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Economic Cooperation

2010/FMM/008
Agenda Item: Ministerial Retreat

Population Aging and Fiscal Sustainability in APEC Economies

Purpose: Information
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POPULATION AGING AND FISCAL SUSTAINABILITY IN APEC ECONOMIES

Expenditure Simulations and Potential Policy Responses

Prepared for the APEC Ministerial Retreat on Fiscal Management and Economic Growth (Kyoto, Saturday, November 6, 2010)

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Purpose of the Analysis

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- Estimate the magnitude of potential changes in expenditures for pensions and health care due to population aging
- Distinguish the effects of changes in age structure from other important factors- trends in coverage and generosity of benefits
- Illustrate how the timing and nature of expenditure changes will be different depending on the characteristic of the economy
- Identify potential policy issues for discussion

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General Approach of Study

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- Create four hypothetical economies representative of the range of conditions in APEC members
- Establish starting points for pension and health programs and expenditures similar to observed conditions
- Develop assumptions about how coverage in social insurance systems and costs will evolve as economies develop over 70 year projection period
- Project path of aggregate expenditures as share of GDP for each case
- Estimate influence of main underlying factors and selected policy responses

Important Caveats

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- Exercise is intended to illustrate general level and dynamics
  - ***No case matches any economy***
  - ***Extrapolations of conditions - not forecasts***
- Partial equilibrium model
  - Does not incorporate dynamic process of responses to age structure, wages or other factors
  - Wages held constant as share of output and fitted to size of the labor force
  - Macroeconomic path is therefore external to modeling – assumed convergence from recent rates to 3% real growth rates
- Demographic path derived from observed fertility rates and UN projections of future changes in mortality – No interactions

Conceptual Framework

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Expenditure as a share of GDP =
Eligible Population x ***Access*** x ***Cost per Beneficiary***

Some Key Challenges in Designing the Analysis (also are primary policy areas)

- How will coverage of benefits evolve with economic development?
- Generosity - Low income economies now have high pension expenditures when cost is measured as share of per capita GDP per beneficiary – How will this change with development?
- How will age related patterns of health care expenditures change with economic growth?
- Does overall health care consumption grow faster than income?

Social Insurance Coverage Is Assumed to be Proportional to Per Capita GDP Levels

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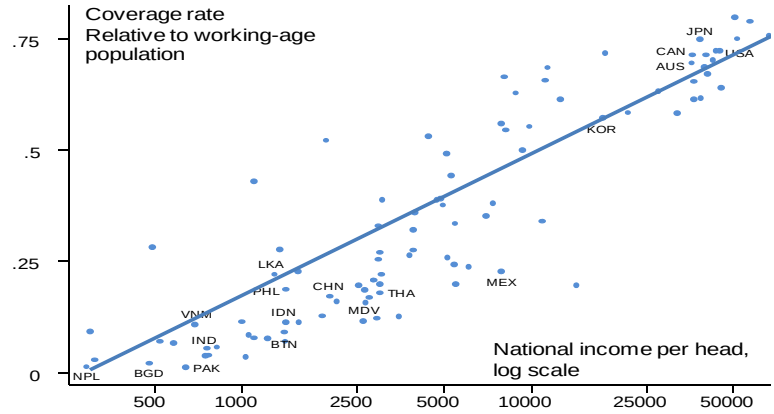

Evolution of Pension Costs When Coverage Increases With Income

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- Observed per beneficiary pension cost are greater in low income settings.
  - High income economies - full coverage: **33% of per capita GDP**
  - Middle income - moderate coverage: **80% of per capita GDP**
  - Low income - low coverage: **135% of per capita GDP**
- Why?
  - High income groups covered first
  - Low density (periods of coverage) requires more generous formula
- Modeling Assumption
  - Middle and low income currently have twice as generous formulas
  - If no changes (reform) will converge to rate of 66% of per capita GDP cost per beneficiary

Available Data on Relative Health Care Expenditures by Age

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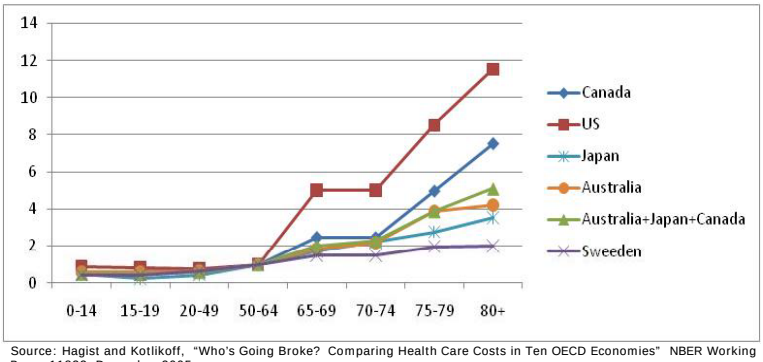
Relative Health Care Expenditures by Age (15-19 = 1.0)



Source: Hagist and Kotlikoff, "Who's Going Broke? Comparing Health Care Costs in Ten OECD Economies" NBER Working Paper 11833, December 2005

Simulating Path of Health Care Expenditures

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- Age specific health care expenditures are assumed to be middle of range for OECD economies (Average of Japan, Australia and Canada)
- As social insurance coverage expands with income gains covered population moves from minimum level (no age change) to age related pattern
- ***Additional variable*** – Health Care as "Luxury Good" - expenditures increase by 1.28% for each 1% increase in per capita GDP- estimated separately – As observed in OECD

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The Four Representative Cases

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	Low Income, Developing System	Middle Income, Maturing System	High Income, Maturing System	High Income, Mature System
Income per capita, (US Dollars)*	2,500	8,000	29,000	37,000
Base year Participation Rate (per cent of working age)	15	30	40	70
Proportion of Population over age 60 receiving benefits	15	60	20	90
Cost of average pension benefit as % of income per capita	135%	89%	84%	33%
Base year pension spending (% of GDP)	1.5%	4%	1.8%	5.2%
Base Year Health Spending	4%	5%	4%	10%
Fertility Rate for Base year	2.7	2.1	1.4	1.7
Old Age Dependency Rate in Base year (% of Population)	8	10	12	22

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Results: Demographic and Income Projections

Total Population and Share over Age 60

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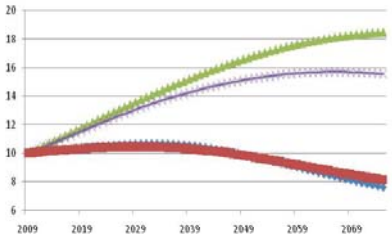
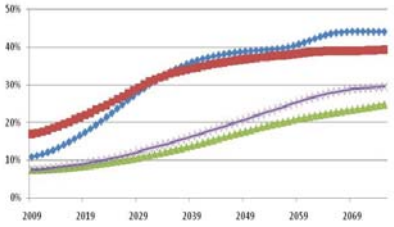
Total Population:
(Starting at common baseline of 10)



High Income Mature
Middle Income Maturing

Percent over age 60



High Income Maturing
Low Income Developing

Projected Real per Capita GDP

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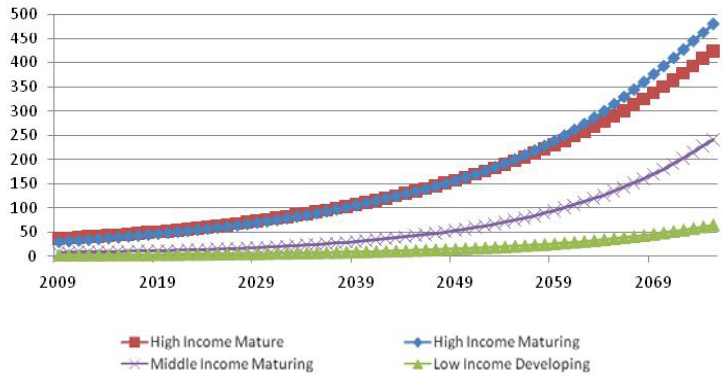

Important Trends

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- High Income economies have stable population levels that decline over the long term and move to very high dependency rate
  - More than 40% of population over age 60
- Middle income and lower income cases have large population growth but lower dependency rate (25-30%)
  - Younger starting point, lower longevity and high fertility
- Per capita GDP grows rapidly for higher income cases
  - Smaller population results in greater returns to labor

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Results: Pension Expenditures

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Share of Population Receiving Pensions

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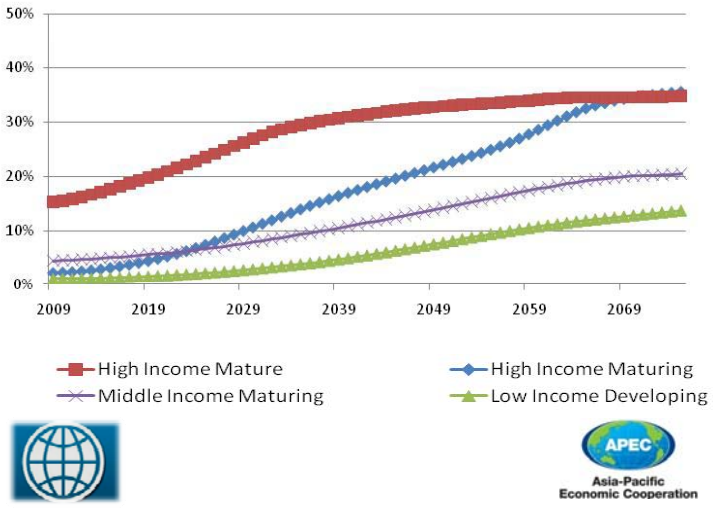

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Total Pension Expenditures: Projected Share of GDP by Year

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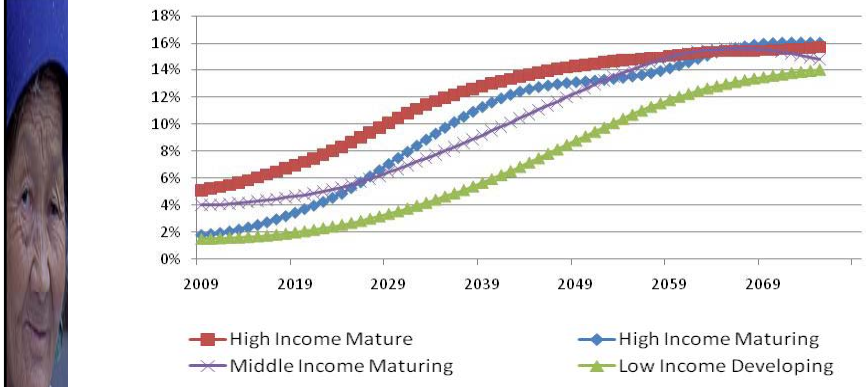

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Increasing Effective Retirement Age to 65

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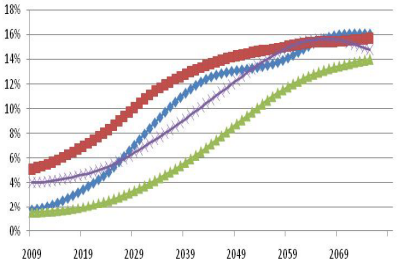
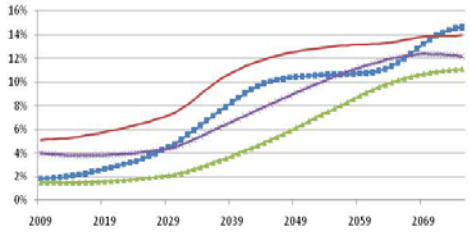
Baseline Simulation



Change to Age 65 Retirement



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Effect of Increasing Retirement Age and Price Indexation of Benefits

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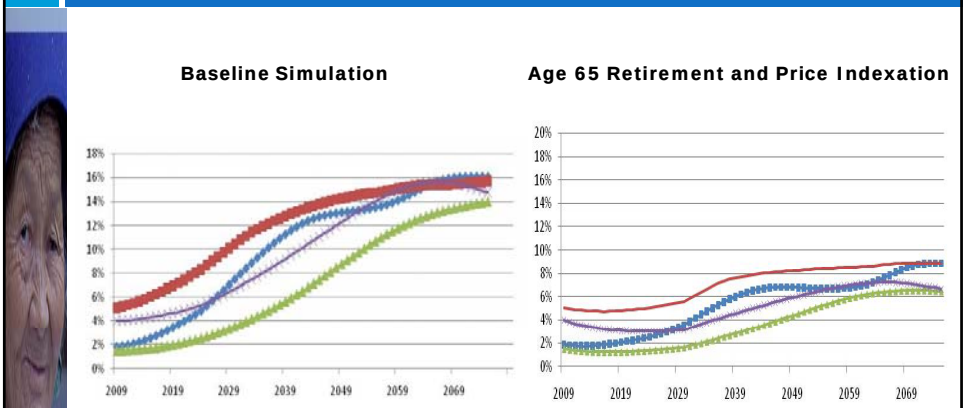

Interpretation/Commentary

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- All cases experience large increase in expenditures reaching similar levels of 15% of GDP but through different influences
  - In mature systems – high dependency rate and longevity increases – increase by a factor of 3 in share of GDP
  - In developing and middle income – coverage increases, generous benefit formulas and rise in dependency rates – Much higher rate of increase from lower starting level by factor of 7-8 . Lower rate of wage growth limits impact of very large change in dependency rates
  - The high income maturing case (eg AsianTiger) have both rapid increase in dependency rate, generous benefit structure and rapid wage growth – results in increase by factor of 10 in expenditure levels
- Longevity gains (constant retirement age) account for 1/10th to 1/3rd of expenditure increase
- Indexation policies are potentially more important due to effect of wage dynamics on benefit formulas

Potential Policy Responses

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- Pre-emptive adjustment of benefit formulas for development dynamics (changes in employment, wages and participation in Social Insurance systems associated with income gains)
- Rethinking of "intergenerational social compact" – move to constant rather than relative consumption replacement – wage to price indexation
- Multi-pillar systems with fixed or means tested "social pension" and mandatory savings to lower exposure to earnings based systems
- Systemic reforms to link benefits with changes in longevity and strengthen links with financing flows
  - Defined contribution or Notional DC elements in national systems
- Pre-funding or building up National reserves – potential to achieve development synergies

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Results: Health Expenditures

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Simulated Age/Cost Profile Transition

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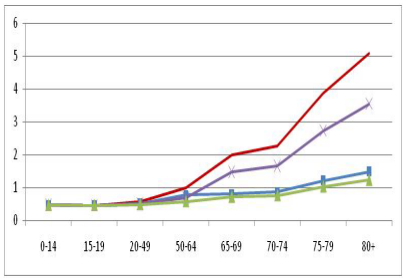
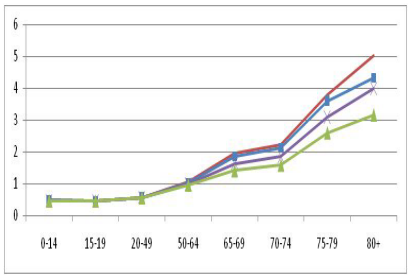
Beginning



End of Projections



High Income Mature
Middle Income Maturing
High Income Maturing
Low Income Developing

High Income Cases

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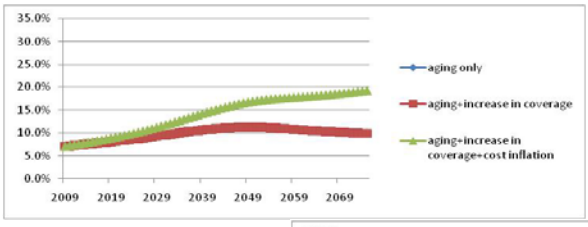
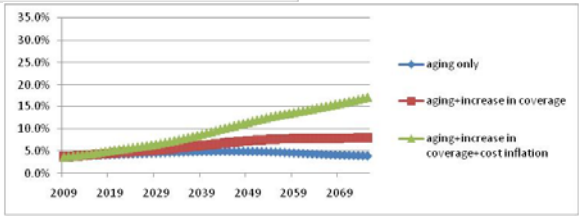


High Coverage Mature System

Lower Coverage Maturing System



Low and Middle Income Cases

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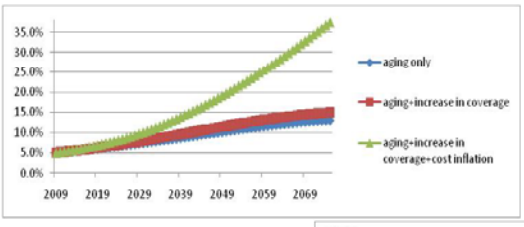
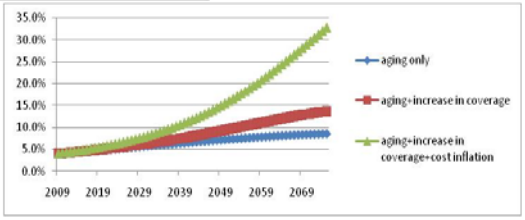


Middle Income
Moderate Coverage

Lower Income
Developing Coverage



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Additional Projected Expenditures by Source

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	Base Year spending	Additional spending		
		2030	2050	2070
Health spending (aging only)				
High income mature	7.0	2.3	4.2	3.1
High income maturing	3.7	0.9	1.1	0.2
Middle income maturing	5.0	2.4	5.3	7.7
Low income developing	4.0	1.7	3.2	4.4
Health spending (access only)				
High income mature	7.0	0.1	0	0
High income maturing	3.7	0.7	2.5	4
Middle income maturing	5.0	0.6	1.3	1.8
Low income developing	4.0	0.5	2.1	4.5
Health spending (cost inflation)				
High income mature	7.0	2	5.7	8.5
High income maturing	3.7	1.4	4.4	9.1
Middle income maturing	5.0	2.1	8.1	19.1
Low income developing	4.0	1.6	6.1	16

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Interpretation/Commentary

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- Without consumption change exceeding income growth **all cases reach 10% to 15% of GDP – combined with pensions would be expenditures of 1/3rd of output**
- Age structure and coverage increases have only small impact in already mature systems – *lower overall population in relation to GDP offsets aging effects* - contrasts with wage impacts for pensions
- Extending coverage roughly doubles expenditures in developing coverage cases
- Access to benefits by covered population moves costs in low and middle income cases to similar levels as high income – *overall population growth is important factor in these environments*
- **Income gain /Consumption increase factor has greatest impact in all cases** – has very large impact if combined with large changes in other factors

Needed Research to Understand Better What the Future Will Bring

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- Why do some high income economies have such high rates of costs for older populations? What is it about the market structure and financing that creates these differences?
- What are the patterns of access to services and costs in developing economies – How can these be managed?
- Are age effects inherent or is this actually end of life effects that will continue to shift age-cost curves outward?
- What is the experience with health care consumption and income in other settings? Is this a income-demand driven or a technology-supply effect that will be exported from high to middle/low income settings?

Concluding Observations

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- **Population aging is critical factor – if not managed pension and health costs can absorb entire public revenue space**
- Structure and parameters of pension systems can be potentially adjusted – solutions are context driven but issues and options are known – just hard choices remain
- Health care expenditures and aging are major challenge for all - perhaps even greater for developing economies
- High income economies biggest challenge is cost of aging – in others health care for broader population is important
- Much more needs to be learned to support good health care financing policy - examples of what to do and what not to do are available
- **Every economy is different. - Analysis of baseline and projections are essential to support effective policy choices**

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