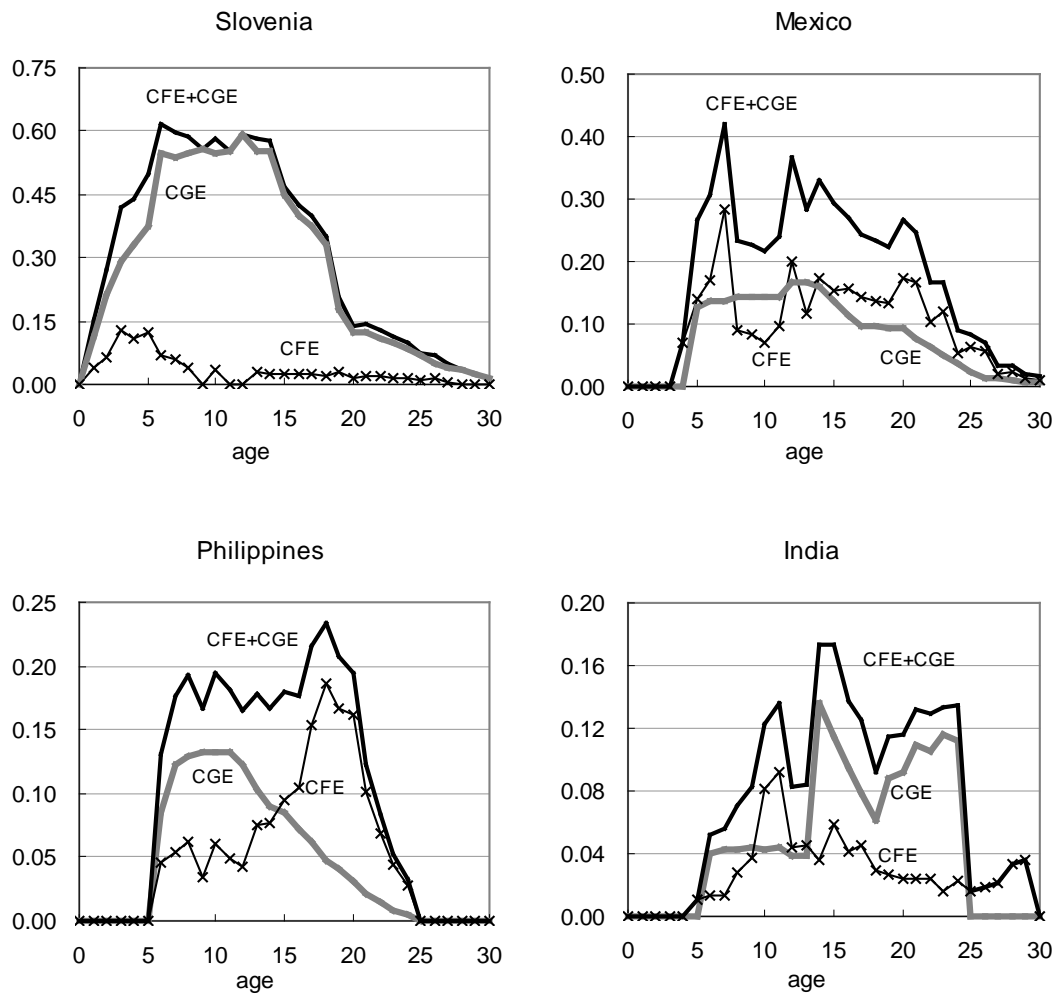


Figure 8. Percentage of education in total consumption



Note: Normalized by mean consumption of age 30-49 in each economy

Figure 9. Mean education consumption in selected countries

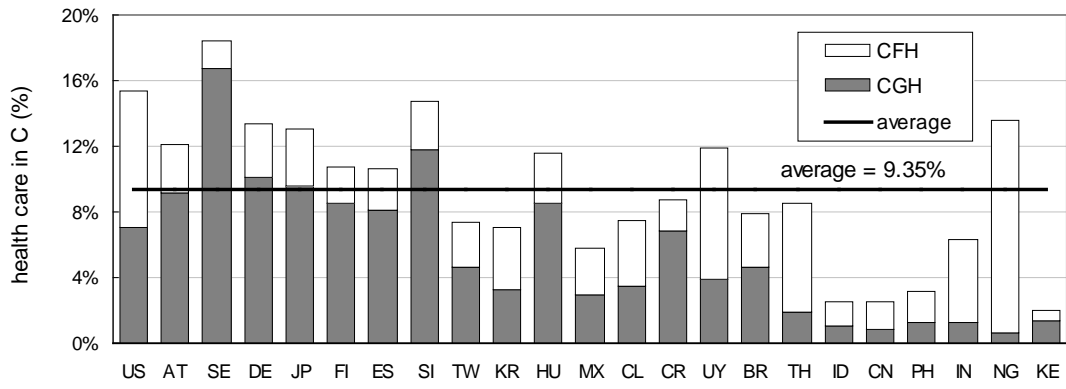
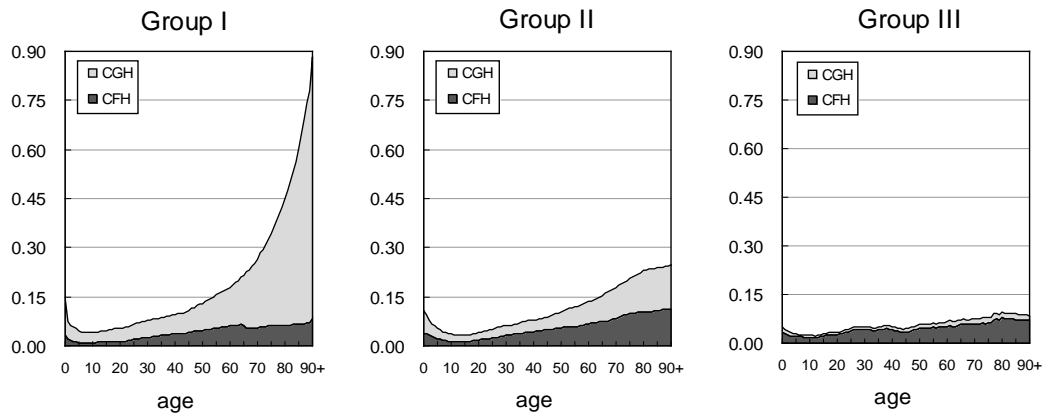


Figure 10. Percentage of health care in total consumption



Notes: (i) Group I: USA, Austria, Sweden, Germany, Japan, Finland, Spain, and Slovenia

(ii) Group II: Taiwan, Korea, Hungary, Mexico, Chile, Costa Rica, Brazil, Uruguay, and Thailand

(iii) Group III: Indonesia, China, Philippines, India, Nigeria, and Kenya

(iv) Normalized by mean consumption of age 30-49 in each economy

Figure 11. Mean health consumption in high, middle and low income groups

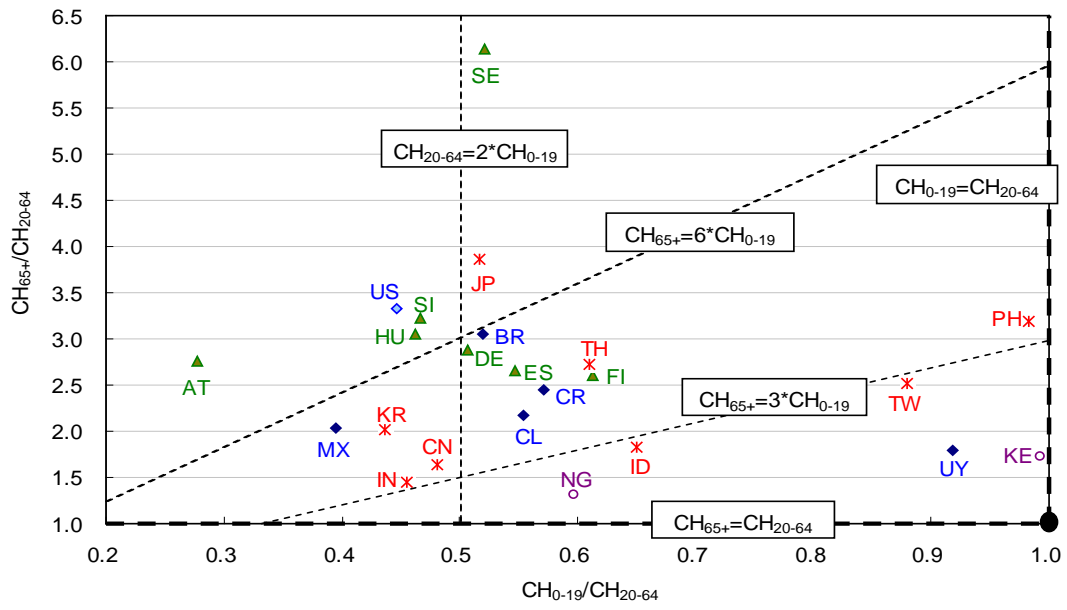
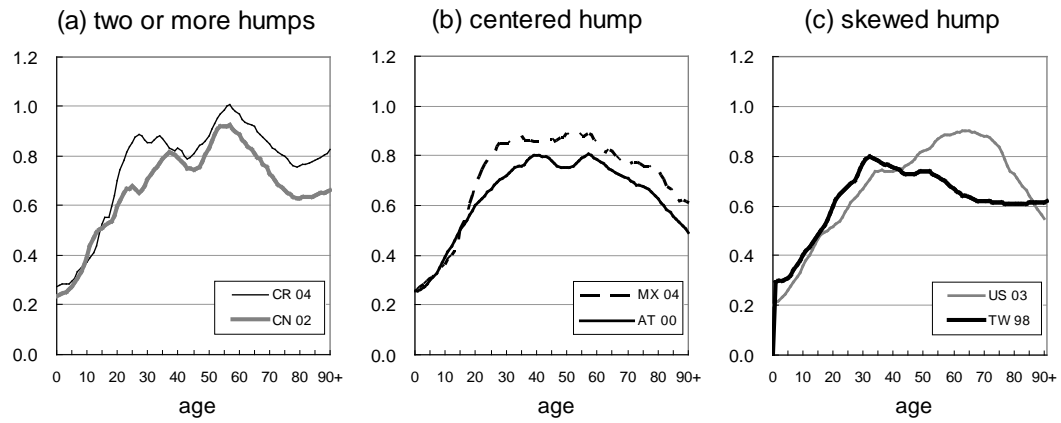
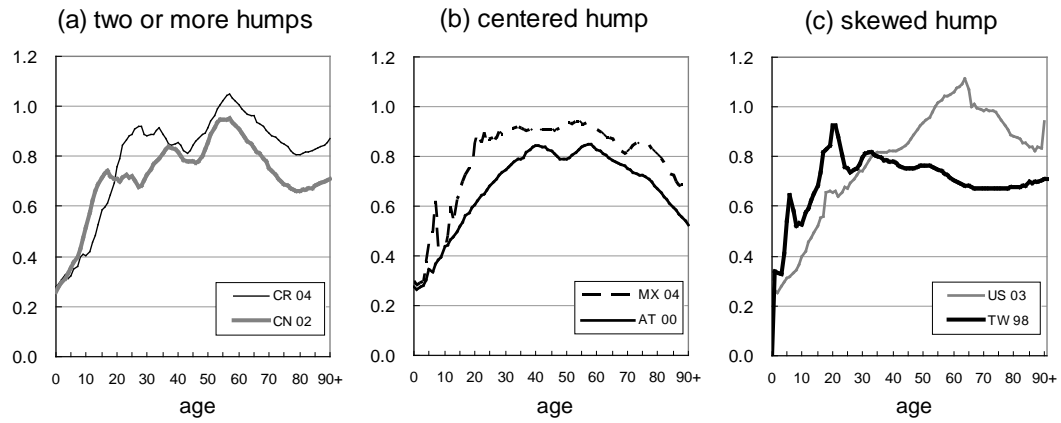


Figure 12. Mean health consumption by broad age groups



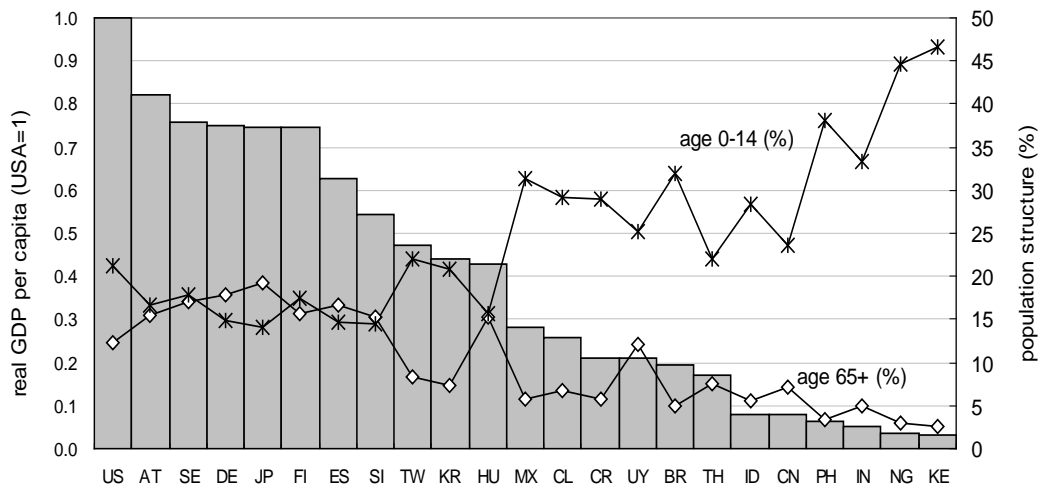
Note: normalized by mean consumption of age 30-49 in each economy

Figure 13. Mean private "other" consumption, selected economies



Note: normalized by mean consumption of age 30-49 in each economy

Figure 14. Mean private consumption, selected economies



Source: World Development Indicators

Figure A1. Real GDP per capita and population structure, 23 countries