



14th Global Meeting of the NTA Network, Paris 2023

Demographic Dividends in Singapore: Past and Future

15 February 2023

OUTLINE

1 Introduction: the demographic context

2 Demographic dividends: methodology

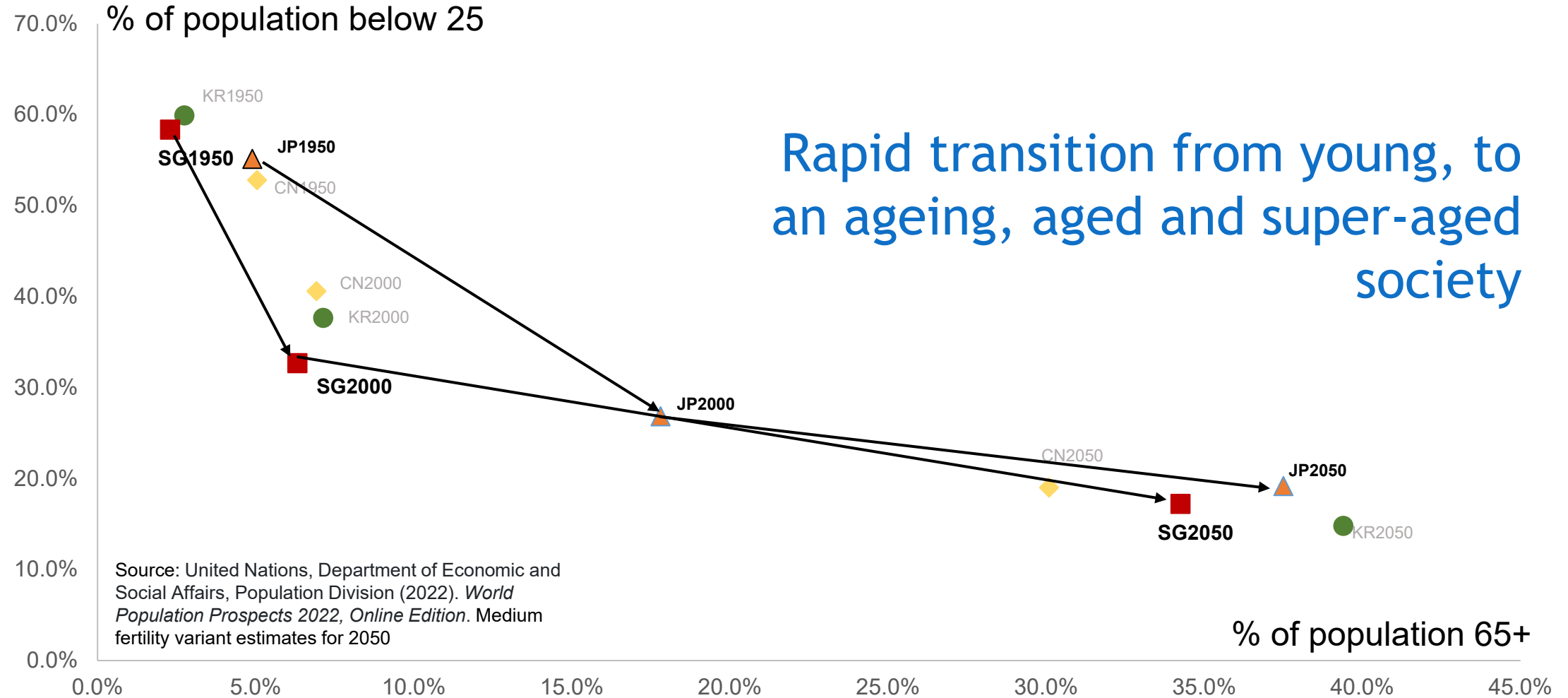
3 Singapore's first demographic dividend

4 Singapore's second demographic dividend(s)

5 The future of demographic dividends in Singapore

Introduction: the demographic context

Very rapid demographic transition



The demographic dividends

First demographic dividend (bonus, gift, window of opportunity)

Second demographic dividend (Mason & Lee, 2004)



The demographic dividends

First demographic dividend (bonus, gift, window of opportunity)

- Fertility decline **reduces young-age dependency** and **increases share of working-age population**
- Leads to a boost in economic productivity
- Arithmetic in nature, ultimately transient

Second demographic dividend (Mason & Lee, 2004)



The demographic dividends

First demographic dividend (bonus, gift, window of opportunity)

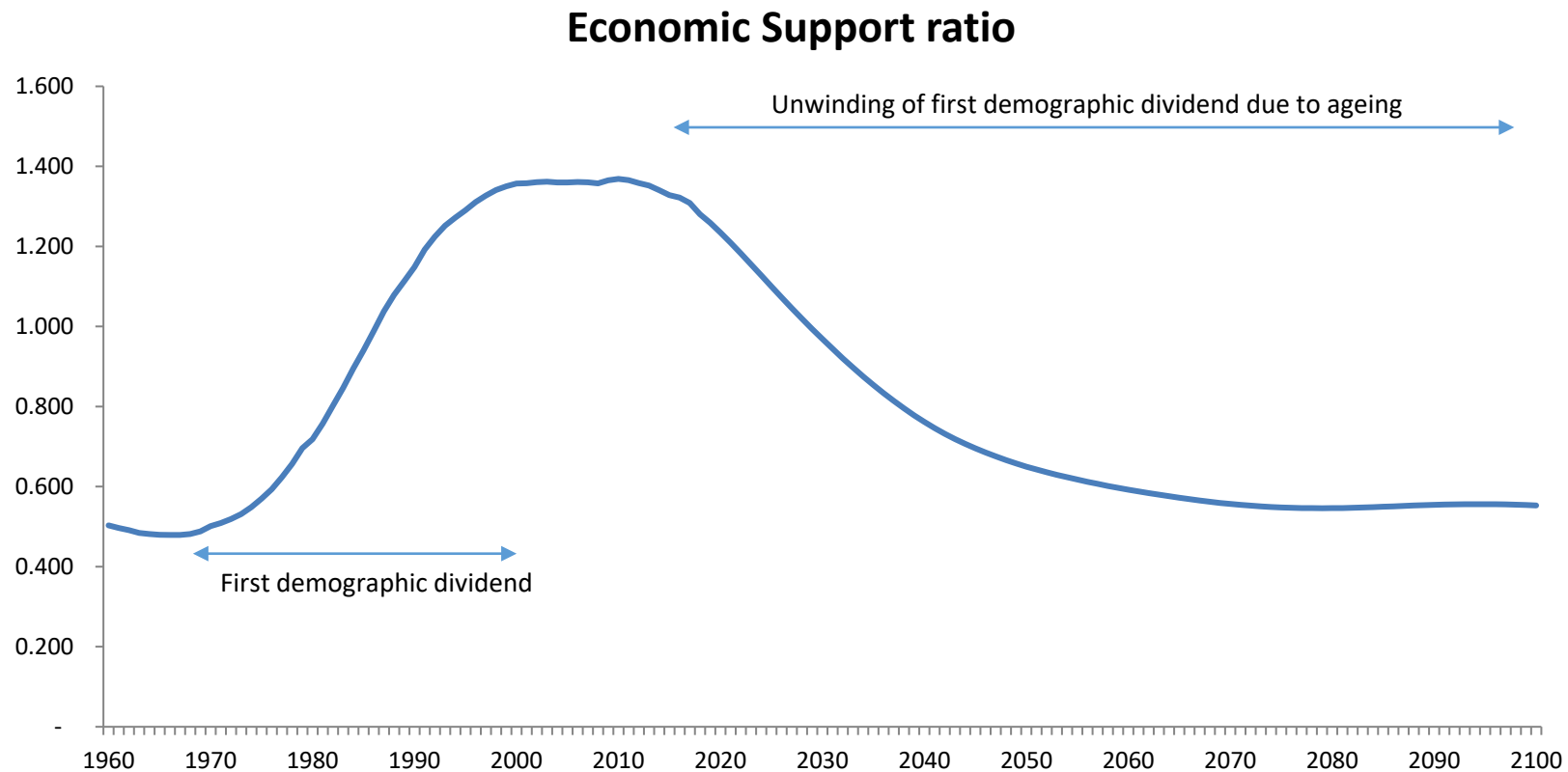
Second demographic dividend (Mason, 2005)

- Accumulation of savings as rational response to ageing
- Invested savings can **lead to capital deepening** and **increased productivity per worker**
- Applies to economic capital and broadened to include human capital investments (health and education)

Methodology for estimating the DDs

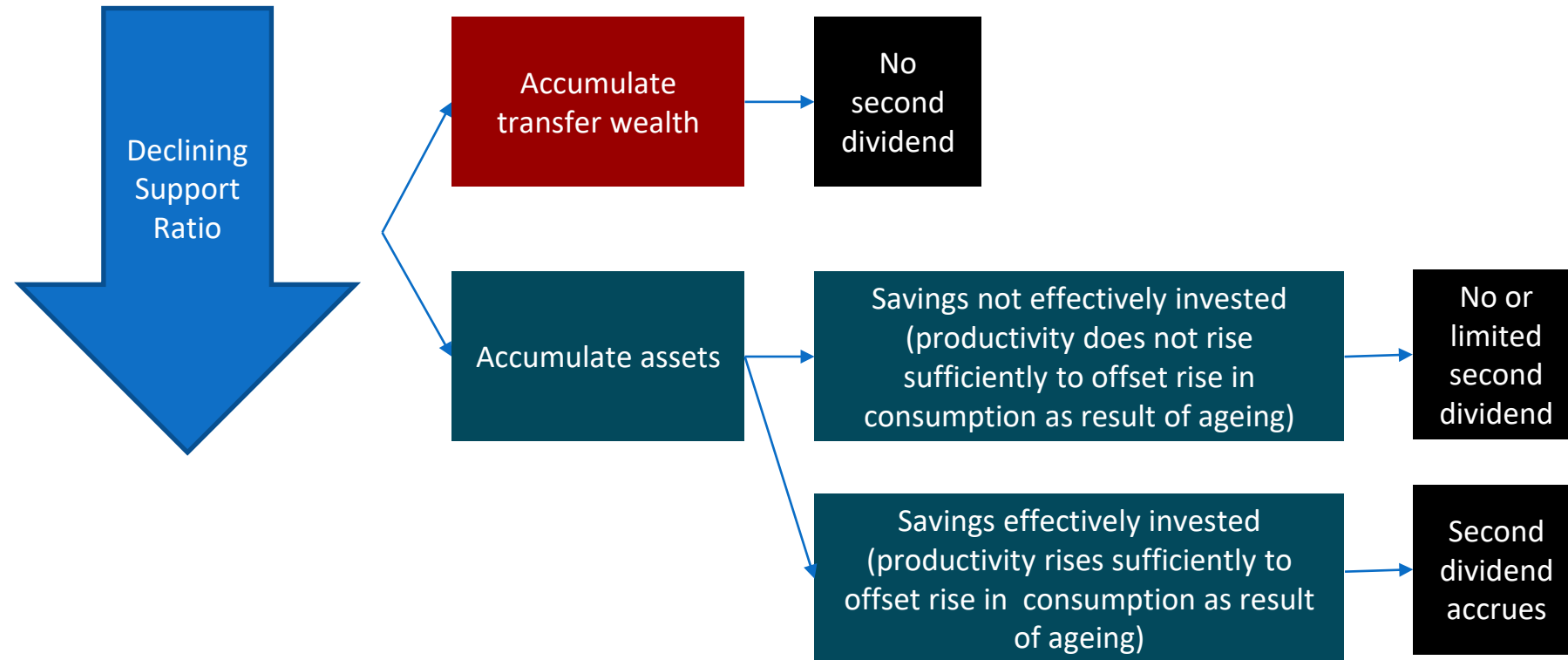
Estimating the first dividend

Economic support ratio (ESR): effective number of producers to effective number of consumers



From Mason & Lee
(2006)

Estimating the second dividend



Estimating the second dividend

Mason & Lee (2006) set out a quantitative method involving the calculation of the **lifetime support ratio** (LSR):

the effective number of producers discounted and cumulated over the lifetime of all year t adults

divided by

the effective number of consumers discounted and cumulated over the lifetime of all year t adults.

$$\frac{W(t)}{W_l(t)} = c(t) \frac{SR(t)}{LSR(t)} - 1$$

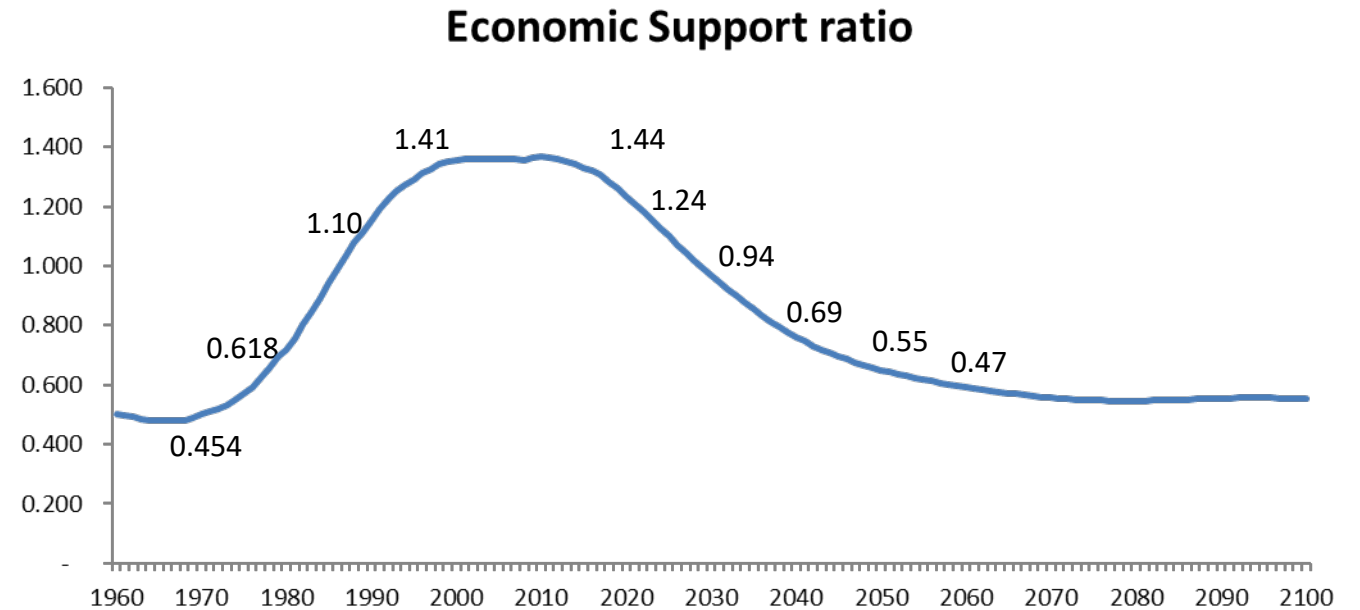
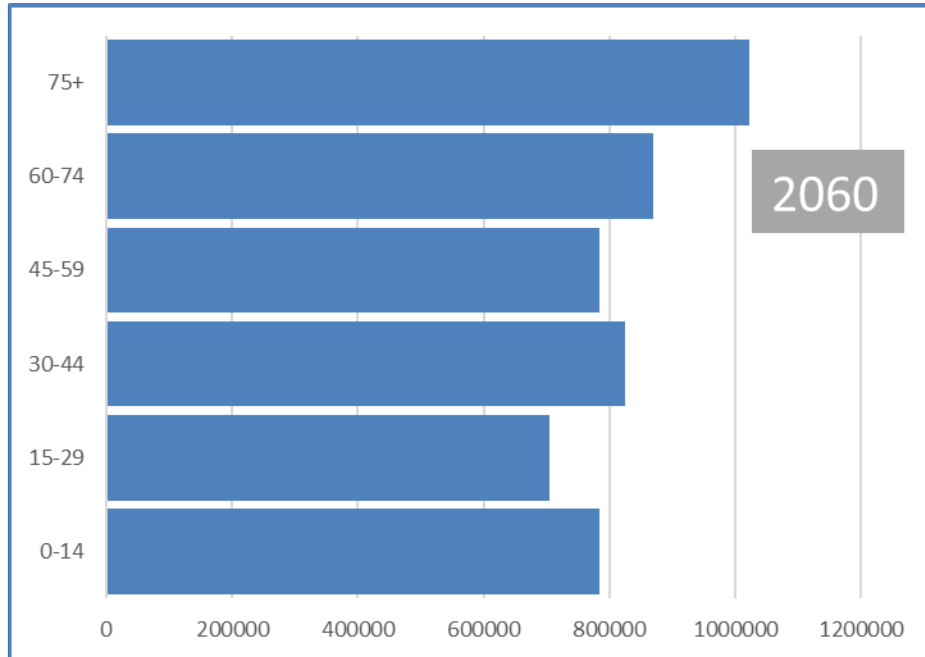
$$LSR(t) = \frac{\int_0^{\omega} e^{[g_y(t,x)-r(t,x)]x} \int_0^{\omega-x} L(z+x, t+x) dz dx}{\int_0^{\omega} e^{[g_c(t,x)-r(t,x)]x} \int_0^{\omega-x} N(z+x, t+x) dz dx}$$



The first dividend in Singapore



ESR rises, then falls



- First demographic dividend contributed 38% of GDP per capita growth between 1967 to 2012
- Reversal of first demographic dividend result in a -1.6% per annum drag in GDP per capita growth from 2015 to 2060

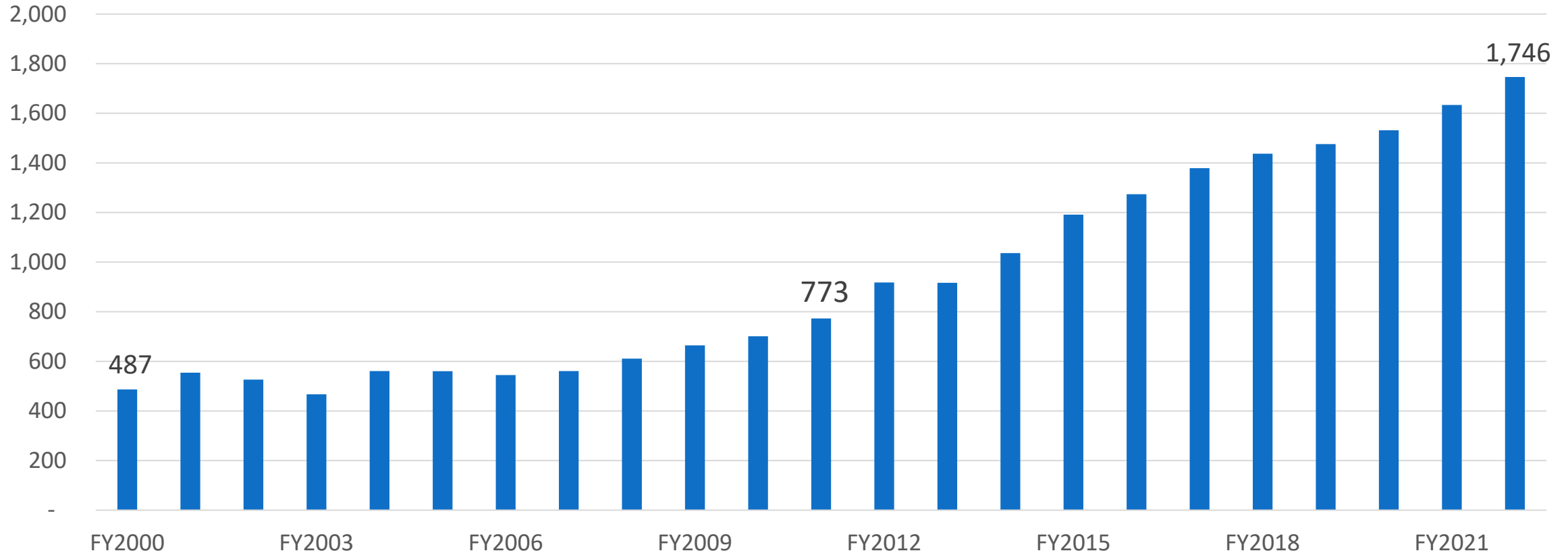


The second dividend in Singapore

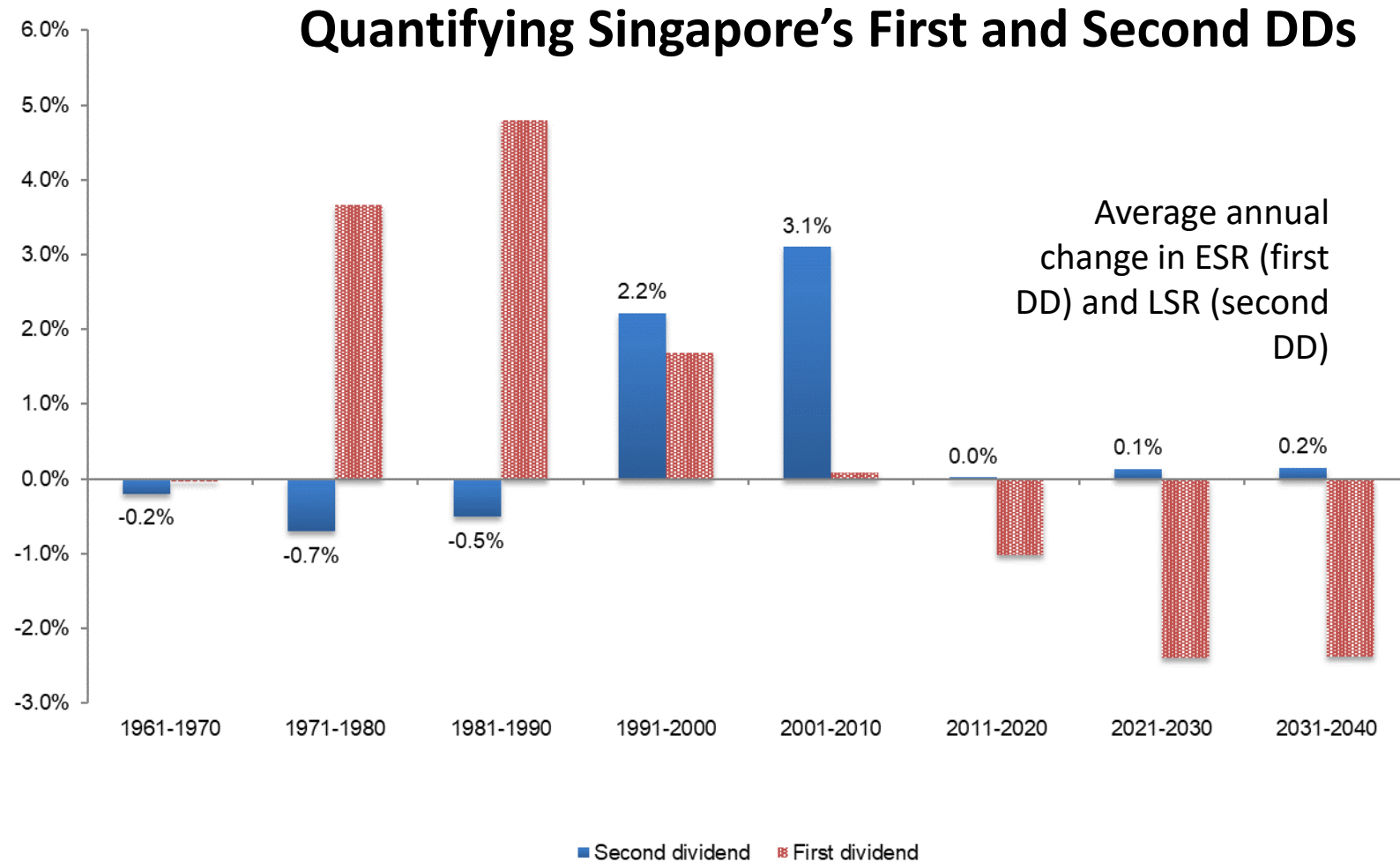


Savings accumulation points to 2nd DD?

Household net worth, S\$ billions



Second dividend estimated



These demographic dividend (DD) calculations only capture lifetime labour income and consumption using age-profiles from 2013

The future of demographic dividends in Singapore



Lee Kuan Yew
School of Public Policy

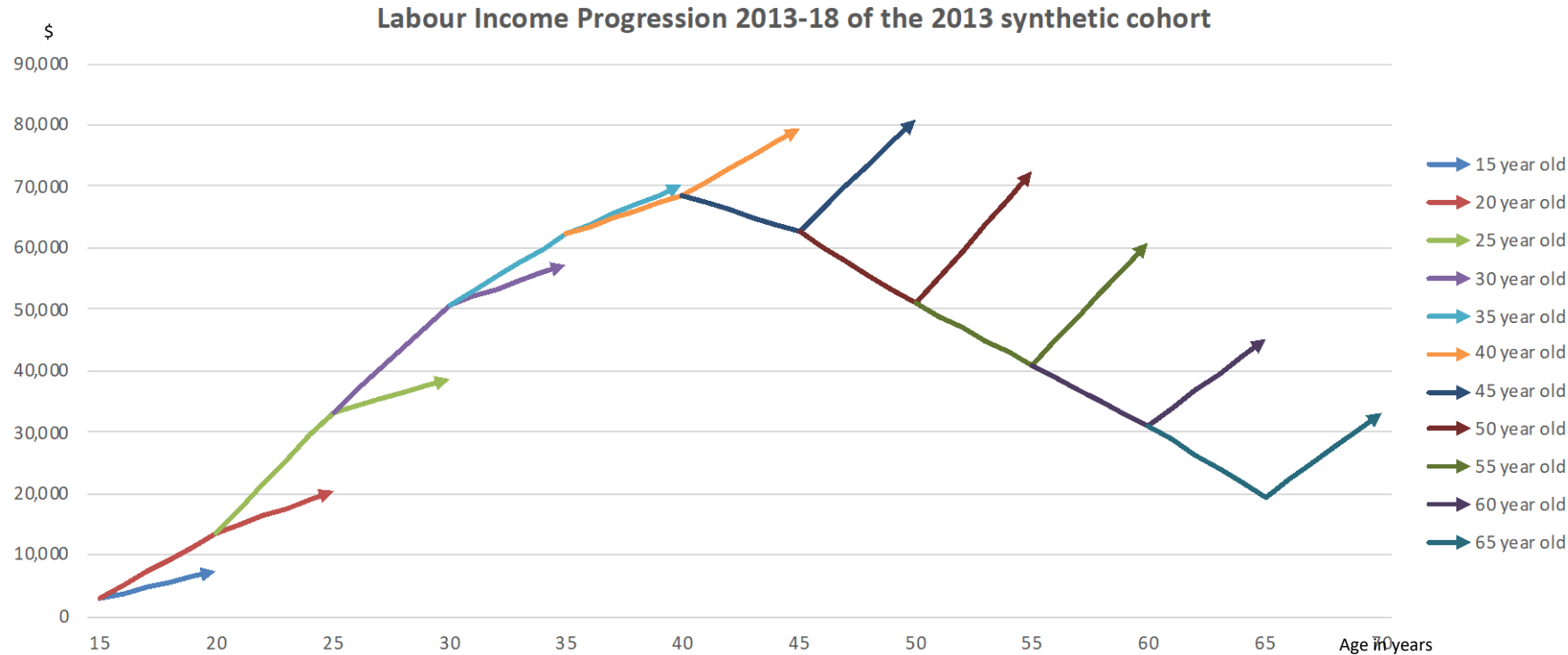
National University of Singapore



Institute of
Policy Studies

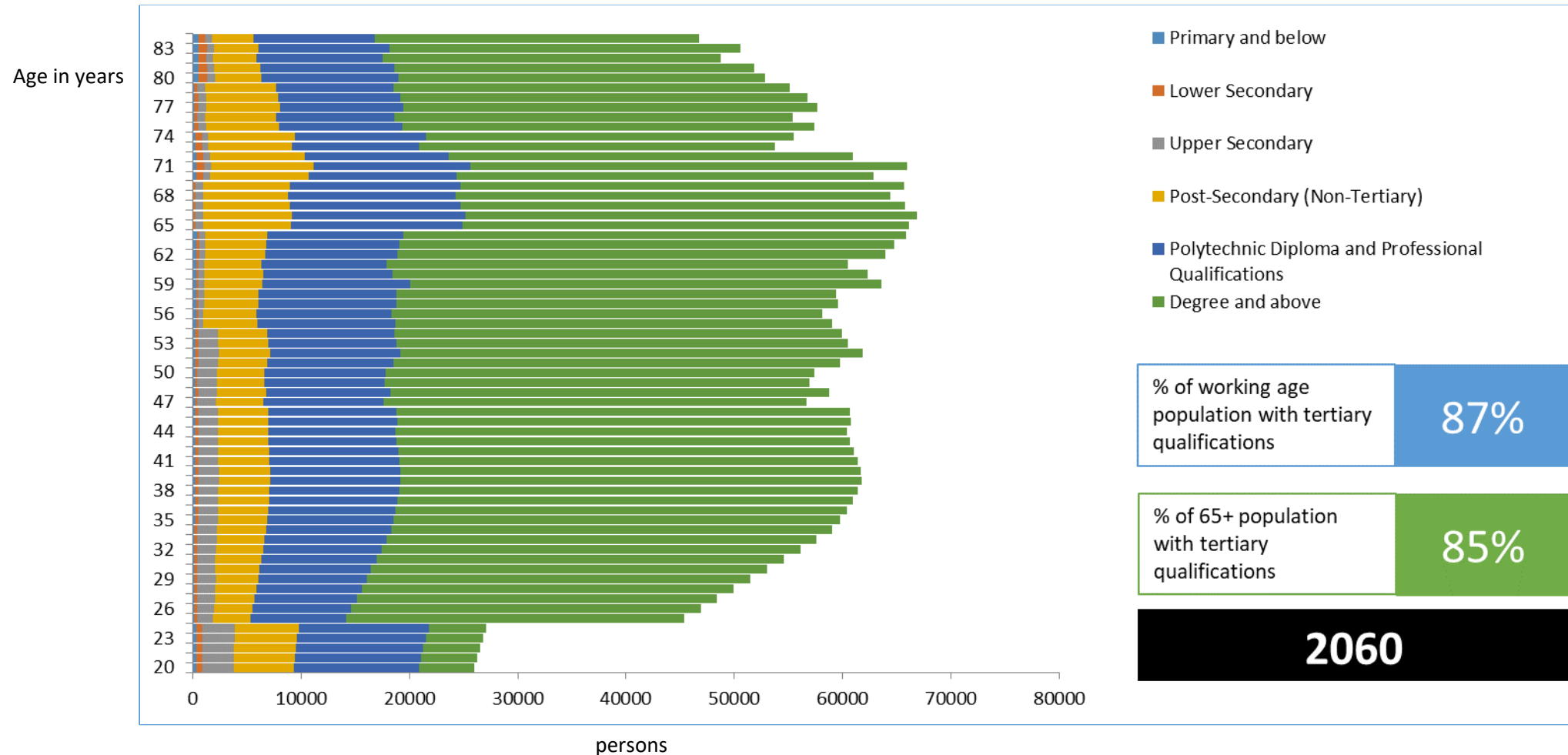
Engaging Minds, Exchanging Ideas

Changing lifetime labour income profiles

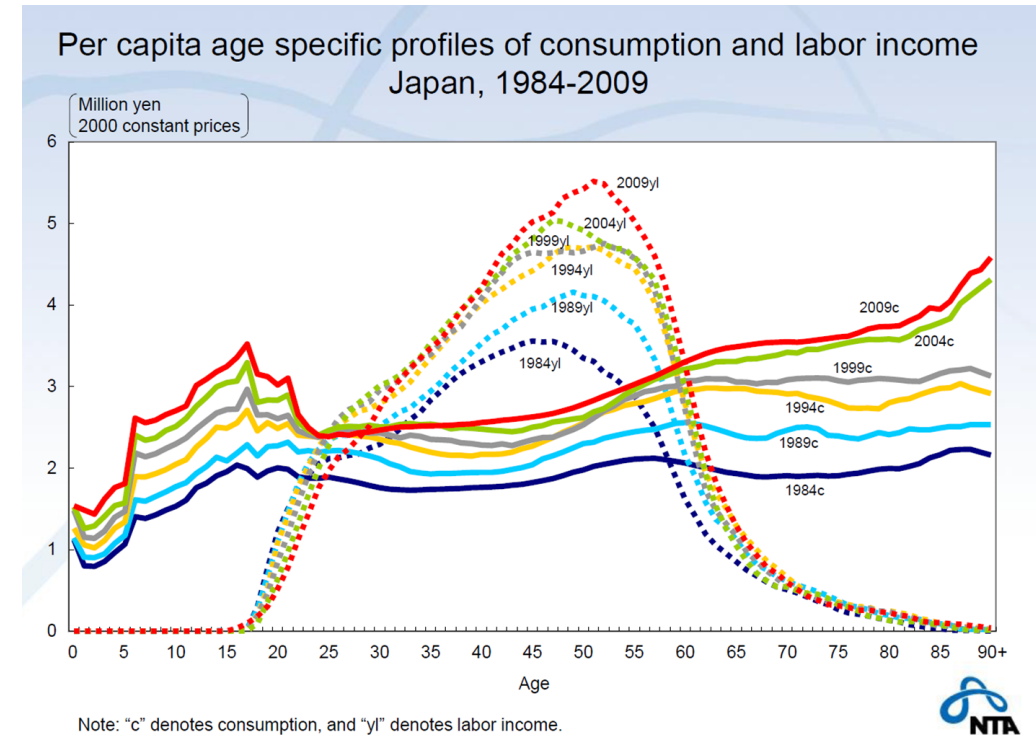
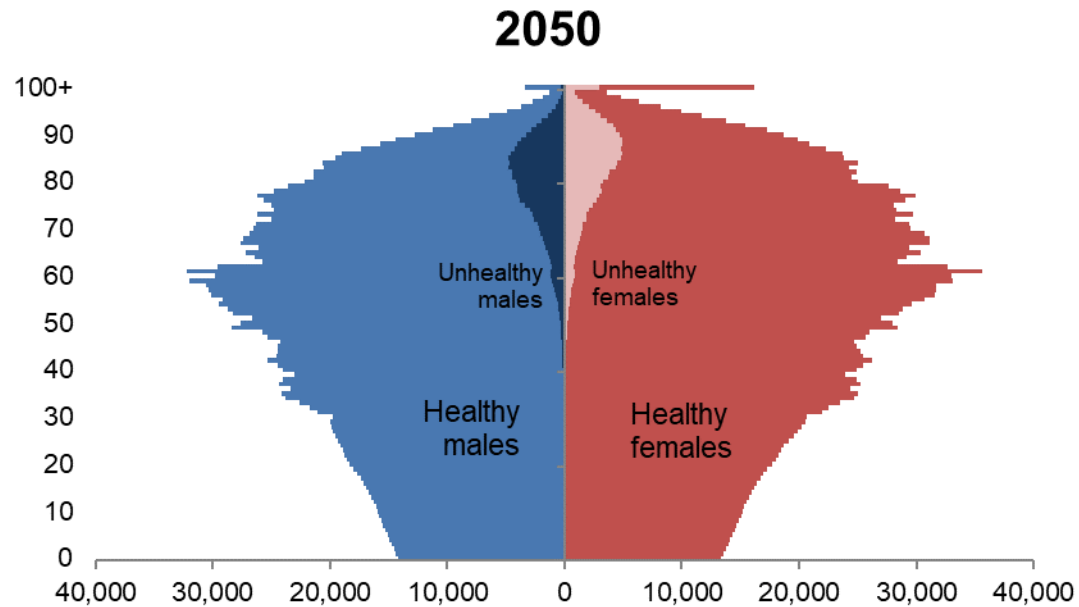


- From higher educational attainment over life-course, leading to improved lifetime labour income
- Changing nature of work (from manual work to knowledge work) to prolong productive capacity, especially at older ages, e.g. delaying retirement

Second dividend: an educational dividend?



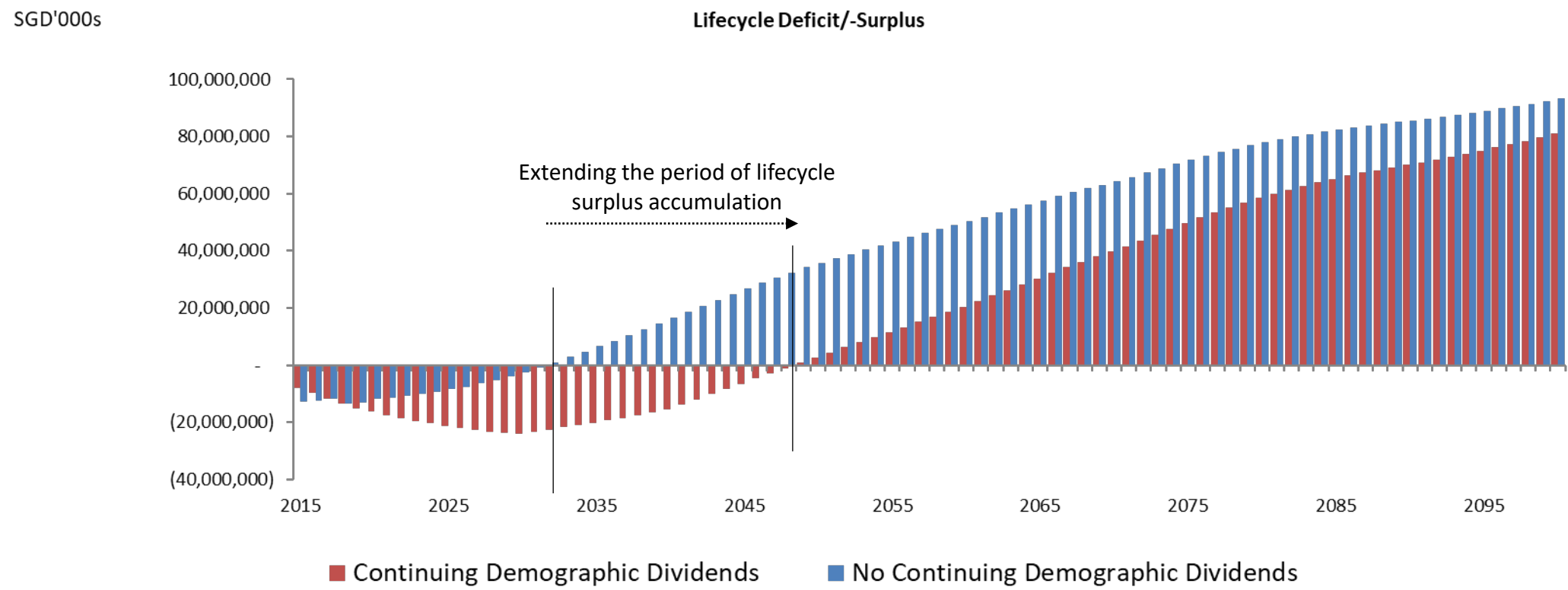
Second dividend: a health longevity dividend?



(Matsukura, 2015)



Extending the dividend accumulation phase



Other demographic dividends to accrue?



Volume 26, Issue 3
2016

Article Contents

Conclusion

References

Author notes

< Previous Next >

EDITOR'S CHOICE

Building a Third Demographic Dividend: Strengthening Intergenerational Well-Being in Ways That Deeply Matter ^{FREE}

Linda P. Fried, MD, MPH [Author Notes](#)

Public Policy & Aging Report, Volume 26, Issue 3, 2016, Pages 78–82,

<https://doi.org/10.1093/ppar/prw015>

Published: 15 June 2016 **Article history** ▼

PDF Split View Cite Permissions Share ▼

Keywords: [Aging](#), [Volunteerism](#), [Second demographic dividend](#), [Third demographic dividend](#)

Issue Section: [Article](#)

This article is about the opportunities of an aging society. This idea runs counter to many policy assumptions about our collective longer lives; assumptions, which have been built on discredited myths and fears, that an aging population is unaffordable and a negative for society. However, the evidence indicates that the benefits for all of society can be profound if we reframe our assumptions, welcome new possibilities, and invest in building new foundations and metrics.

Consider this: over the last 100 years, societal investments that created health have transformed our life expectancy. Investments to prevent death in childhood and in childbirth, contain the spread of infectious diseases, and, broadly, public health advances to prevent disease, along with education, poverty alleviation, and—more recently—medical care, have led to survival to middle age and now to longer lives. Our society—and now almost every society—has gone past the “first demographic dividend” of the transition from the high mortality of an agrarian society to one with

Counting Women's Work is a project within the National Transfer Accounts research project



COUNTING WOMEN'S WORK

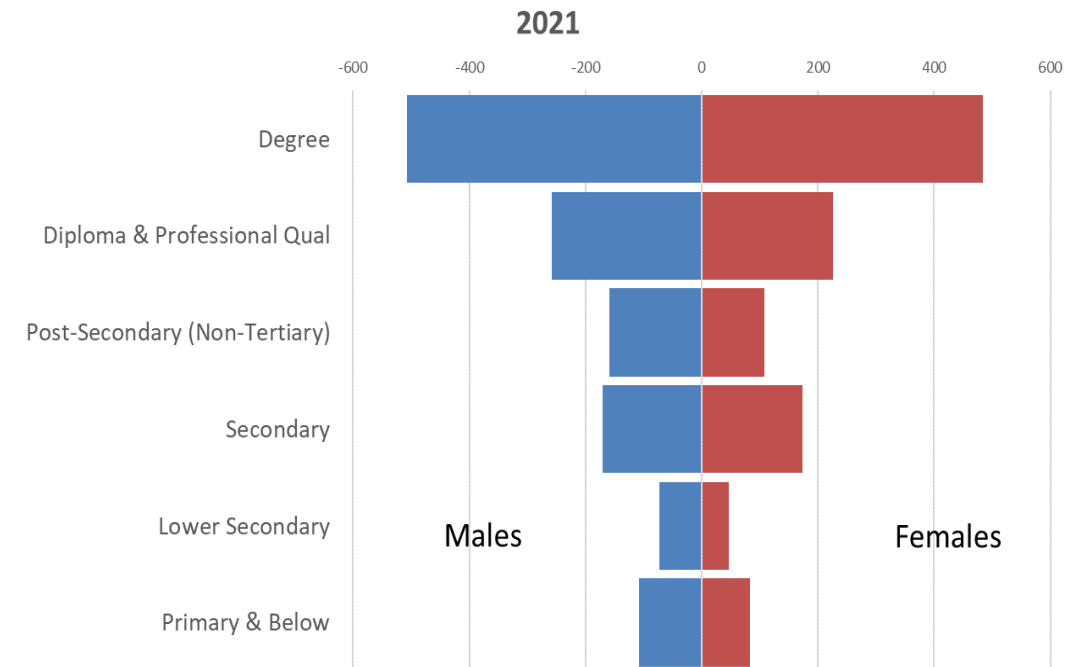
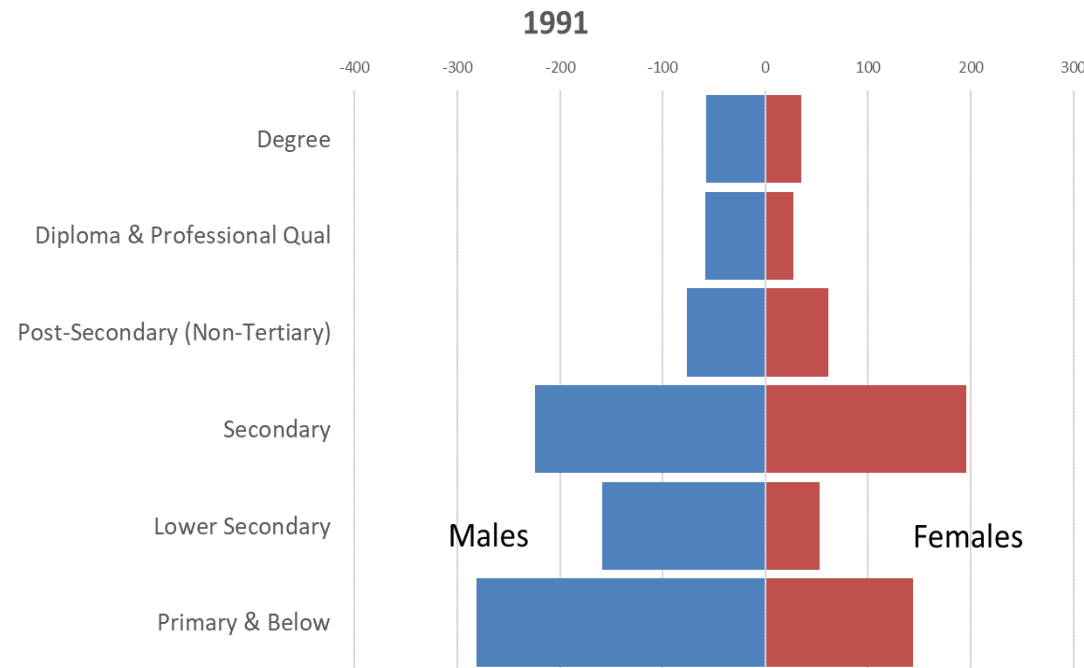
Compare how much time you devote to unpaid care work and education relative to others in the world.

MEASURE THE GENDERED ECONOMY

THE NEW CWW WEB APP!

Gender dividend – market work

Resident Labour Force Aged Fifteen Years and Over by Highest Qualification Attained and Gender



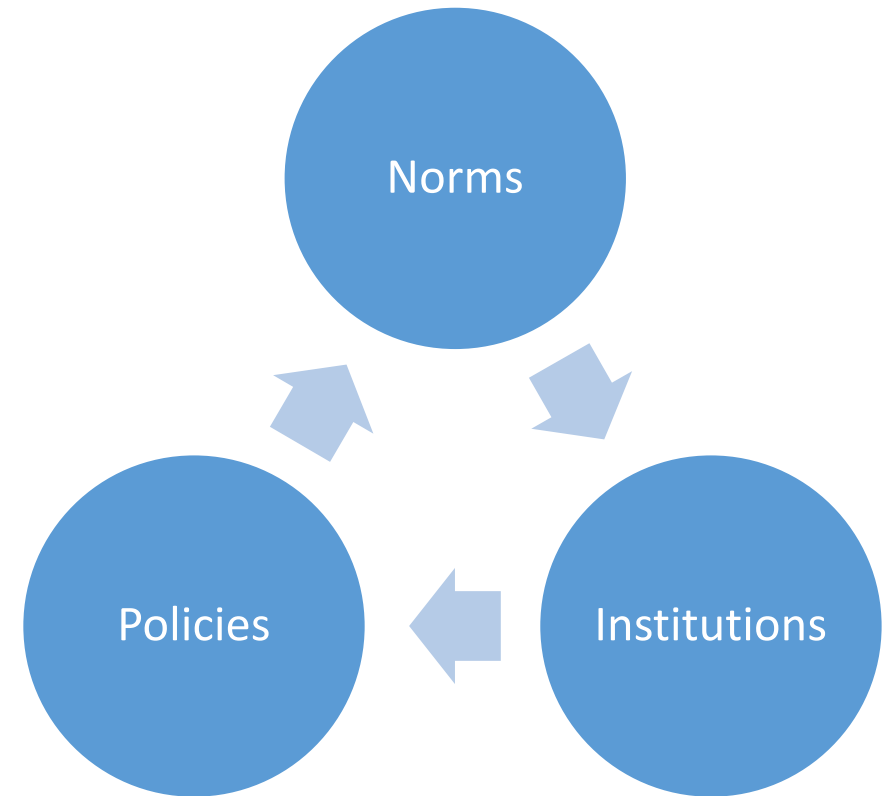
Source: Labour Force in Singapore Surveys, Ministry of Manpower, Singapore

Capturing the DDs: the challenge

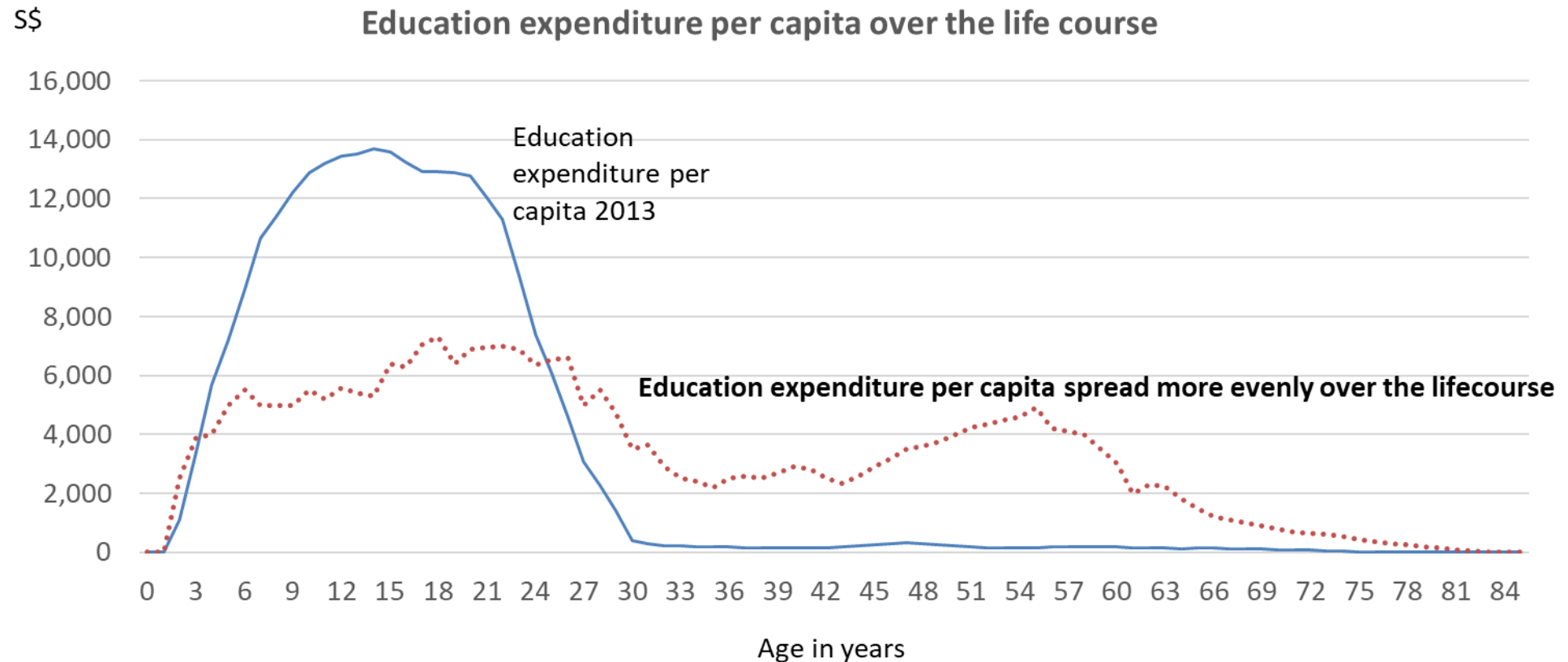
Successfully capturing demographic dividends at a societal level depends on:

- **Norms**
- **Institutions**
- **Policies**

and the capacity of each society for change in the above.



Change needed to capture 2nd DD: Education



Demographic dividends: policy dependency

To capture demographic dividends **policy focus and implementation** necessary in:

Education

Health

Fiscal/public revenues-expenditure

Demographic dividends: policy dependency

To capture demographic dividends **policy focus and implementation** necessary in:

Education

- Spreading educational investments over the life-course
- The economic and social returns to education over the life-course

Health

Fiscal/public revenues-expenditure

Demographic dividends: policy dependency

To capture demographic dividends **policy focus and implementation** necessary in:

Education

Health

- Changing care requirements provided by health systems (primary, tertiary, long-term care)
- Mental health and well-being

Fiscal /public revenues-expenditure

Demographic dividends: policy dependency

To capture demographic dividends **policy focus and implementation** necessary in:

Education

Health

Fiscal/public revenues-expenditure (how public transfers are funded)

- Intersection of public finances with:
 - pension systems and retirement adequacy
 - Health and long-term care infrastructure
- Public asset-based reallocations (and considerations of intergenerational equity)

References

Mason, 2005. Demographic Transition and Demographic Dividends in Developed and Developing Countries. United Nations Expert Group Meeting on Social and Economic Implications of Changing Population Age Structure, Mexico City, 2005

Mason & Lee, 2006. Reform and support systems for the elderly in developing countries: Capturing the second demographic dividend. *GENUS*, LXII(2), 11–35.

Matsukura, 2015. A Step towards Overcoming Methodological Limits: A Case of Japan. Regional Meeting on National Transfer Accounts in Asia, Bangkok, Thailand, December 3-4, 2015. <https://asia.ntaccounts.org/doc/repository/AsiaNTA2015-JPN.pdf>

Fried, 2016. Building a Third Demographic Dividend: Strengthening Intergenerational Well-Being in Ways That Deeply Matter, Public Policy & Aging Report, Volume 26, Issue 3, 2016, Pages 78–82, <https://doi.org/10.1093/ppar/prw015>

Counting Women's Work, see website: <https://www.countingwomenswork.org/>

END

Please contact Mr Christopher Gee at christopher.gee@nus.edu.sg or
Eddie Choo at eddie.choo@nus.edu.sg