

Demographic Transition and Economic Growth in Asia

Cedeplar, UFMG, Belo Horizonte
7 December 2011

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Acknowledgements

- Asian Development Economic Outlook 2011
 - Supported by Asian Development Bank (ADB)
 - ADB signature project
 - A detailed analysis for 8 NTA Asian members: China, India, Indonesia, S Korea, Japan, Philippines, Taiwan, and Thailand (most recent for Asia)
 - Includes the projections of demographic change on growth for “all” ADB developing member countries (DMC).
 - Widely disseminated (see link)

Demographic Transition and Economic Growth: Overview

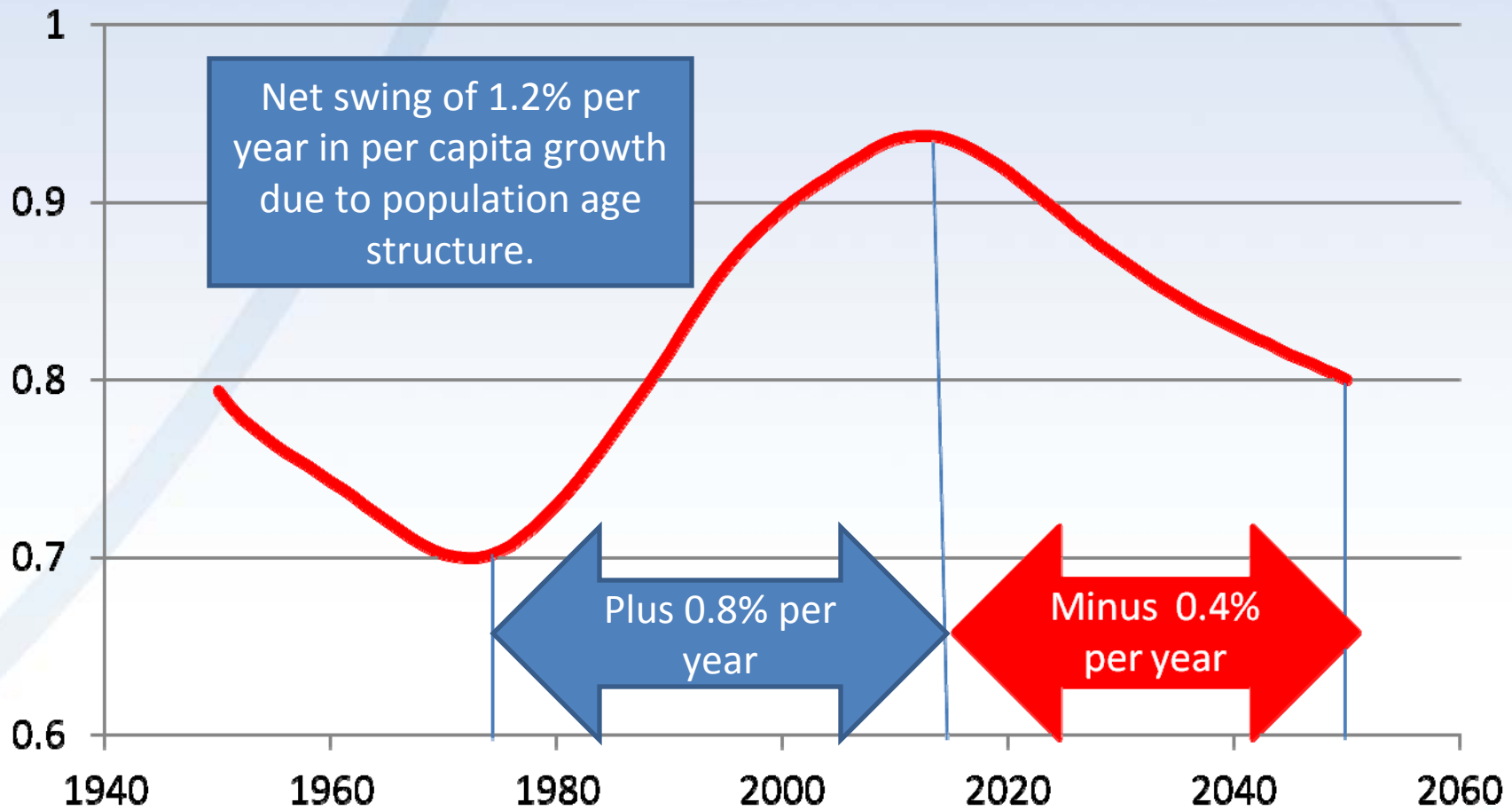
- Fertility and mortality decline produce important changes in population age structure
- Choice among options to support old age consumption have implications for wages, rates of return to capital, economic growth, and generational equity.
- Human capital investment may offset the effects of population aging.

Key Issues

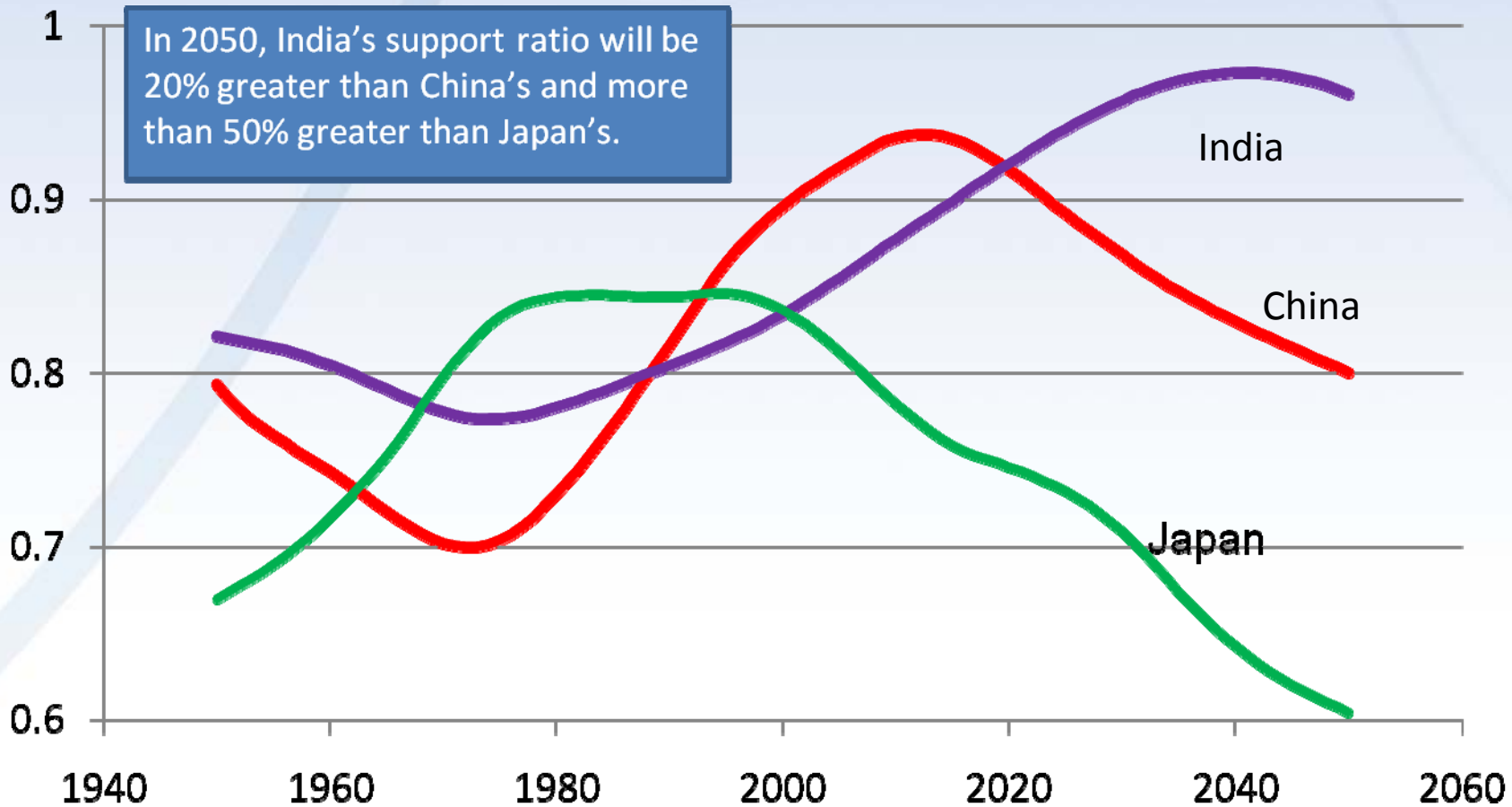
- How important are the dividends in Asia?
- How support system matters in Asia?
- What kinds of policies should be pursued to avoid potential problems and capitalize on potential opportunities in Asia?

Part I. Demographic Dividend in Asia

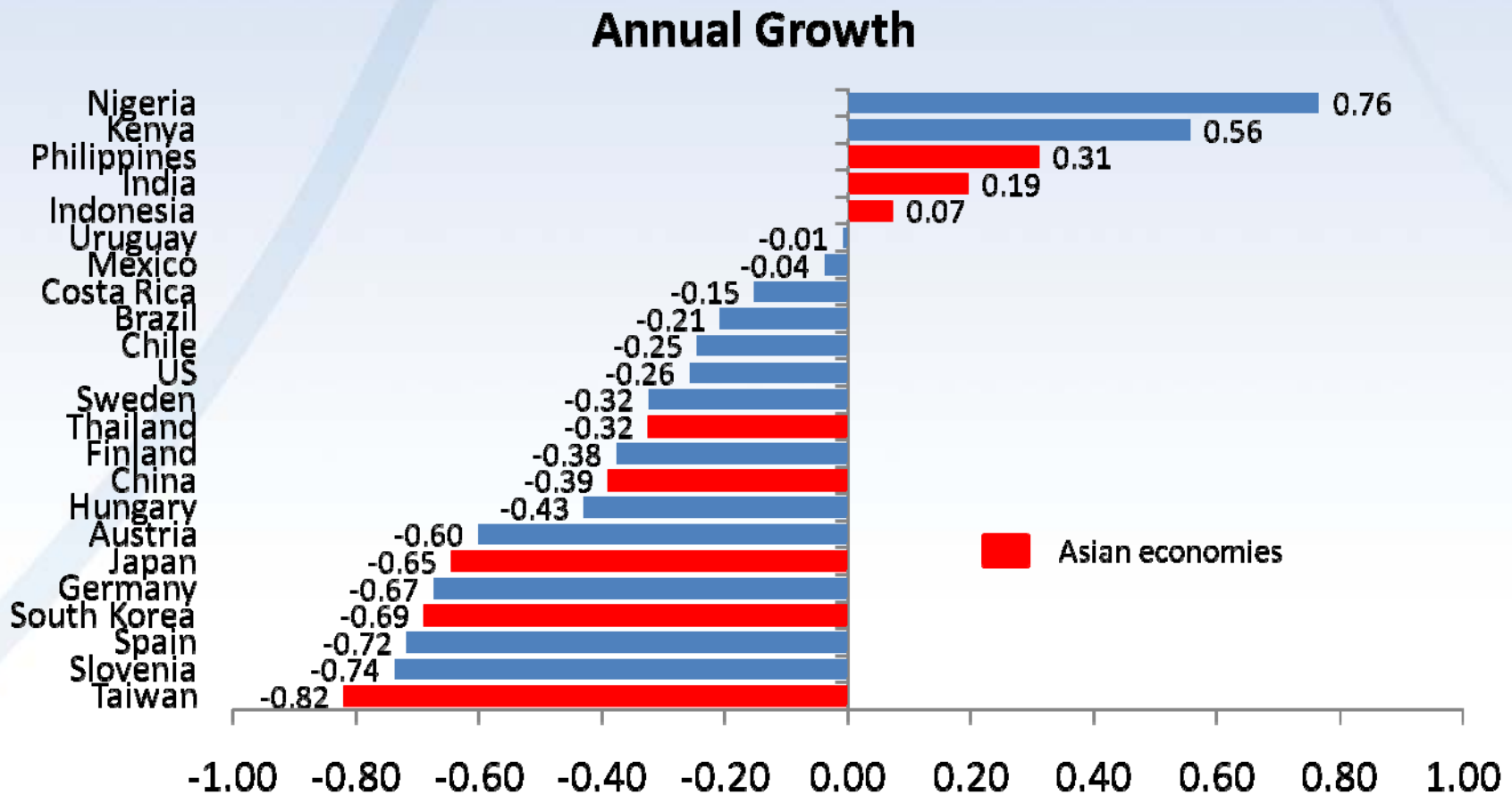
Support Ratio, China



Support Ratios: Divergent Paths for China, India, and Japan

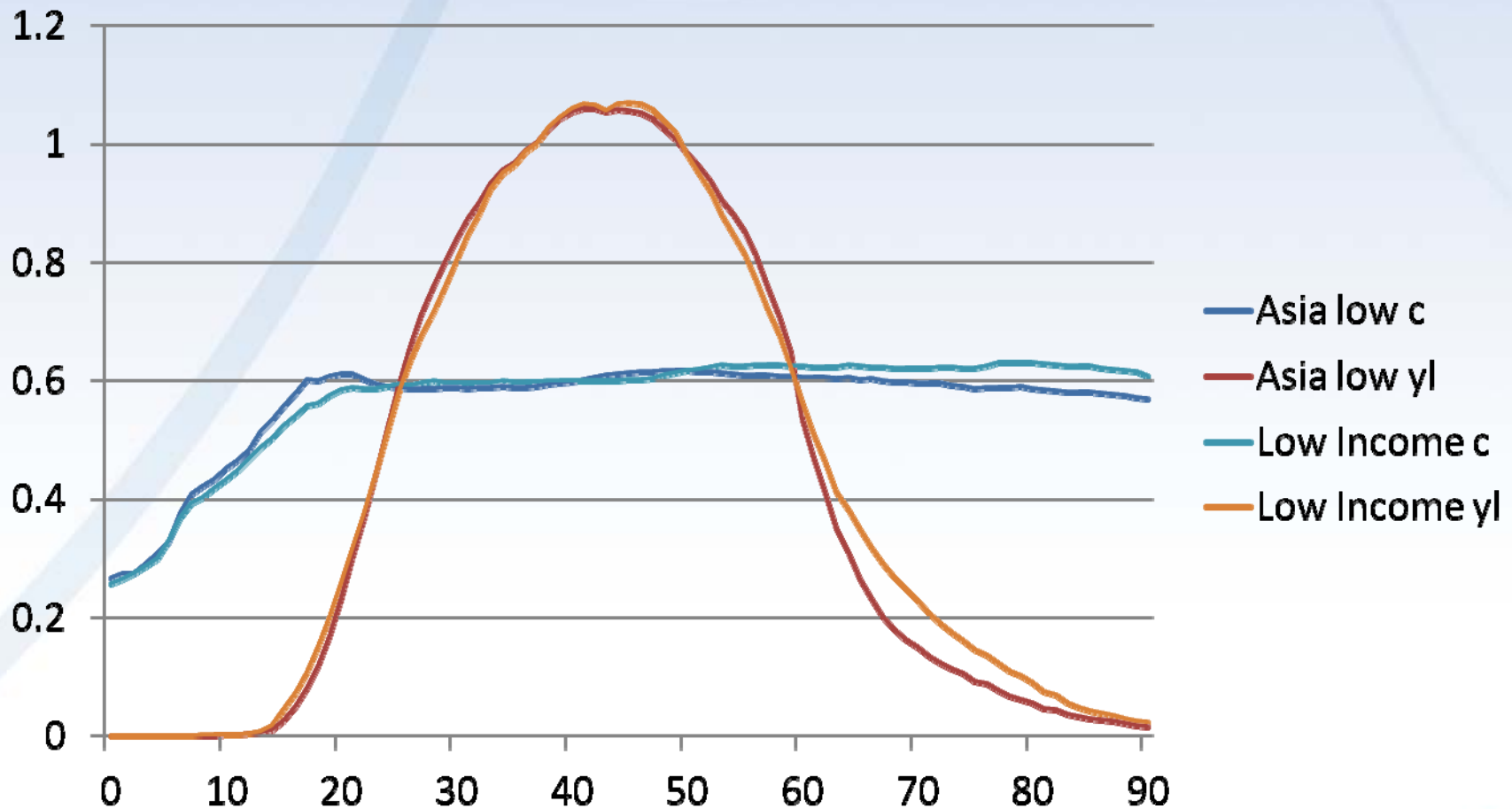


Support Ratio, Annual Growth NTA Economies, 2010-2050



Economic Lifecycle, Per Capita

Normalized on labor income(30-49)

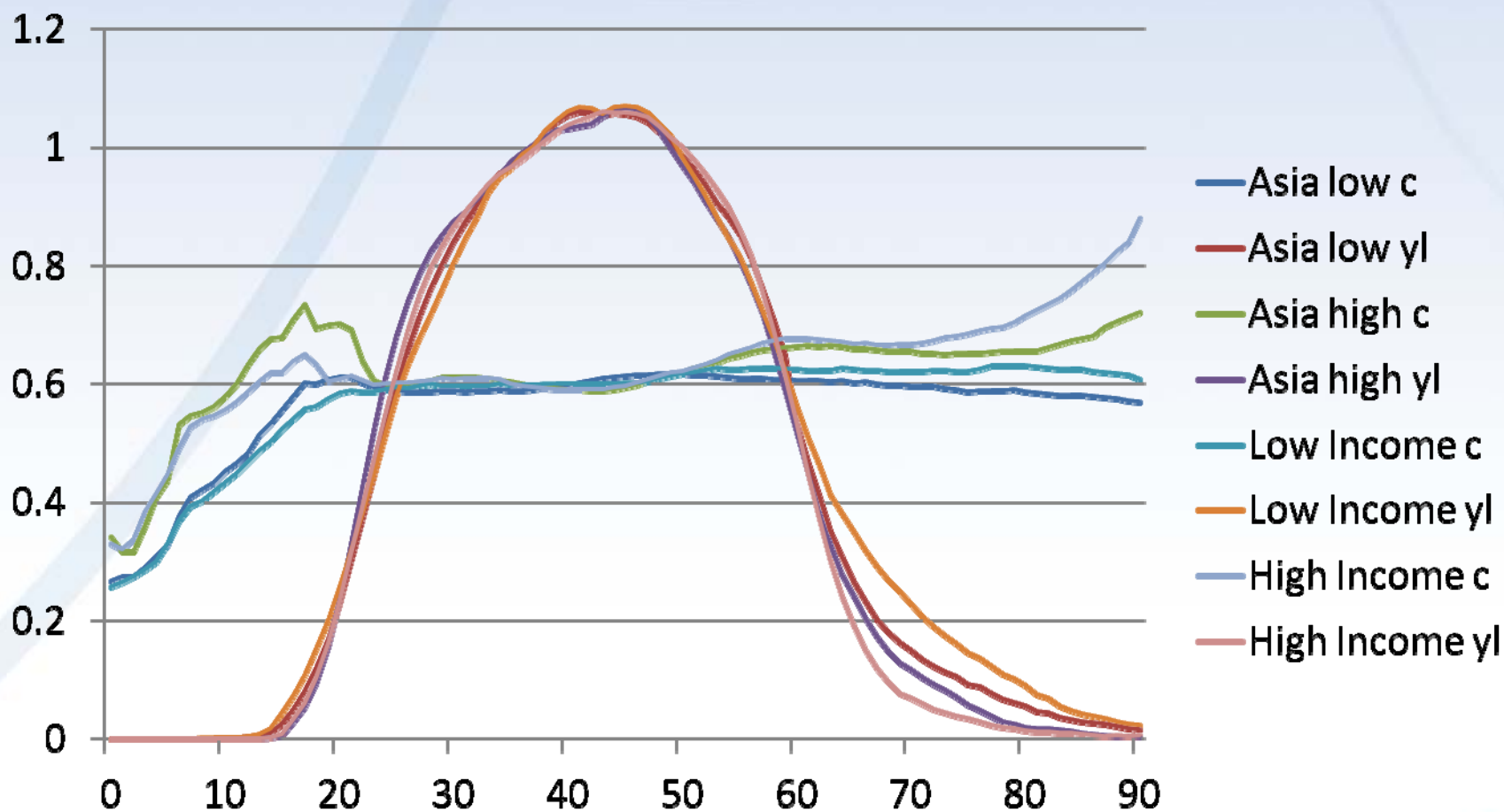


Source: National Transfer Accounts, www.ntaccounts.org. Mason and Lee 2011



Economic Lifecycle, Per Capita

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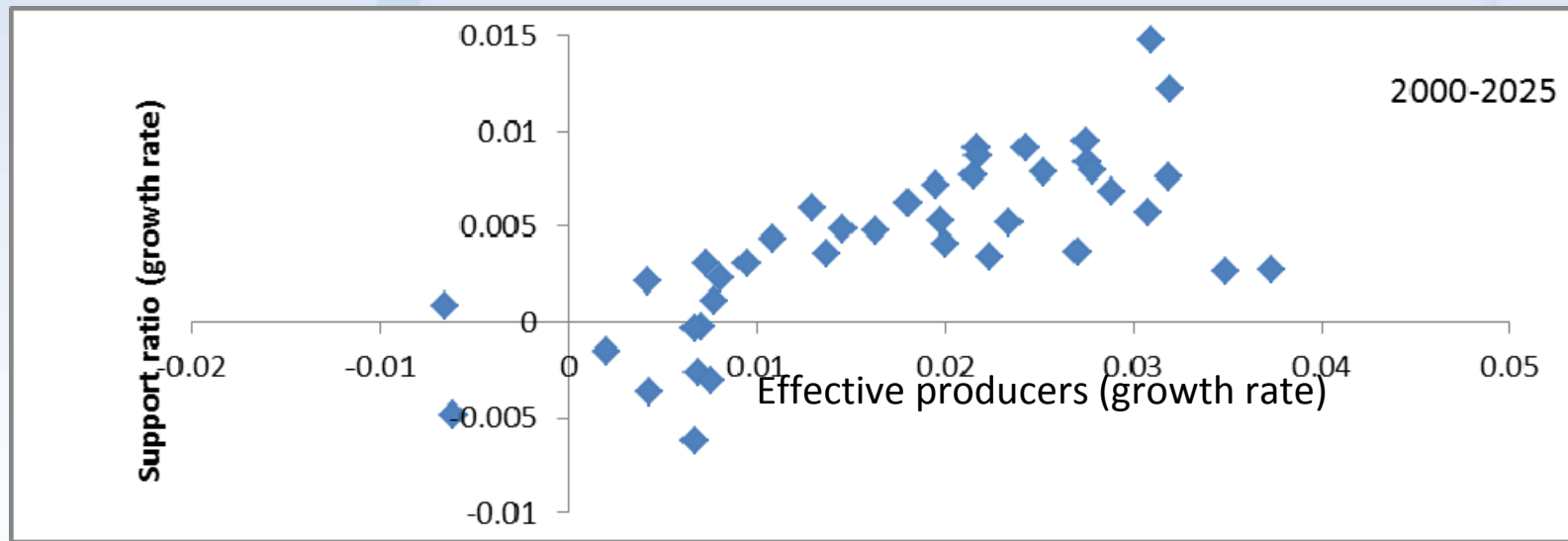
Mason and Lee 2011



Quantitative Effects

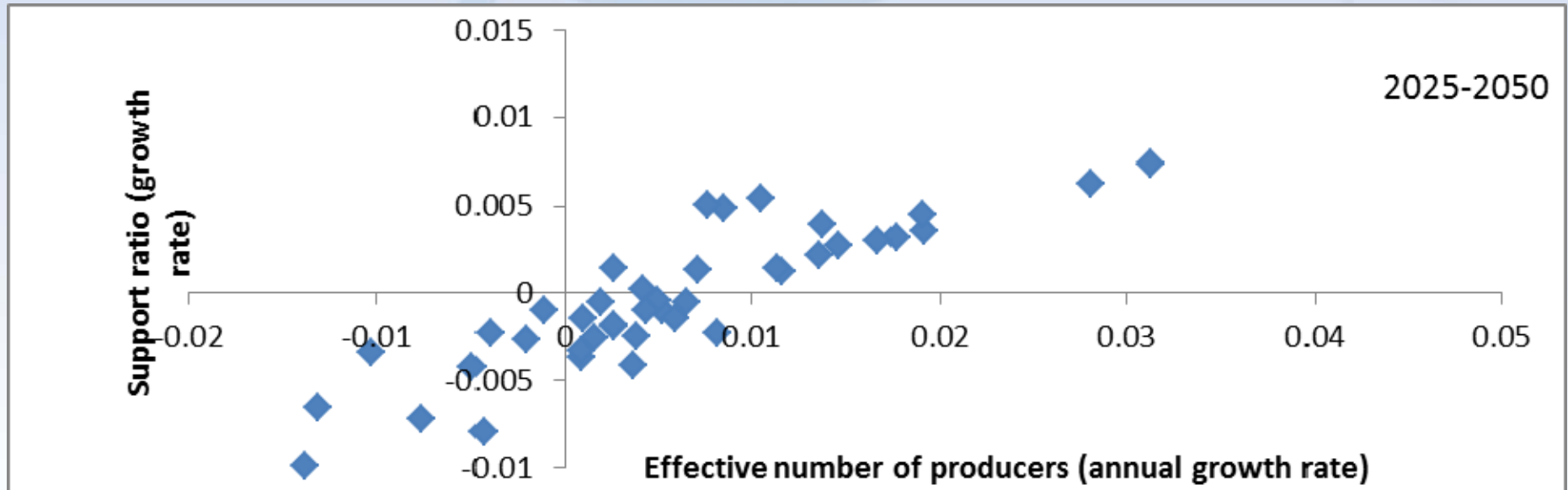
- Favorable in many Asian countries
 - Where: Bangladesh, India, Indonesia, Pakistan, the Philippines, and others with late demographic transitions.
 - How much
 - Per capita income growth will be higher by 0.3-0.4% pa.
 - How long: For the next 15 years or longer.

Quantitative Effects, 2000-2025



- In most A/P countries the support ratio is increasing and is an impetus to economic growth.
- Except in two countries, changing age structure contributes 1% pa or less to economic growth.
- In a handful of countries, the support ratio is declining.

Quantitative effects, 2025-2050



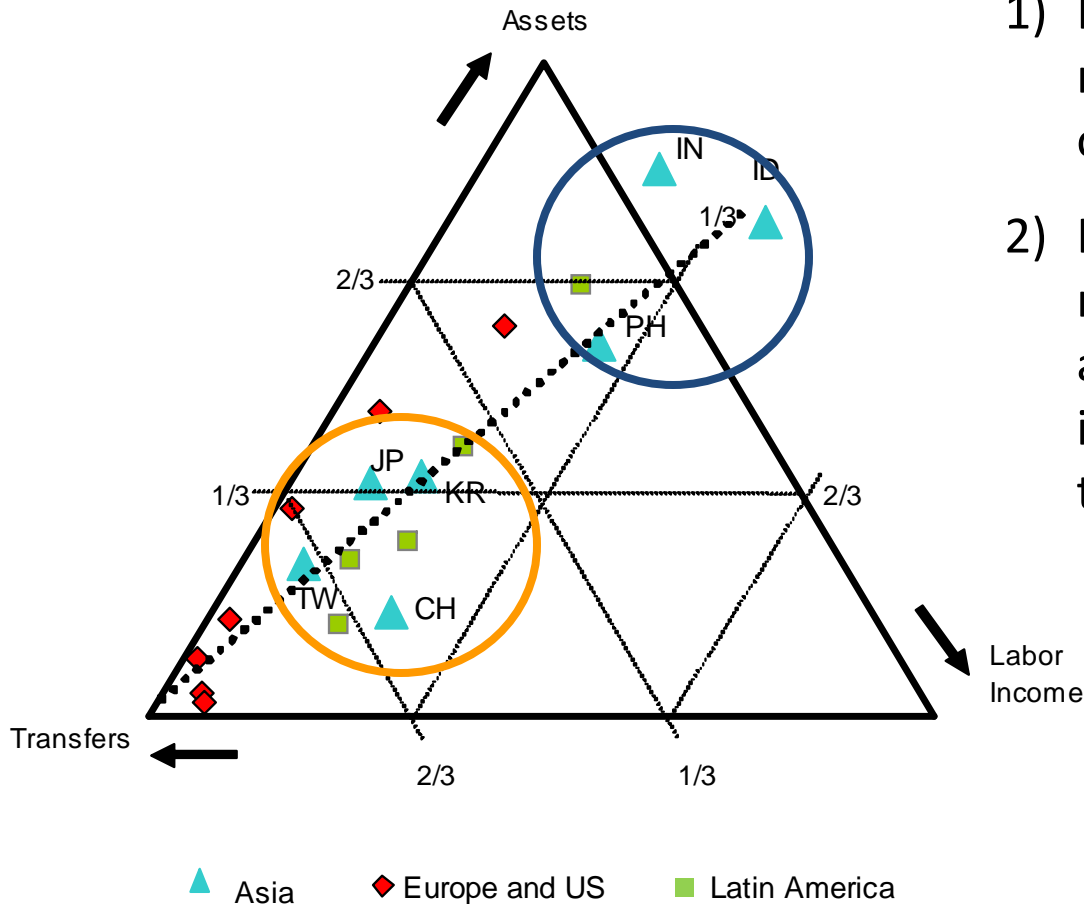
- For 2025-2050, most A/P countries will be experiencing a decline in the economic support ratio.
- In these countries, changing age structure will retard economic growth by as much as 1% pa.

Conclusion I: Policy Responses

- Age pattern of labor income
 - Improve the school to work transition (Austrian example)
 - Improve the work to retirement transition
 - Raise or eliminate mandatory retirement policies
 - Address low productivity of older workers through continuing education programs and perhaps changes in employment practices
- Age pattern of consumption
 - Efficiency of spending on education and health including long-term care.
- Demography
 - Limited scope for immigration policy
 - Develop effective responses to low fertility

II. Support System in Asia

Funding consumption for the elderly 65+

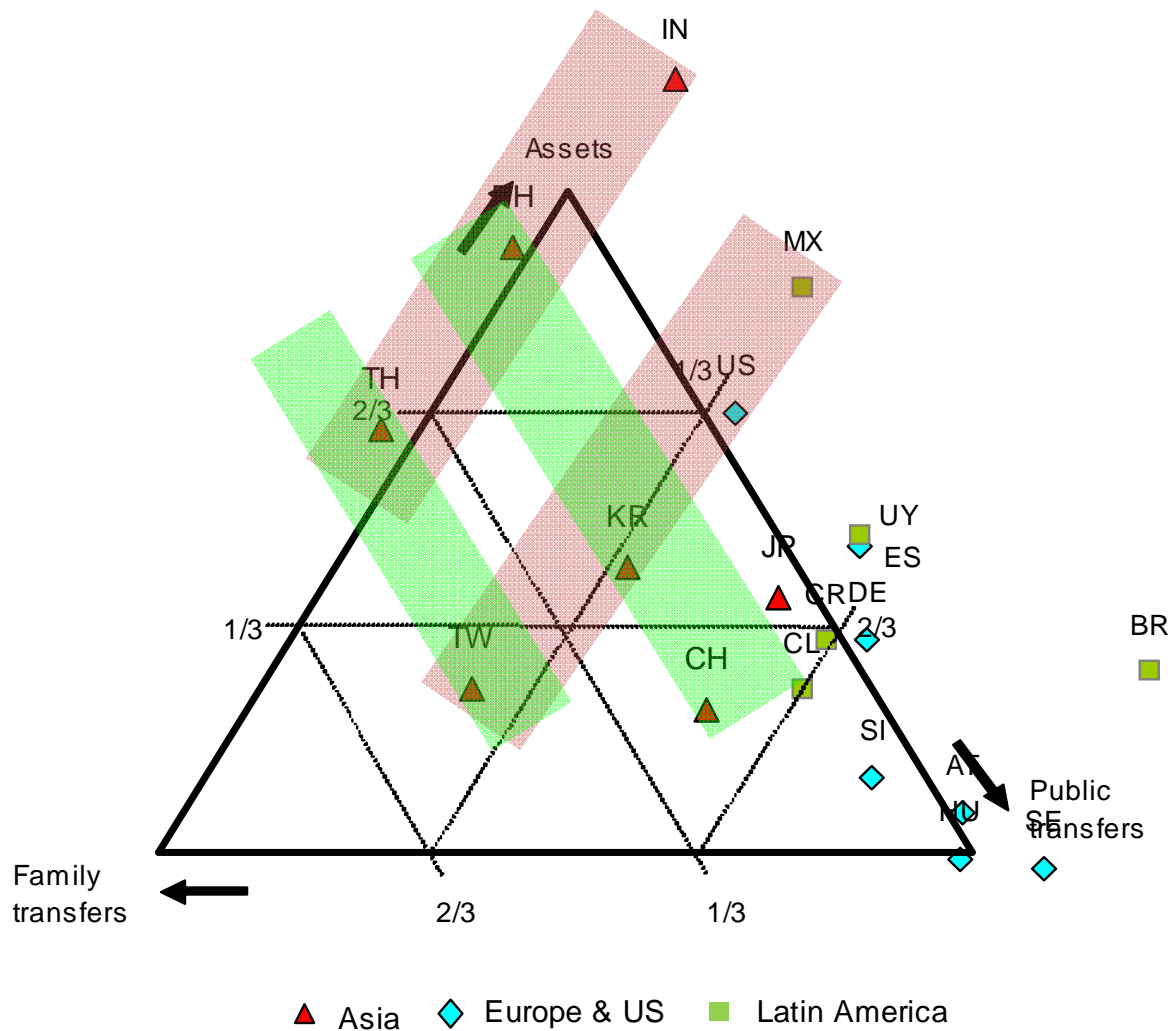


- 1) Main tradeoff is between relying on transfers and on assets.
- 2) In economies relying more on assets, people also have more labor income in old age. But this effect is not as large.

Working more is not very effective in Asia

- The likely effect of working more is relatively small for many Asian countries
 - In part due to relatively high activity rate and low productivity of older people (for some countries, related with labor market rigidity)
 - Population is aging more rapidly in many Asian countries.
- Significant lifecycle deficits at old ages are allowed only if the elderly can depend on transfers and asset-based flows

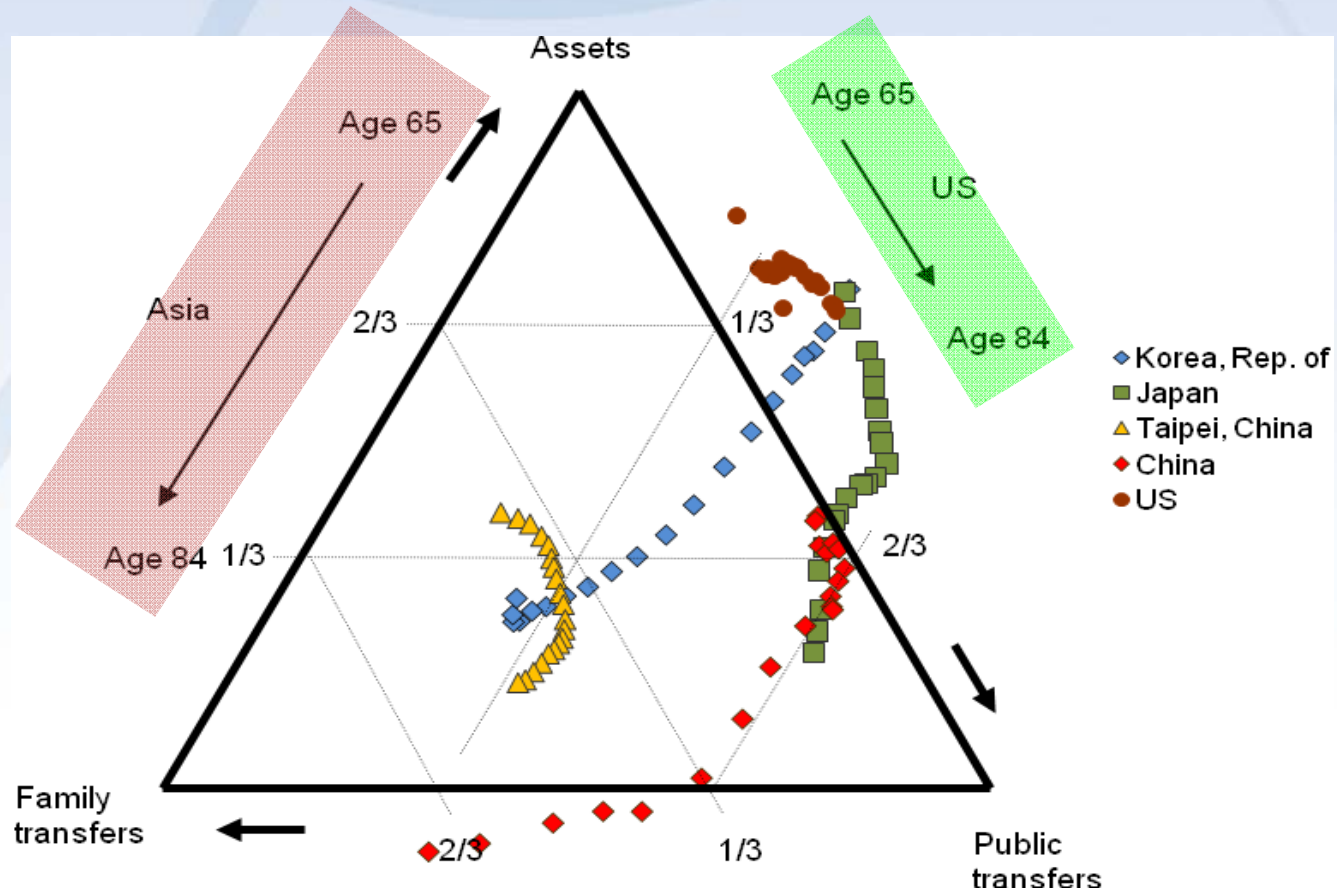
Support system for the elderly 65+



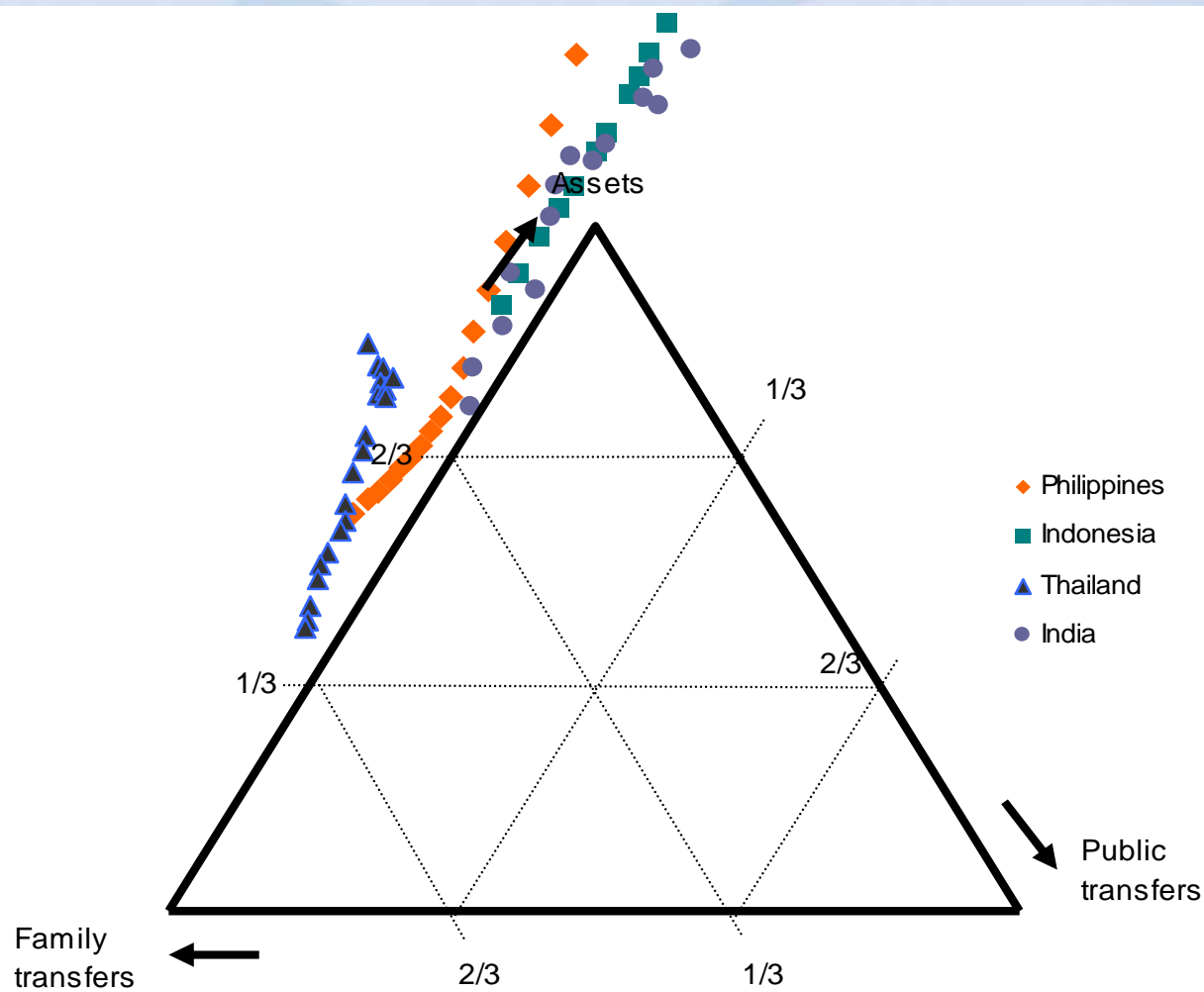
1) **Familial transfers** are more important in Asia than elsewhere.

2) **Public transfers** are smaller in Asia

Family transfers increases as the elderly get older (by single age, for ages 65 to 84)



Family transfers play an important role as the elderly get older (from 65 to 84)



Relying on public transfers

- Reliance on public transfers in Asia are relatively small. This is important for Asia because,
 - Fiscal burden is relatively small.
 - Too much reliance on public transfers may reduce savings and growth.
- Projections show the impact of demographic transition on public transfers in the future.
 - Fiscal support ratio & publicly provided healthcare expenditure
 - Not terribly onerous in Asia
- But demand for public programs is increasingly large

Fiscal Support Ratio

(the size of tax payment/the size of benefit)

	1950	2010	2020	2030	2050	Year of most favorable age structure
China	89	100	97	89	82	2012
India	97	100	102	103	102	2028
Indonesia	79	100	106	110	108	2033
Japan	91	100	92	87	74	1976
Philippines	87	100	106	111	116	2050
S. Korea	76	100	97	89	80	2008
Taipei, China	68	100	100	94	78	2015
Thailand	66	100	104	104	104	2039
US	99	100	96	92	89	2006

Source: National Transfer Accounts, re-estimated based on Miller (2011)



Relying on assets and savings (asset-based reallocation)

- They vary greatly across Asian countries.
 - Particularly important in some low income Asian countries (the Philippines, India, and Thailand)
 - Reflect age variation in assets, and variation in returns.
 - Savings varies a lot too, showing interesting patterns.
- Implications for capital accumulation in aging populations
 - The proportion of wealth-holding elderly is higher.
 - If need is met by asset accumulation, then population aging raises asset income and perhaps labor productivity.
 - But if people expect to be supported by transfers when they are old, this effect is muted.

Conclusion II: Future Support Systems in Asia

- Work more?
- Increase familial transfers?
- Increase public transfers?
 - Maybe inevitable.
 - Projections based on the “current system” suggest that public transfer system will not be terribly onerous.
- More reliance on capital accumulation?
 - Human capital & asset/savings
 - Implication on growth
 - Need to develop a system to facilitate

Part III. Lifecycle Wealth and Saving in Asia

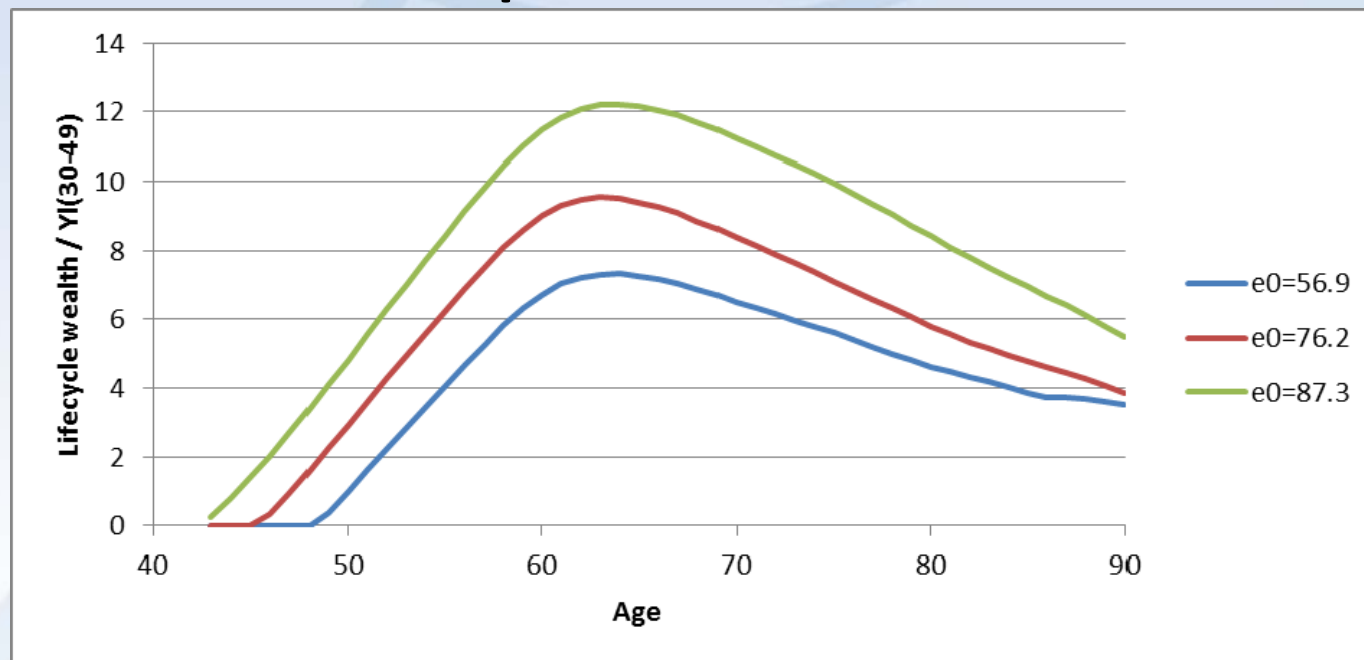
Aging and Lifecycle Wealth

- To fund the old-age consumption in excess of labor income, individuals must accumulate lifecycle wealth, $W(x)$, where x is age.
- $W(x)$ is the present value of anticipated consumption less the present value of anticipated labor income.
- How will population aging affect $W(x)$?
 - Effect on cohorts of changes in expected years lived.
 - Compositional effect of change in pop age structure.
- Illustrated using Japan's experience

Analysis of Japanese cohorts

- Age profiles of consumption and labor income for Japan in 2004.
- Both profiles shift upwards at 1.5% pa
- Interest rate of 3%
- Period life expectancy for
 - 1949 (56.9)
 - 1979 (76.2)
 - 2009 (87.3)
- VERY rapid increase in life expectancy.

Path of life cycle wealth for 3 synthetic cohorts, Japan 1949, 1979, 2009

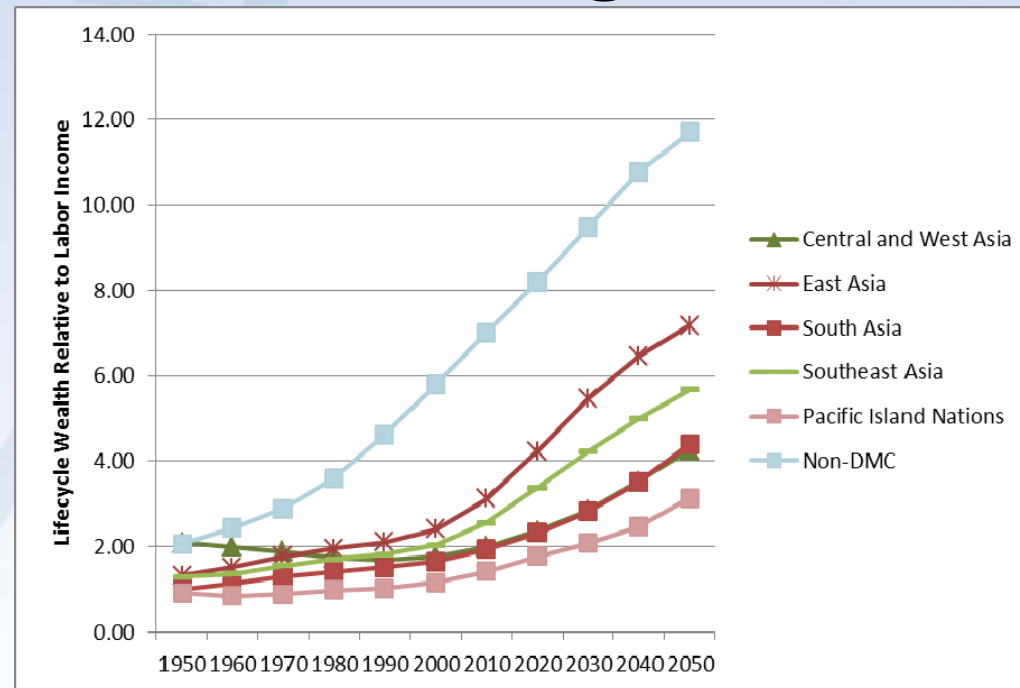


- $W(x)$ rises with age and peaks in the early to mid-60s; declines gradually thereafter.
- $W(x)$ shifts upwards as life expectancy increases
- Effect of life expectancy is greater at higher levels of life expectancy. (Note that change in e_0 much smaller for 1979-2009 as compared with 1949-1979.)

Lifecycle wealth for DMCs

- Shape of age profiles of consumption and labor income are fixed (high and low-income Asia profiles).
- Shift upward at 3% per annum; 6% discount rate.
- Medium fertility population projection from UN World Population Prospects 2008.

Lifecycle wealth, high-income profiles

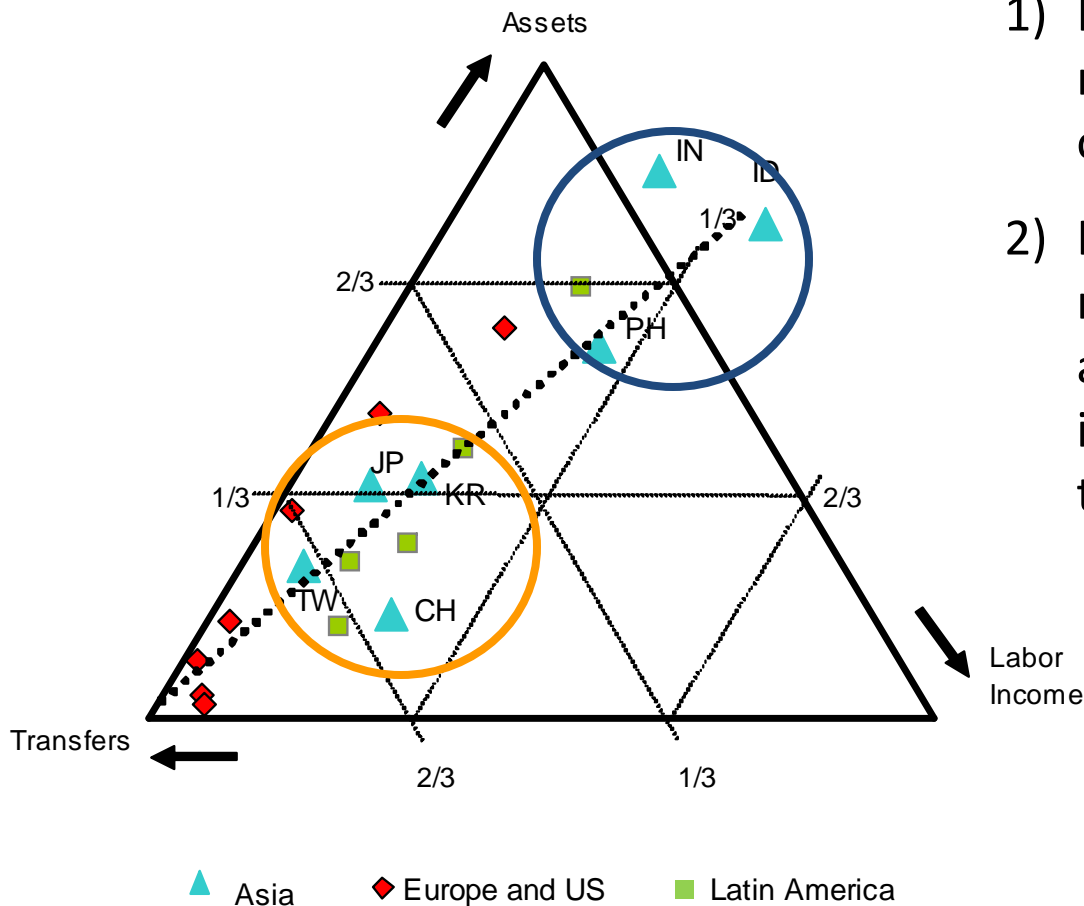


- Modest increase in DMC W before 2000 – about 1.5% faster than labor income.
- W grows most rapidly in DMCs from 2010-20 at 2.8% faster than labor income.
- Growth becomes more moderate in later decades, but always faster than labor income.

Assets or Transfer Wealth?

- Lifecycle wealth comes in two forms
- Transfer wealth
 - Transfer wealth is the present value of net transfers to the elderly in old age
 - Satisfies the lifecycle problem but imposes debt on the young and on future generations.
- Assets
 - If invested domestically, lead to more rapid economic growth, raise wages, but reduce rates of return to capital.
 - If invested abroad, lead to higher national income in sending country; raise wages and reduce rates of return to capital in receiving country.

Funding consumption for the elderly 65+



- 1) Main tradeoff is between relying on transfers and on assets.
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Old-age support Transfers or Assets

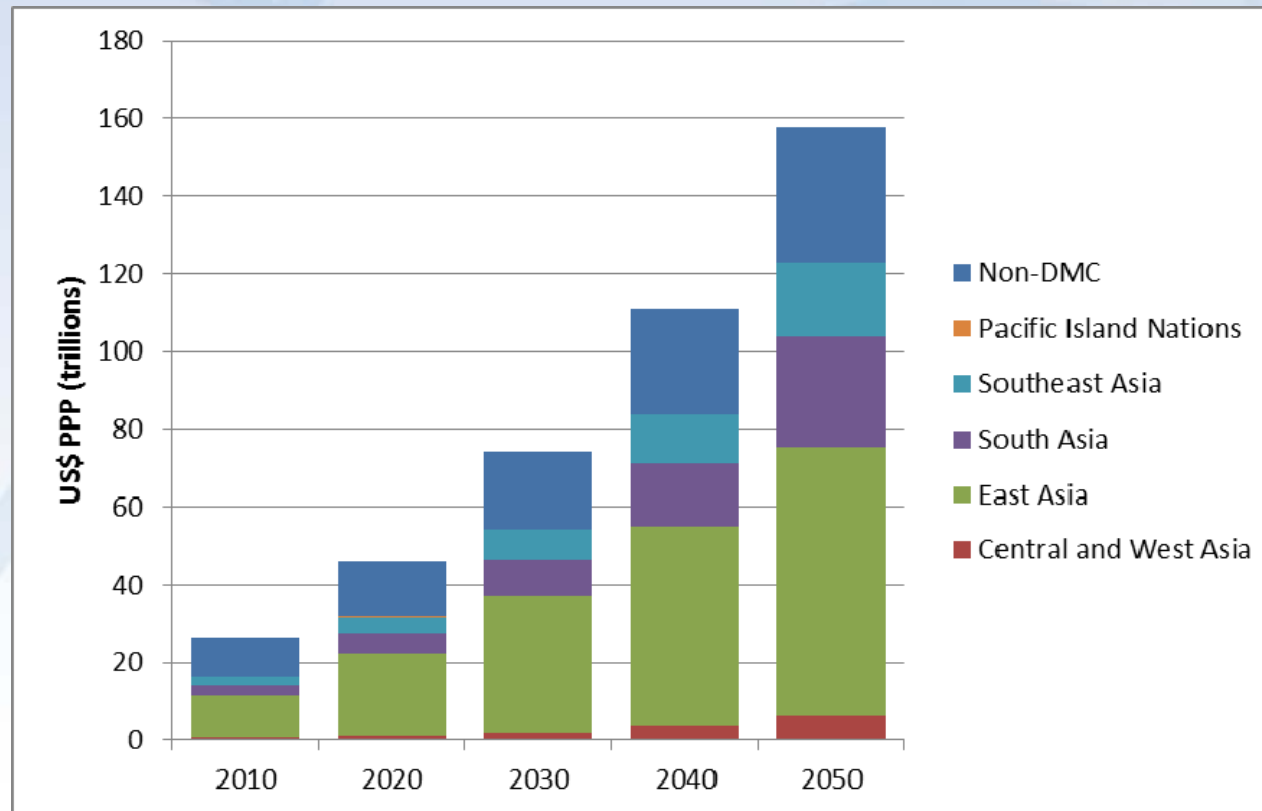
- Discussed more extensively in Lee and Mason chapter.
- In previous work, we've assumed that $\tau = T/W$ is constant.
- Here we estimate $\tau(x)$ for low income and high income Asian countries.
- τ rises gradually over time because the oldest old rely more on transfers than younger old.
- τ is much higher in high income Asian countries than low income Asian countries.

Pension Transfer Wealth

	Low income profiles			High income profiles		
	2010	2030	2050	2010	2030	2050
Asia-Pacific Countries	1.1	1.8	2.5	2.6	4.0	5.4
Developing Member Countries	0.8	1.4	2.0	1.9	3.2	4.5
Central and West Asia	0.5	0.8	1.3	1.4	2.0	3.0
East Asia	0.9	1.6	2.4	2.2	3.8	5.2
South Asia	0.5	0.8	1.3	1.3	1.9	3.1
Southeast Asia	0.7	1.2	1.8	1.8	2.9	4.0
Pacific Island Nations	0.3	0.5	0.9	1.0	1.4	2.2
Non-DMCs	2.3	3.4	4.3	5.1	7.0	8.7

- Using the low income profiles DMC pension transfer wealth is 80% of total labor income.
- By 2050, transfer wealth would rise to 200% of total labor income if the reliance on old-age transfer systems does not increase.
- A shift to pension systems found in Asia's high-income countries would lead to an increase in transfer wealth that is more than five-fold.
- Implicit debt equal to 450% of total labor income would be a serious problem.

Pension Assets



- Demand for pension assets would increase from about 25 trillion in 2010 to 160 trillion in 2050.
- This could lead to significant capital deepening, higher wages, but also lower returns on capital.
- More risk taking?

Conclusion III: Many Challenges

- Solutions require substantial political reform related to public pensions, health care systems, educational systems, financial institutions, investment environment, etc.
- Private behavior is also critical
 - Financial education
 - “Supportive” environment