

# **RETIREMENT and INCOME MODELLING UNIT: TREASURY**

## **Predicting the Unpredictable**

**Foresighting in the APS -  
From forecasts, models to scenarios**

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APS Futures Forum - March 2000



# Destination Z

- that “straightforward forecasting .... has proved to be a poor guide [to the future] throughout most of history.
- scenario planning breaks free from extrapolation and its shortcomings.
- Scenarios allow us to dream, not of the totally fantastic but of the possible and the probable, and what it might mean for our lives in the future.



# Some Questions

- **Is this just rhetoric?**
- **Is forecasting and projection methods a waste of time?**
- **Does it mean that I been wasting the last 30 years of my life?**



- **These sentiments flavour most of the books on scenario planning.**
- **Why do these books and articles take such a bipolar view?**
- **Is scenario planning the panacea that they claim.**
- **Has future studies dumped the traditional methods of forecasting?**



# The story runs as follows:

- **The future is essentially unpredictable:**
- **Hence need techniques which do attempt to accurately predict the future**
- **But ones which allow us to imagine a range of possible futures**
- **Answered by the futures technique - scenario planning**



# From forecasts, models to scenarios

- **Critical look at these issues and**
- **how they reflect on futures work in the APS.**
- **Fundamental to this discussion is the proposition that the future is inherently unpredictable?**
- **To my mind, the idea that the future is unpredictable should not go unchallenged.**



# Futures projects in the APS

## **Attorney General's Department**

[Office of Strategic Crime Assessments \(OSCA\)](#)

## **Department of Defence**

[Strategic Policy and Plans Division, Strategic Policy Branch](#)

## **Department of Education, Training & Youth Affairs**

[Addressing the Future](#)

## **Department of Family and Community Services (FaCS)**

[Scenario Planning](#)

[Communicating trends](#)

## **Department of Transport and Regional Services**

[Transport Directions](#)

## **Department of Veterans' Affairs**

[Review of Health Care & Services for the Veteran Community](#)



# Structure of the Presentation

- **What is foresighting and what's in it for the APS?**
- **What is the relationship between forecasting, models and scenarios?**
- **What future studies are carried out within Treasury?**
- **What results flow from these studies and how they might used in scenario planning?**
- **What do they mean for the APS in general?**





**According to one definition, foresighting is "a process by which one comes to a fuller understanding of the forces shaping the long-term future which should be taken into account in policy formulation, planning and decision making.... Foresight involves qualitative and quantitative means for monitoring clues and indicators of evolving trends and developments and is best and most useful when directly linked to the analysis of policy implications...."**

(Martin and Irvin, 1989)



# Policy formulation, planning and decision making.

- **Foresighting allows us to get a handle on the future challenges facing the APS and**
- **provide some perspectives on strategic positioning of the organisational**
- **Further, Commonwealth departments are responsible for both policy development and service delivery.**



# Interesting questions for the APS

- **How do future studies contribute to a policy development process?**
- **What kind of knowledge about the future is required?**
- **What should be the areas of focus?**
- **How will they be explored?**



# What are Scenarios?

- Scenarios are internally-consistent stories of possible futures. What would we do if this scenario came about?

(Arie de Geus former head of Planning for the Shell Group)

- Scenario thinking (planning) is not about predicting the future, and surprisingly enough, not about choosing the best way forward, though indeed a powerful and invaluable tool which helps this. Its primary value lies in the development of new faculties for improving decision making in those that practice it regularly.... (Galt et al – Idon scenario thinking)



- Scenario planning is about making choices today with an understanding of how they might turn out.... Using scenarios is rehearsing the future. You run through the simulated events as if you were already living them. You train yourself to recognise which drama is unfolding. That helps you avoid unpleasant surprises, and know how to act. (Peter Schwarz – The Art of the Long View)
- Scenarios are not predictions. Rather they help us visualise different possibilities, take account of inherently unpredictable events.

(Global scenarios for the 21<sup>st</sup> Century)



- Scenarios are only as good as the information they are based on. (David Mercer – Scenarios Made Easy)
- Scenario planning is...aimed at...foresight in contexts of accelerated change, greater complexity and genuine uncertainty (Pierre Wack, Scenarios: The Gentle Art of Reperceiving (Part II) 1984)
- Experience has taught us that the scenario technique is much more conducive to forcing people to think about the future than the forecasting techniques we formerly used. (André Bénard, former Managing Director, Royal/Dutch Shell)



# Characterisation of scenarios planning process

- There are an infinite number of scenarios
- Identify the question - strategic intent
- Identify main driving forces -
- Select two scenario axis
- – make them significantly different – take the extremes



# Probabilities: “Help or Hindrance in Scenario Planning”

- 1991 debate on Uncertainty in scenarios planning.
- The question was can you put probabilities on scenarios and would you want to.
- To my mind the answer is clearly you can't.
- does not mean that some scenarios are not more likely than another.
- Can some of these flavours be ruled out/unlikely/less likely. In my view Yes





# Requirements of Scenarios

- consistent and robust
- coherent
- possible and probable
- provide structured understanding and
- plausible.

To this list I would add

- defensible.



# The use of Scenarios

- As a pedagogical tool, getting executives to think outside the box, then I have no worries
- But I start to worry when:
- scenarios are used as the basis for decision making
- scenarios are used to rehearse the future
- the dynamics can be so complex that even slight differences in the drivers can result in large consequences.



- What if you choose the wrong drivers?
- What if you choose the wrong scenario axis?
- What if one of the extremes is not possible or likely?
- What about the time frame? When does a management decision have to be made?



# Some operational questions

- What forces (mindset) drive our opinions and decisions?
- What are we assuming about the situation?
- Are we questioning assumptions?
- Are we facing the inherent uncertainties that exist?
- How many possible outcomes do we consider?
- What have we not taken into account?
- Have we considered unexpected events?
- What might they be?
- What does our intuition tell us?
- Are we pursuing the right path?



# Hardin's Scenario Matrix Summary

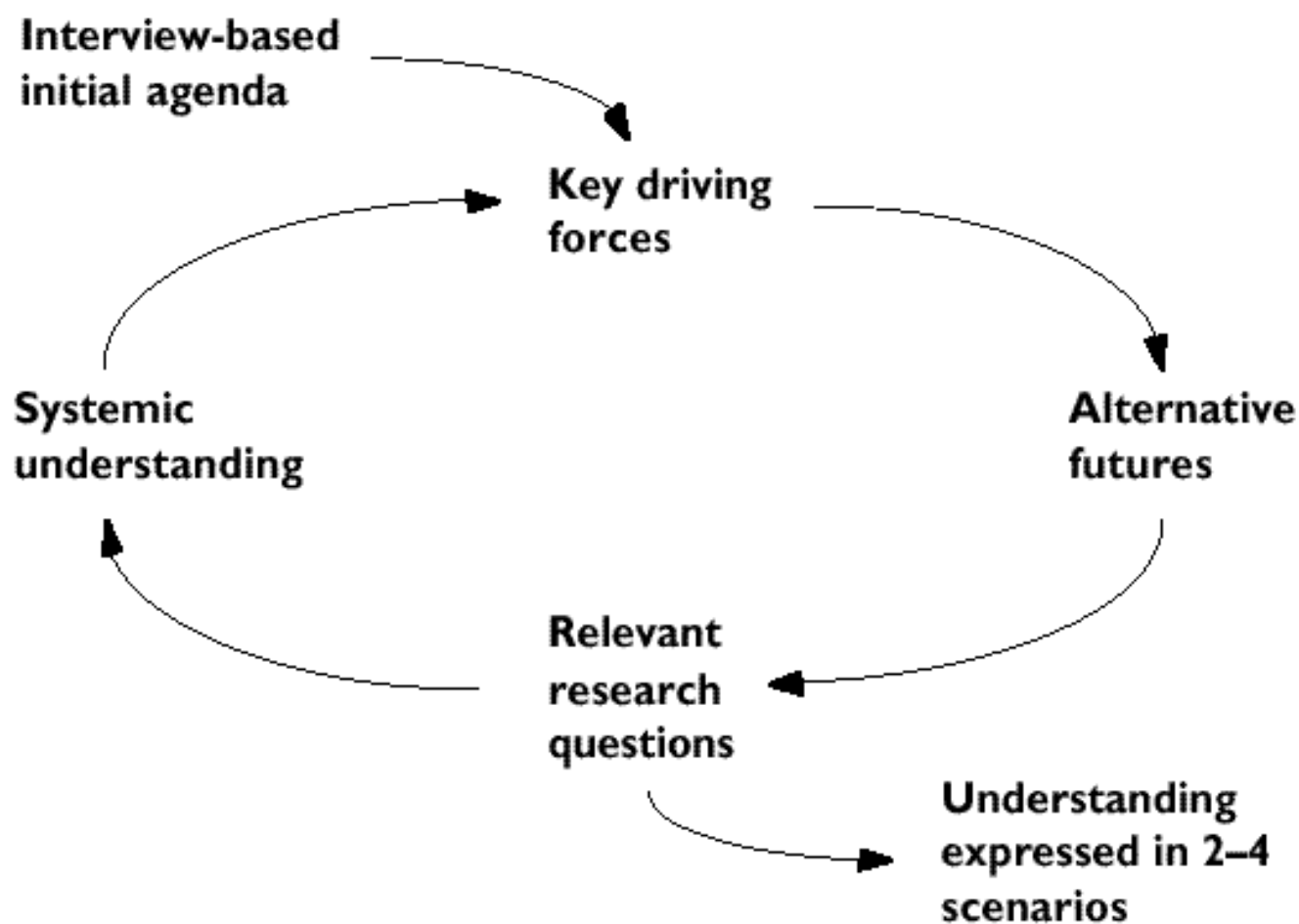
Introduction to Scenario Thinking

## The Scenario Matrix: Summary

- Strengths
  - simple*
  - quick*
  - memorable*
  - marketable*
- Shortcomings
  - too few variables*
  - prioritisation contentious*
  - may mask actual insights about the system*



## Pierre Wack's Scenario Approach



# Shocks

- Scenario analysis has been most useful in business, where uncertainty is about a single variable (the price of oil in the case of Shell). In economic policy there is rarely a single uncertainty. Of the many shocks, the one that actually hits you is unlikely to have been considered. [In this situation] .....it is very difficult to use scenario analysis to produce contingency plans. (Ron Smith 1998)



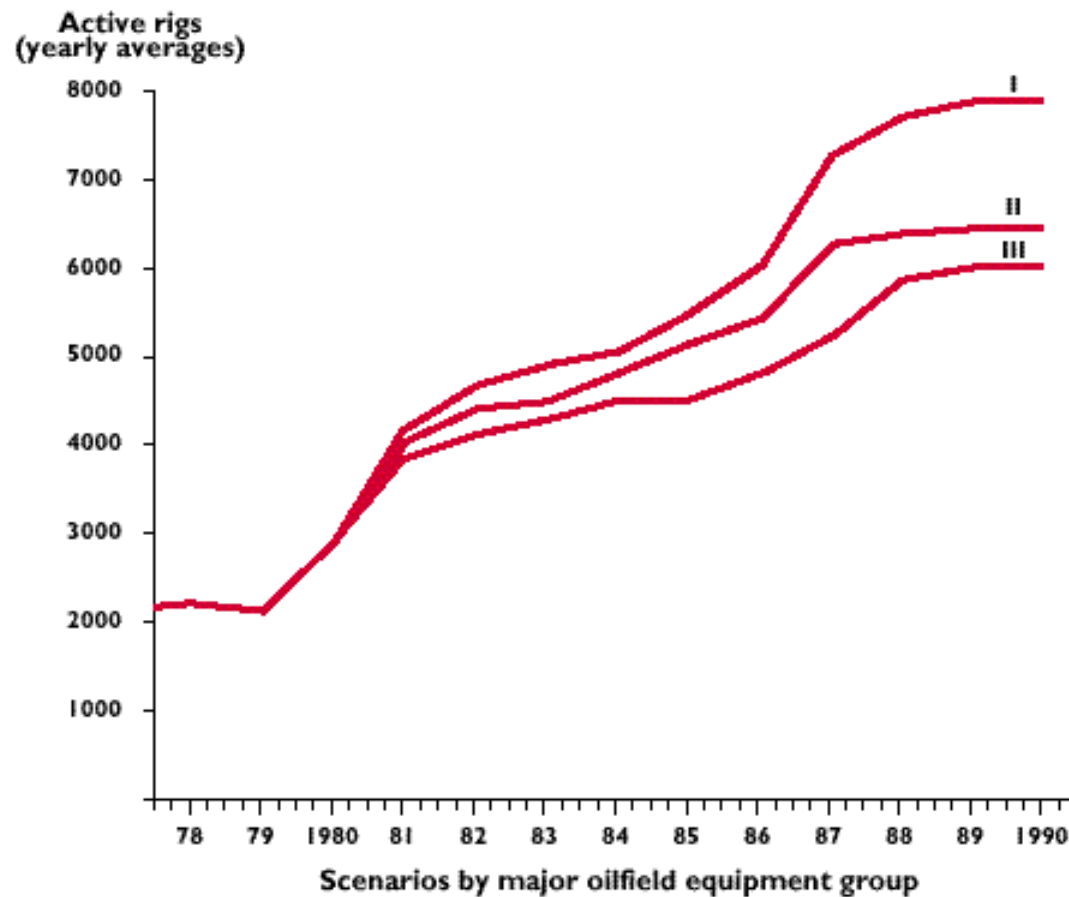
# Forecasting

- Scenario books put up forecasting as the straw men
- Linear trend extrapolation for any serious forecasting it is not realistic
- Forecasts can be very nonlinear with linear assumptions
- most forecasting is multivariate
- very complex interactions when forecasting

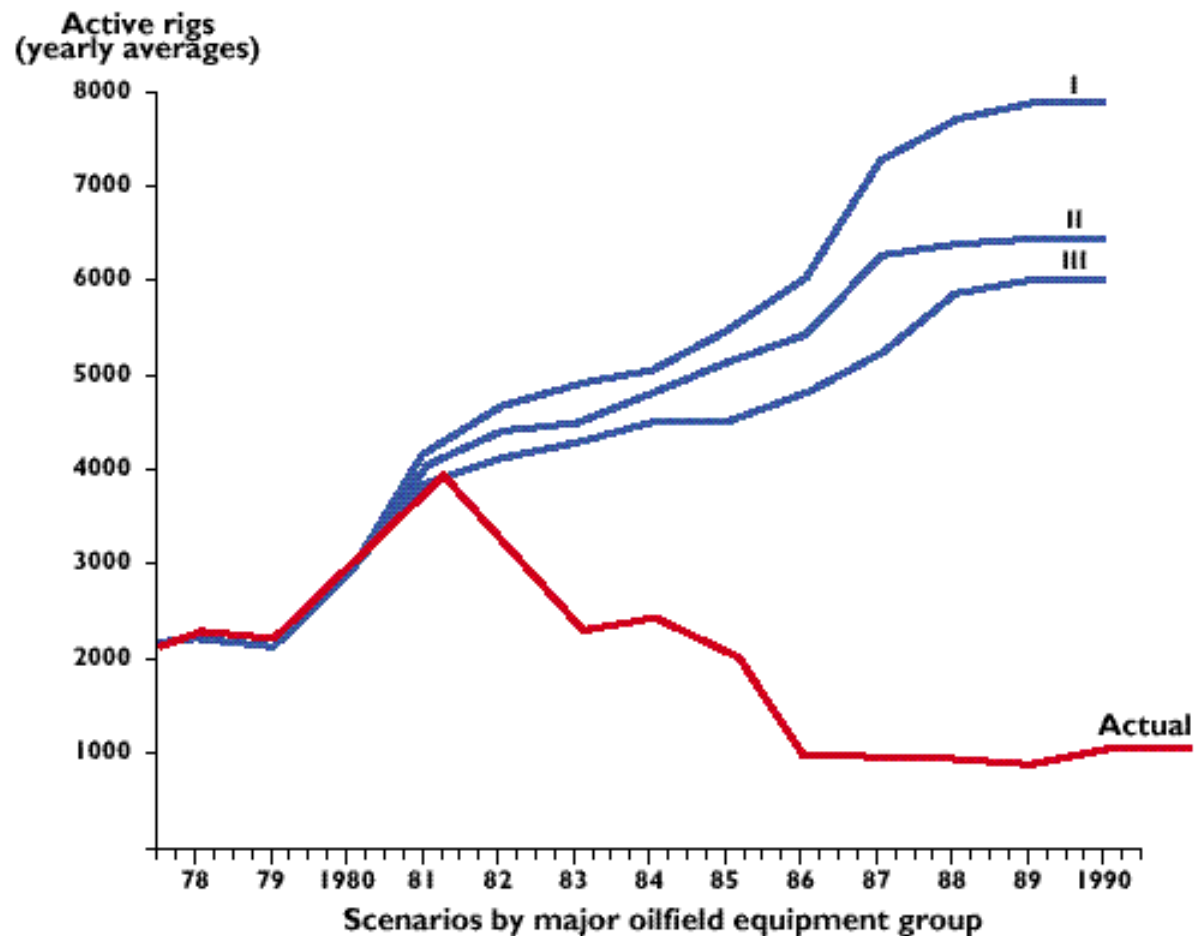




# Drilling Scenarios USA, 1980–1990



# Drilling Scenarios USA, 1980–1990



# Models (Economic)

- An economic model is just a formal representation of the way in which the modeller believe the system functions.
- The model provides information that helps answer the questions, it does not provide the answers



- In general terms the Treasury wants the forecasts to be accurate, timely, internally consistent, well thought through, set out in the required level of detail, well presented and readily explicable to all necessary audiences.... The outputs of the models are useful, inputs into the policy making process. Policy making is an inherently quantitative process. But if you are going to need a consistent set of numbers that satisfy past economic relationships, and are going to want to look at alternate policy scenarios and input your judgement about the future, you are going to end up with something that looks like a traditional economic model. (Ron Smith , Economic Modelling 1998)



# RIM's Story

- build hypothetical and aggregate models
  - ◆ quantum and distributional
  - ◆ over the next 60 years
- investigate interaction of
  - ◆ retirement benefits,
  - ◆ social security,
  - ◆ tax expenditures,
  - ◆ superannuation assets,
  - ◆ fiscal balance,
  - ◆ national saving
- and to show sensitivity of results to
  - ◆ demographic,
  - ◆ labour force,
  - ◆ economic, and
  - ◆ superannuation industry parameters



# An Economic Story of Ageing

- Ageing and:
  - Population Growth
  - Supply of Labour
  - Early Retirement
  - Economic Growth
  - Productivity
  - Earning Profiles
  - Career Earnings
  - Public Expenditure
  - Saving
  - Wealth
  - Bequests



# At a recent industry conference the sessions preamble was:

- The 'baby-boomer' generation are now in their fifties and without a retirement 'nest egg' - so may want to keep working past traditional retirement age. The risk for companies includes poor productivity, accidents, rising workcover costs as well as restricted opportunities for younger people.
- If you believe this, then your company is in trouble.



# If your view of the ageing workforce for your company is:

- Poor productivity
- More accidents
- More sick leave
- Greater labour costs
- You may want to think again





# If you think:

- That you should retire your mature workers as soon as possible
- You may want to think again



# If you think:

- That as we move into the next century that you will have a choice between employing younger vs mature aged workers.
- You may want to think again



# Ageism

- A Drake Management Consulting survey....
- “While we have long known that ageism is a problem in organisations, we were unaware of just how deep-rooted the problem is.”
- “...the survey results come at a time when companies are beginning to recognise that knowledge and learning are crucial to their competitive success and instead of retaining our mature workers - our powerhouses of knowledge - we’re relegating them to the scapeheap.”



# In fact

- If you don't put strategies in place to retain your mature aged workers, the market will do it for you.
- Those companies who leave it to market forces will face large adjustment costs.



# INTO THE CENTURY



# THE WORK FORCE

- Not only is the work force ageing
- but the size of the work force as a proportion of the population is falling
- Not only will the supply of matured aged workers outstrip the supply of younger workers
- but demand will outstrip supply



These dynamics will  
have important  
consequences for your  
company and the  
economy as a whole.



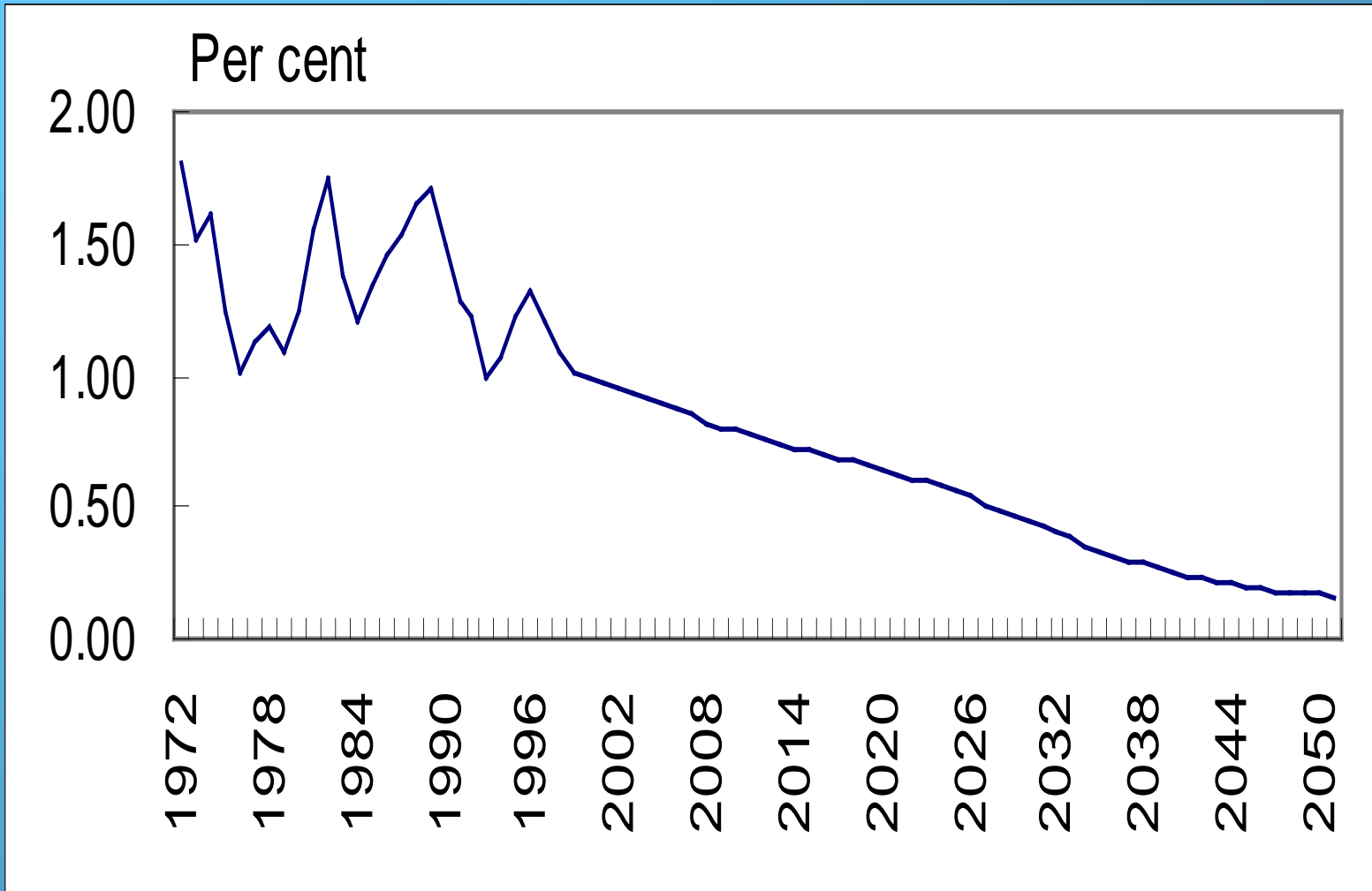
# Ageing and Population Growth

- **Australia will experience a largely unavoidable ageing of the population over the next half century**
- **Elderly dependency ratio, rose from around 14% in 1971 to 18% in 1997**
- **is projected to rise to 40% by the year 2051**





# Historic and Projected Population Growth Rate



# Ageing and Working Population Growth

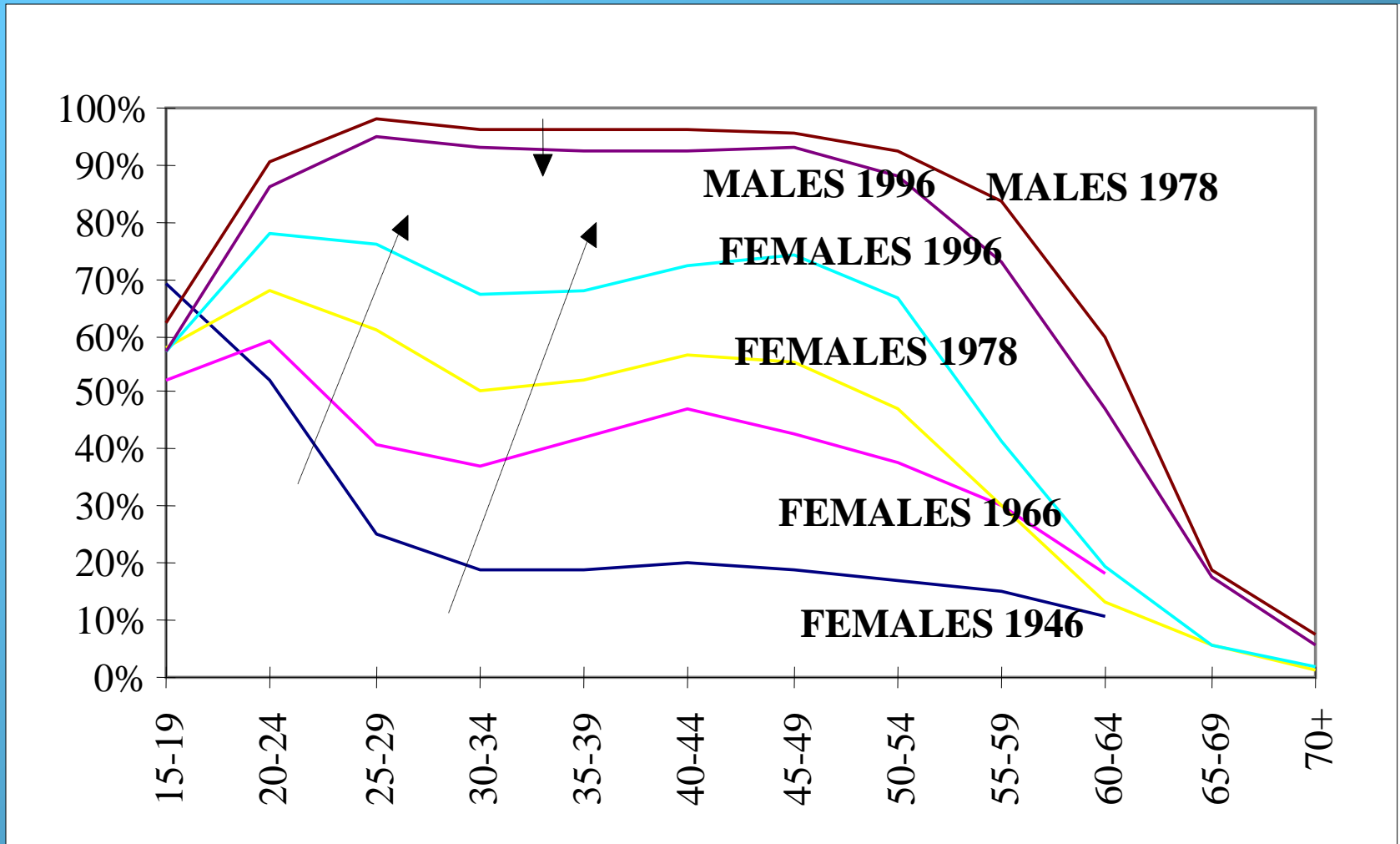
- Last year the working age population grew by 180,000 people per year
- In the decade starting in just twenty years time the working age population will grow by 140,000
- Not per year, but over the whole decade
- The growth peaks this year



# Ageing and the Supply of Labour



# Labour Force Participation by Age Group

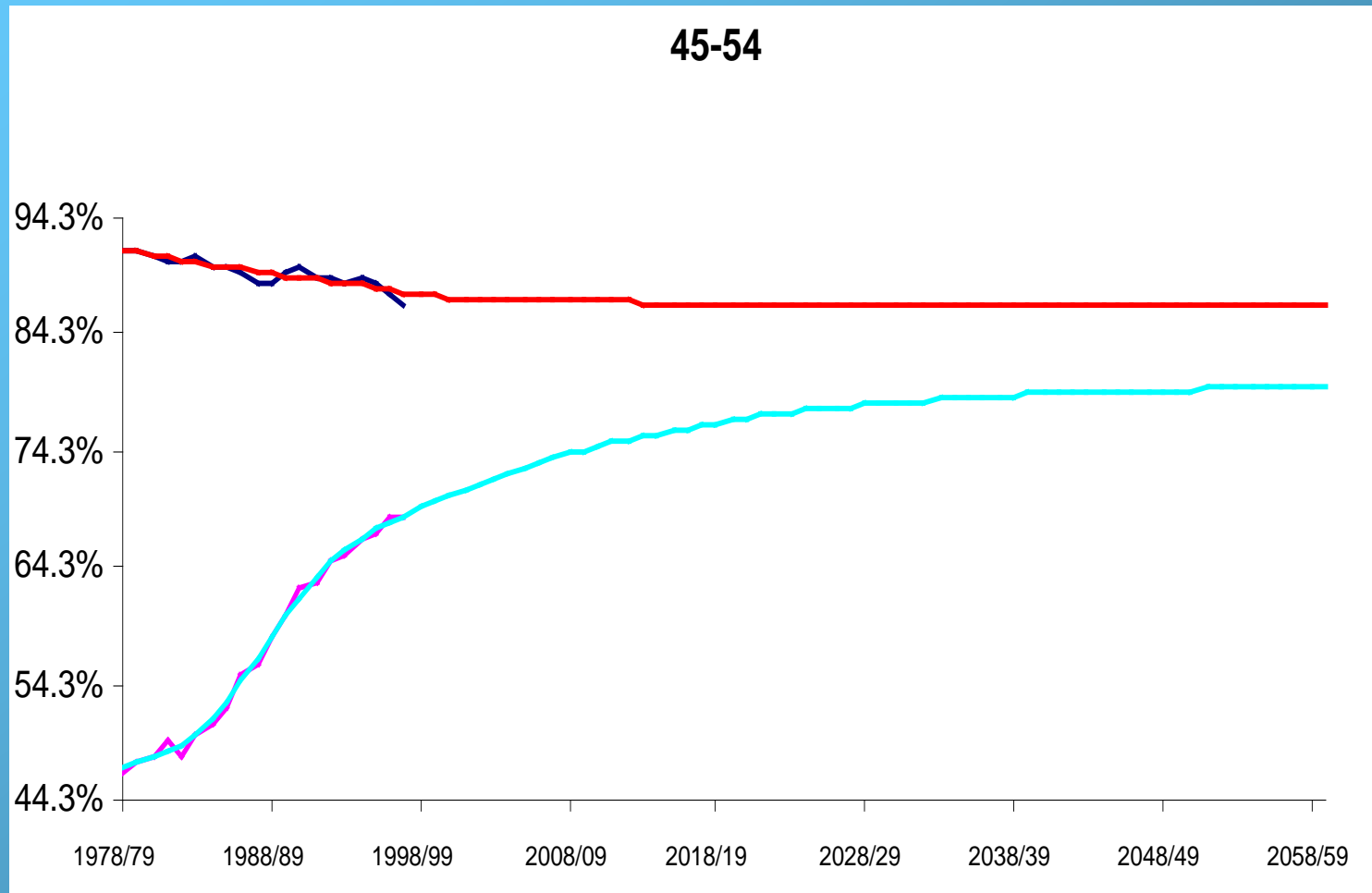


# Underlying Mechanisms

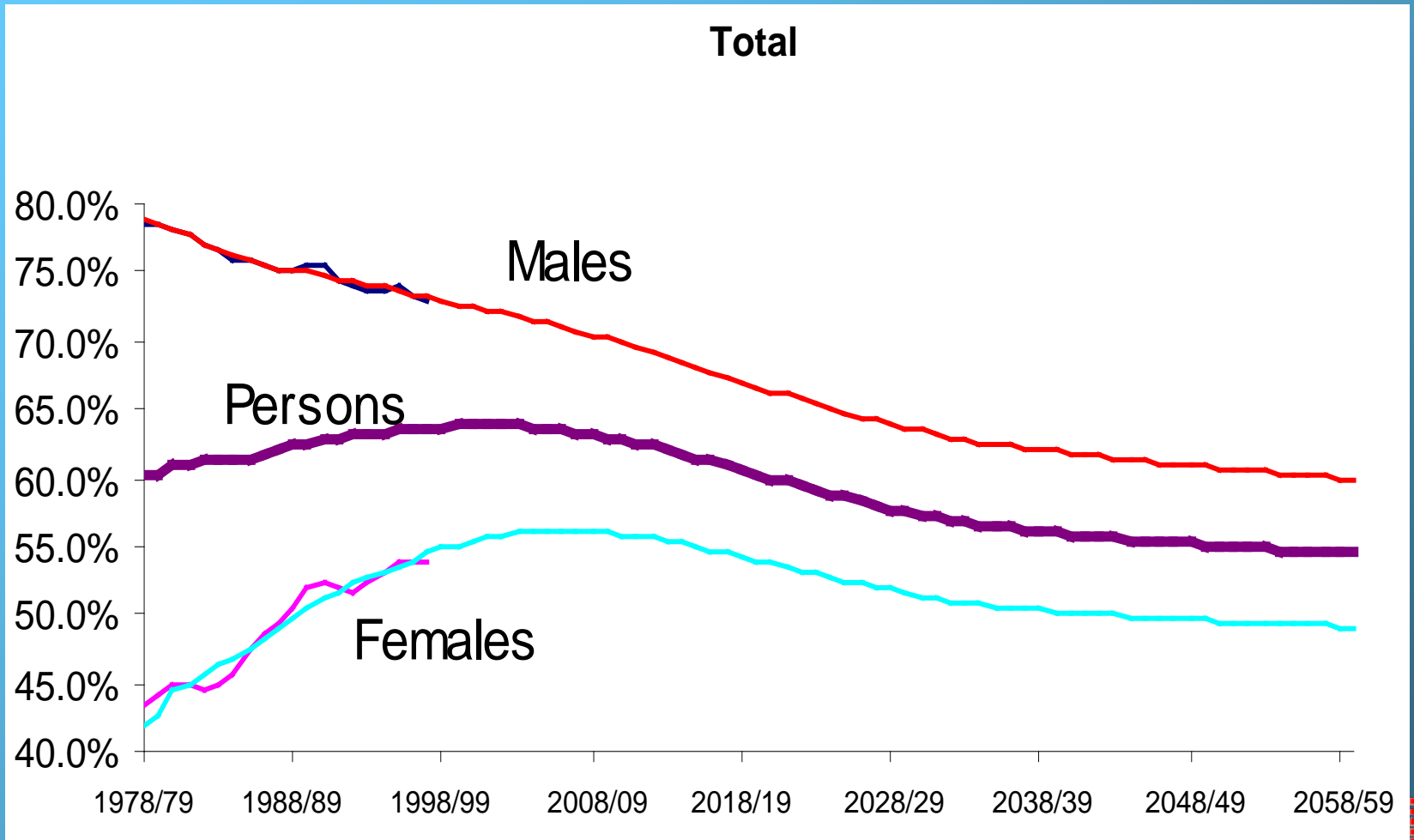
- Gender Shifting
  - ◆ more female employment at the expense of male employment,
- Part-time/Casual
  - ◆ the growth in part-time and casual employment,
- Early Retirement
  - ◆ cohorts which would previously have retire at pension age now retiring earlier, and
- Female re-entry
  - ◆ more females re-entering the work force after child bearing/raising.



# Participation Rate Projection

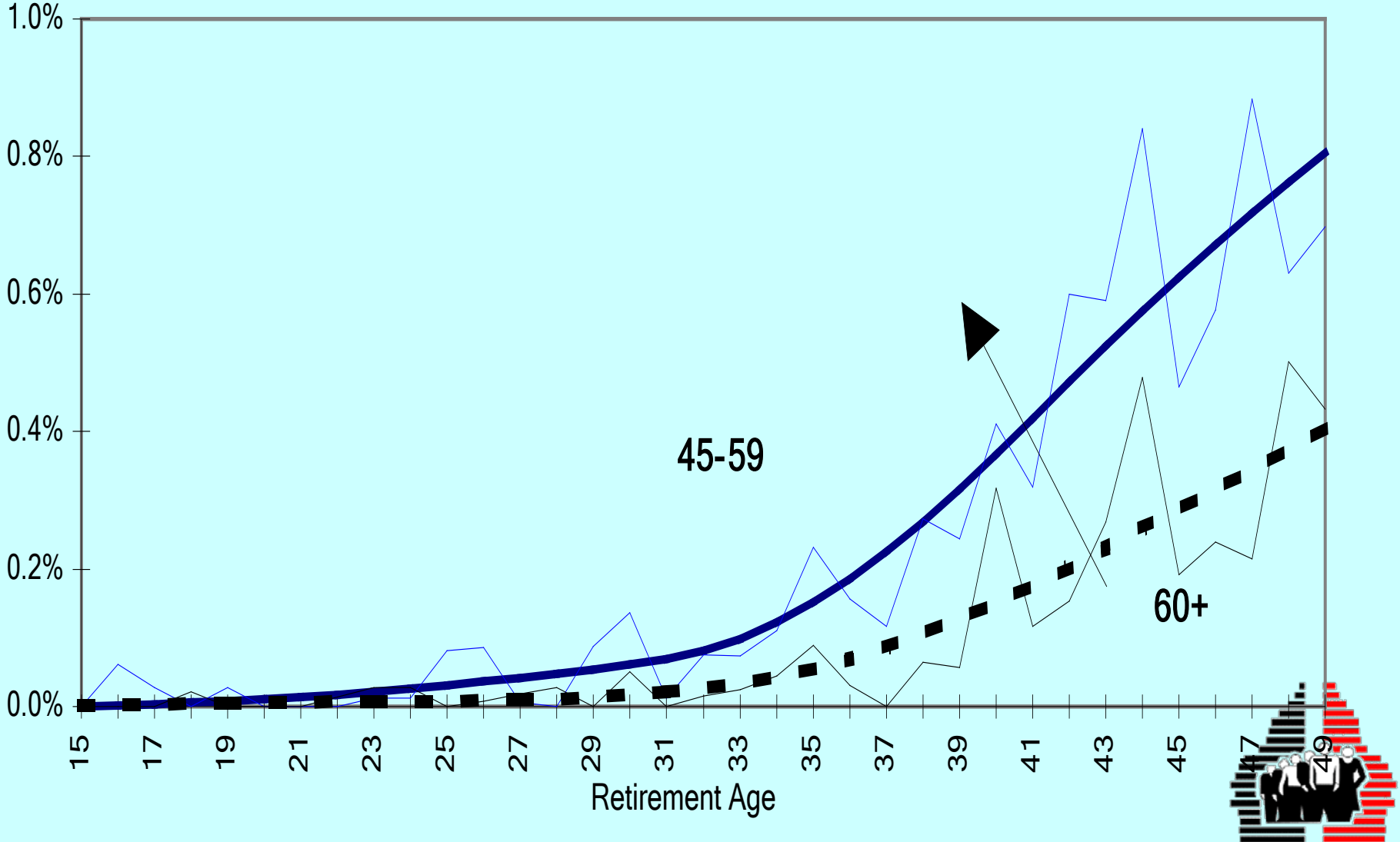


# Aggregate Participation Rates



# Smoothed Retirement Rates from Full-time Work - Males

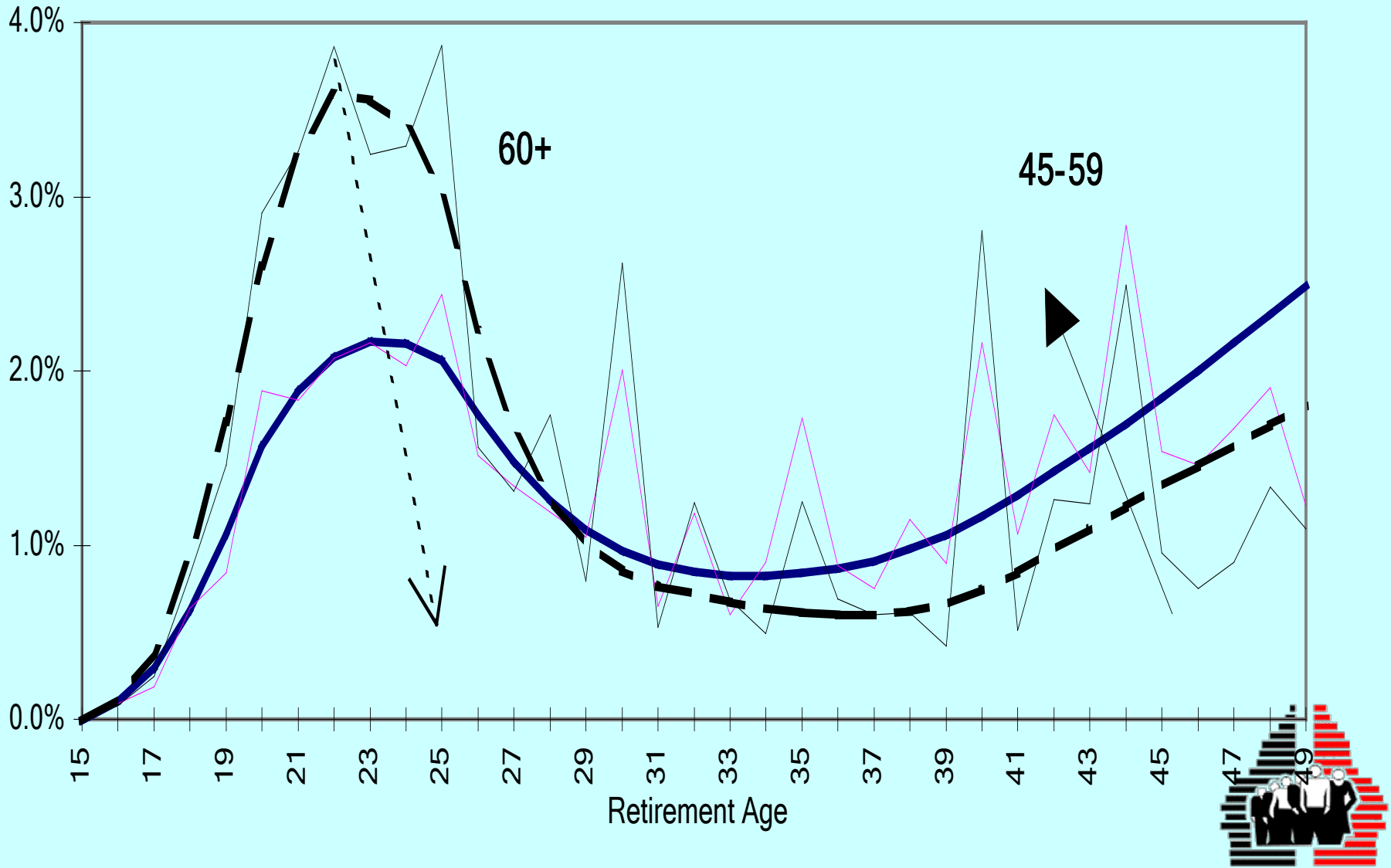
## 45-59 & 60+ cohorts





# Smoothed Retirement Rates from Full-time Work - Females

## 45-59 & 60+cohorts



# Ageing and Early Retirement

- Early retirement has shown that it is a real phenomena for both males and females
- The increases in early retirement have slowed and might even have stabilised
- Age-specific participation rates for females are rising at the same time as age-specific retirement rates are also rising

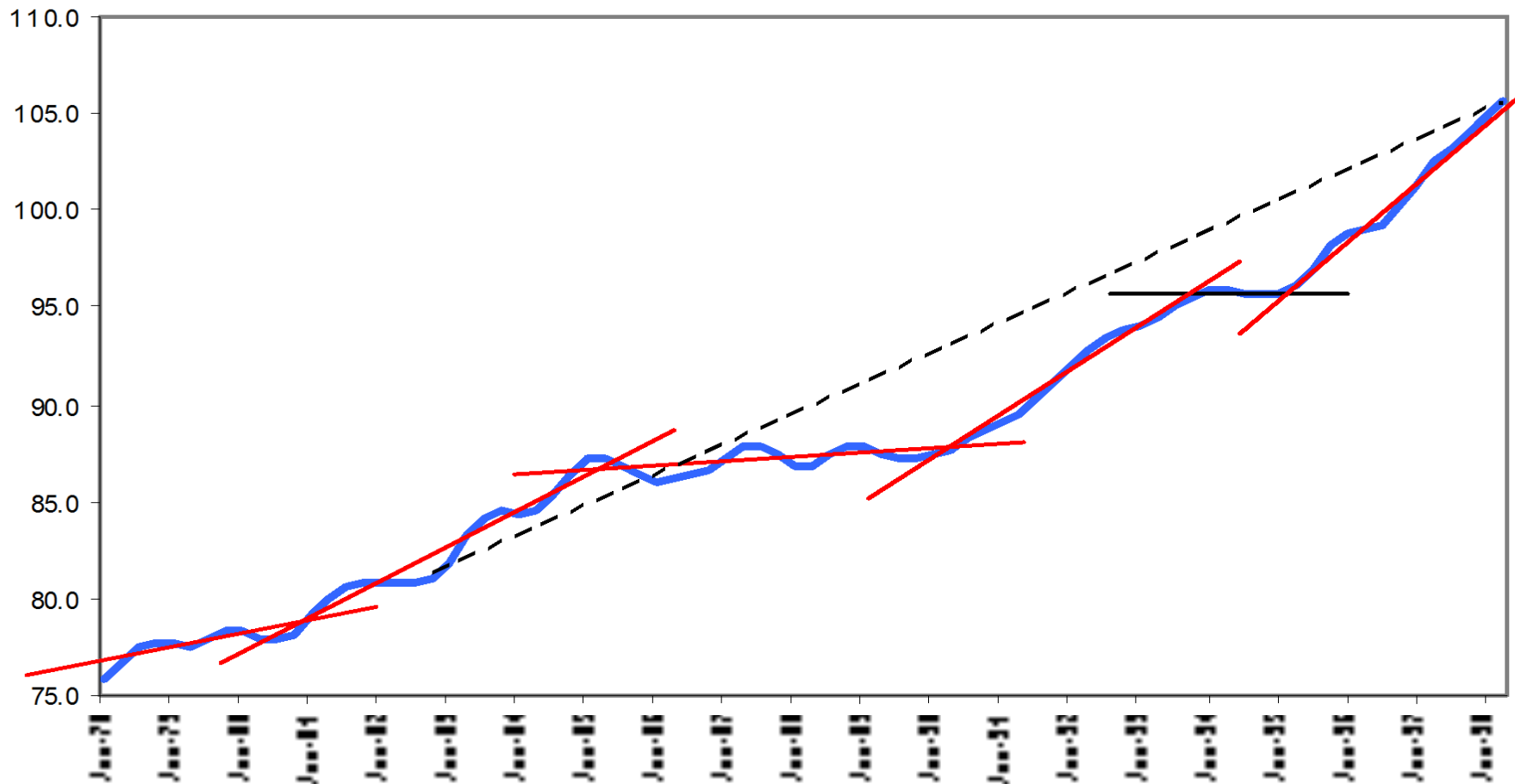


# Ageing and Productivity



# Annual productivity growth 1983-1998 - average 1.6%

Productivity Index – GDP to Hours worked

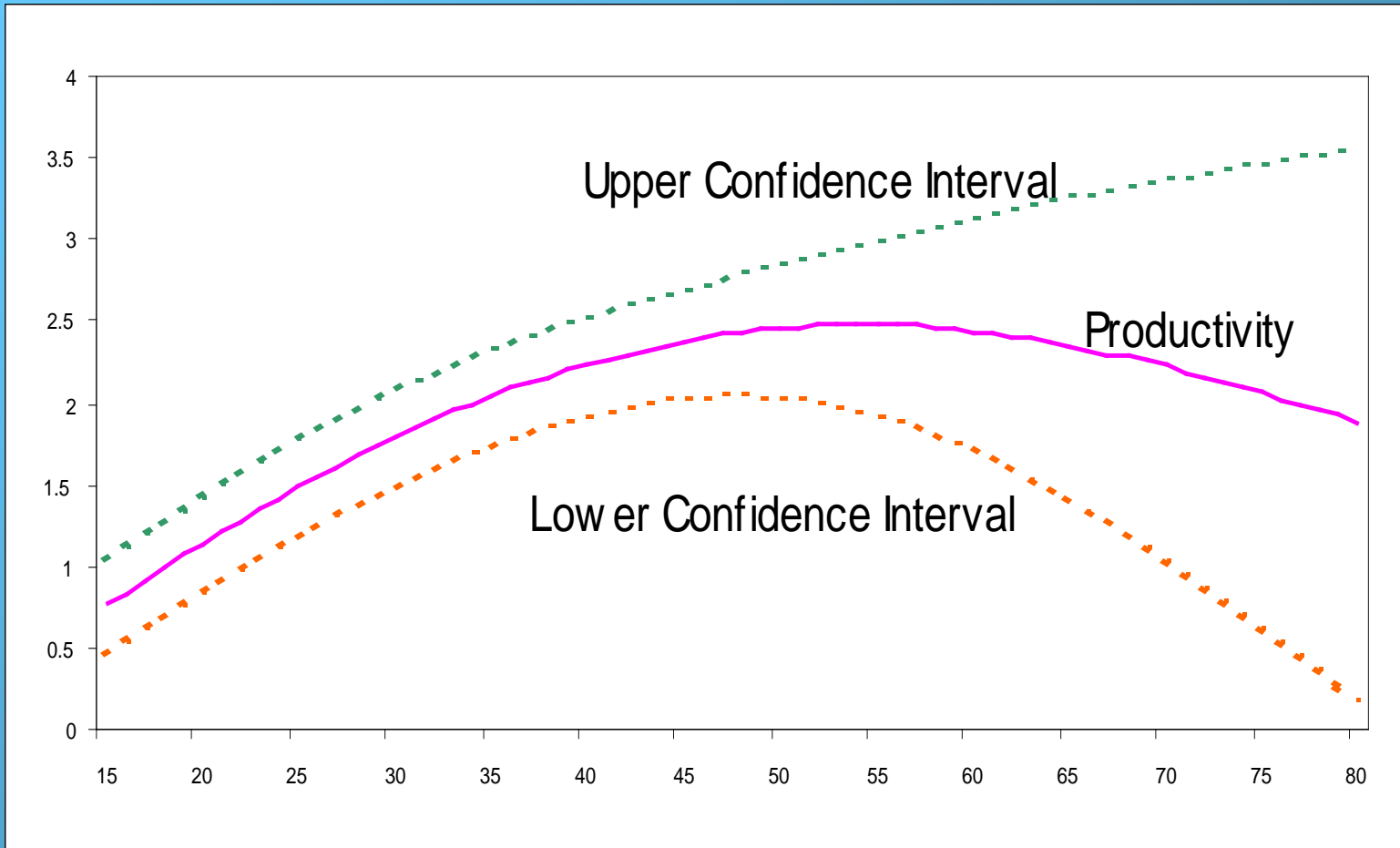


# Ageing and Productivity

- **Does productivity reach a peak and decline with older age?**
  - As assumed by many economists
- **If so, does it represent**
  - ◆ a real decline of productivity or
  - ◆ age discrimination (say).
- **However, most research which attempts to directly measure productivity shows no diminution with age**



# Productivity by Age



# Ageing and Economic Growth

$$GDP = \frac{GDP}{Hours} \circ \frac{Hours}{Emp} \circ \frac{Emp}{LF} \circ \frac{LF}{Pop} \circ Pop$$

OR

Growth in GDP =

Growth in Productivity +

Growth in Hours +

Growth in Employment +

Growth in Participation Rates +

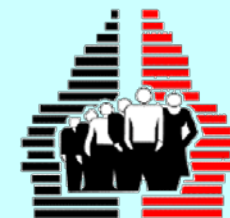
Growth in Population



# Ageing and Economic Growth

$$GDP = \frac{GDP}{Hours} \circ \frac{Hours}{Emp} \circ \frac{Emp}{LF} \circ \frac{LF}{Pop} \circ Pop$$

Growth Component	Annual Growth 1983 to 1998	Annual Growth 2044 to 2059
Population	1.7%	0.3%
Participation Rate	0.1%	-0.1%
Employment Rate	0.2%	0.0% (stable unemployment rate)
Average Hours	0.3%	0.0%
Productivity	1.6%	1.6% (assumed constant)
GDP Growth	3.9%	1.8%





# Three Main Factors Driving GDP Growth

- Population Growth
- Labour Force Participation
- Productivity



# What can we do about these Three Main Factors

- **Population Growth**
  - ◆ nothing much
- **Labour Force Participation**
  - ◆ put strategies in place to maintain and retain your mature aged workers
- **Productivity**
  - ◆ put strategies in place to promote productivity growth
  - ◆ particularly for mature aged workers



# **Value your Mature Aged Workers**

## **They are your Future**



# The Bottom Line

- **“It is important that older workers are assessed on the basis of their performance and contribution rather than on the basis of their age” (OECD).**
- **The view that mature aged workers are less productive and cost more is not supported by detailed study.**
- **Even so, you can do something about improving the situation.**



# Think About

- **Productivity - declines little with age**
- **Quality of work - improves with age**
- **Corporate memory - don't throw it away**
- **Job turn over - 25% higher for younger workers**
- **Recruitment costs - reduce turnover**
- **Training costs - the young are 5 times more likely to change jobs**
- **Absenteeism - no observable difference**
- **Loyalty, work ethic and reliability - usually higher for mature aged workers**
- **Company structure reflects customer base**



# Jobs for the Young

- Few jobs relinquished by older workers go to young people (Overseas studies).
- “While the tragedy of youth unemployment should not be understated, encouraging early retirement as a method of creating jobs for younger workers is both short-sighted and expensive” (Edey & Simon RBA).



# Will They Want to Work?

- **Wealth**
- **Access to superannuation**
- **Wage/leisure trade off**
- **Retirement age inertia**
- **Flexible and accommodating working environment**
- **Health**
- **Labour market disengagement**



# Strategies

- **Job redesign (including mentoring)**
- **Job Sharing**
- **Phased Retirement**
- **Part-time Work**
- **Temporary or Contract Work**
- **Working from Home**
- **Retraining**
- **Promotion of Occupational Health**
- **Return to Work processes - R2W**





# Return to Work

- “When you return older workers to work, or locate them in suitable employment they’re rock solid” (work solutions group).
- Principle - Early, early, early intervention.
- Rule of thumb, if you’re not back in work by 3 months, you disengage from the workforce.
- Whether you’re self insured or not, the rule of thumb is \$1 spent => \$4 plus saved.



# Some Possible Tensions

- Ageing population
  - ⇒ diminished labour force
  - ⇒ excess demand for labour
  - ⇒ unemployment pressure down
  - ⇒ wage pressures up
  - ⇒ pressures on public purse



# But at the same time

- Household wealth growth of 10% per capita per annum
- declining no of children
  - ⇒ (children/family)
  - ⇒ larger individual bequests
  - ⇒ increasing individual wealth
  - ⇒ lower labour supply



# **Value your Mature Workers**

## **They are your Future**

- **Companies are following a wrong headed strategy if they encourage their mature aged workers to leave employment.**
- **Apart from the fact that you will need them in future -**
- **their performance and contribution to your company is probably undervalued now.**



# Conclusion

- **When it comes to future studies in the APS: forecasting, modelling and projection techniques are an important tool for policy development and decision making.**
- **Clearly if you combine foresighting techniques, as I think envisaged by Wack, you get a better decision making framework.**



- As an example I have demonstrated how the ageing of the Australian population can be predicted , in my view, with some certainty.
- The implications for scenario selection and are clear. A high growth scenario is not likely.
- Further the analysis demonstrates the labour supply issues facing the APS in the middle of the century.
- The projections permit strategic positioning of the organisation



# Two Lessons Learned

- Scenarios Planners - misunderstand the role of forecasting in setting scenarios.
- Forecasters - do not take advantage of the potential offered scenario planning



# Predicting the Unpredictable?

– let me suggest

might be difficult

but not impossible





# END

<http://www.treasury.gov.au/rim>

The views expressed in this presentation are those of the Author and do not necessarily reflect the views of Treasury or the Government.

