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The Demographic Time Bomb

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AGENDA

- The Problem: The World Goes Gray
- A Consequence: A World Awash in Debt
- Two Paths Forward
  - The Pessimistic
  - The Optimistic
- Conclusion

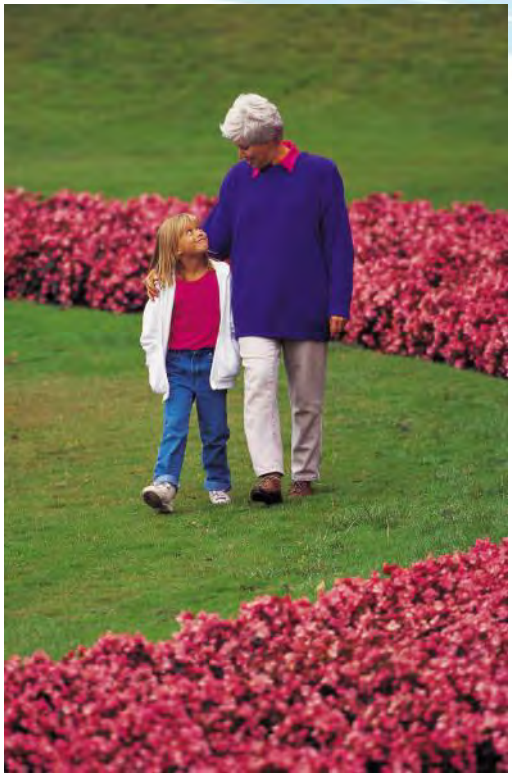
Jean Monnet, 1888 - 1979

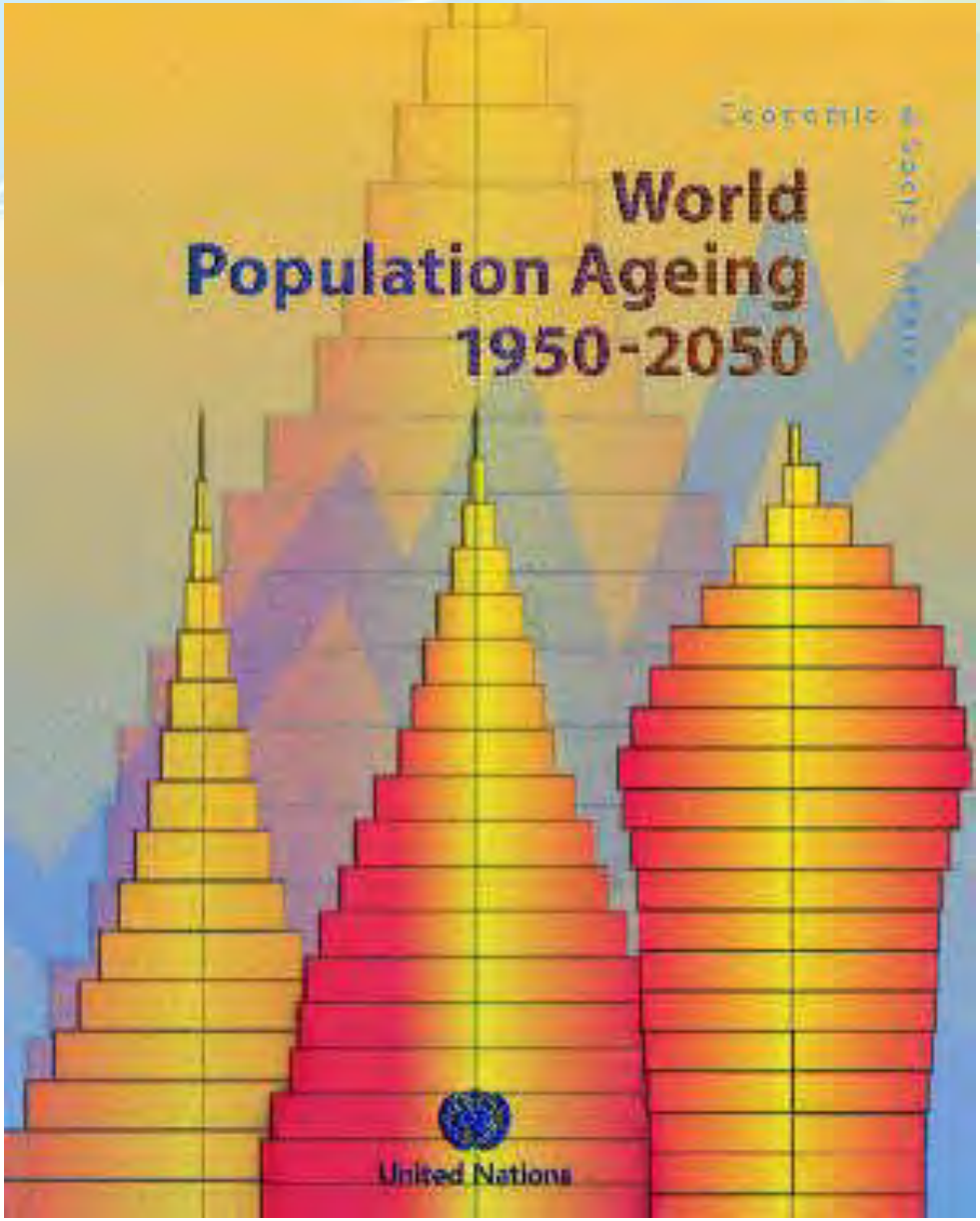
People only accept change when they are faced with necessity, and only recognize necessity when a crisis is upon them.

Source: *First, Let's Lower the Bar*, John Mauldin, November 12, 2010

Demographics: A Definition

- The study of population statistics
  - Age
  - Sex
  - Mortality
- Who is going to look after Grandma?





Population aging is unprecedented,
without parallel in human history—
and the twenty-first century will witness even more rapid aging than did the century just past.

Source: http://www.un.org/esa/population/publications/worldaging19502050/

Population aging is pervasive,

a global phenomenon affecting every man, woman and child—but countries are at very different stages of the process, and the pace of change differs greatly. Countries that started the process later will have less time to adjust.

Source: http://www.un.org/esa/population/publications/worldaging19502050/

Population aging is enduring:

We will not return to the young populations that our ancestors knew.

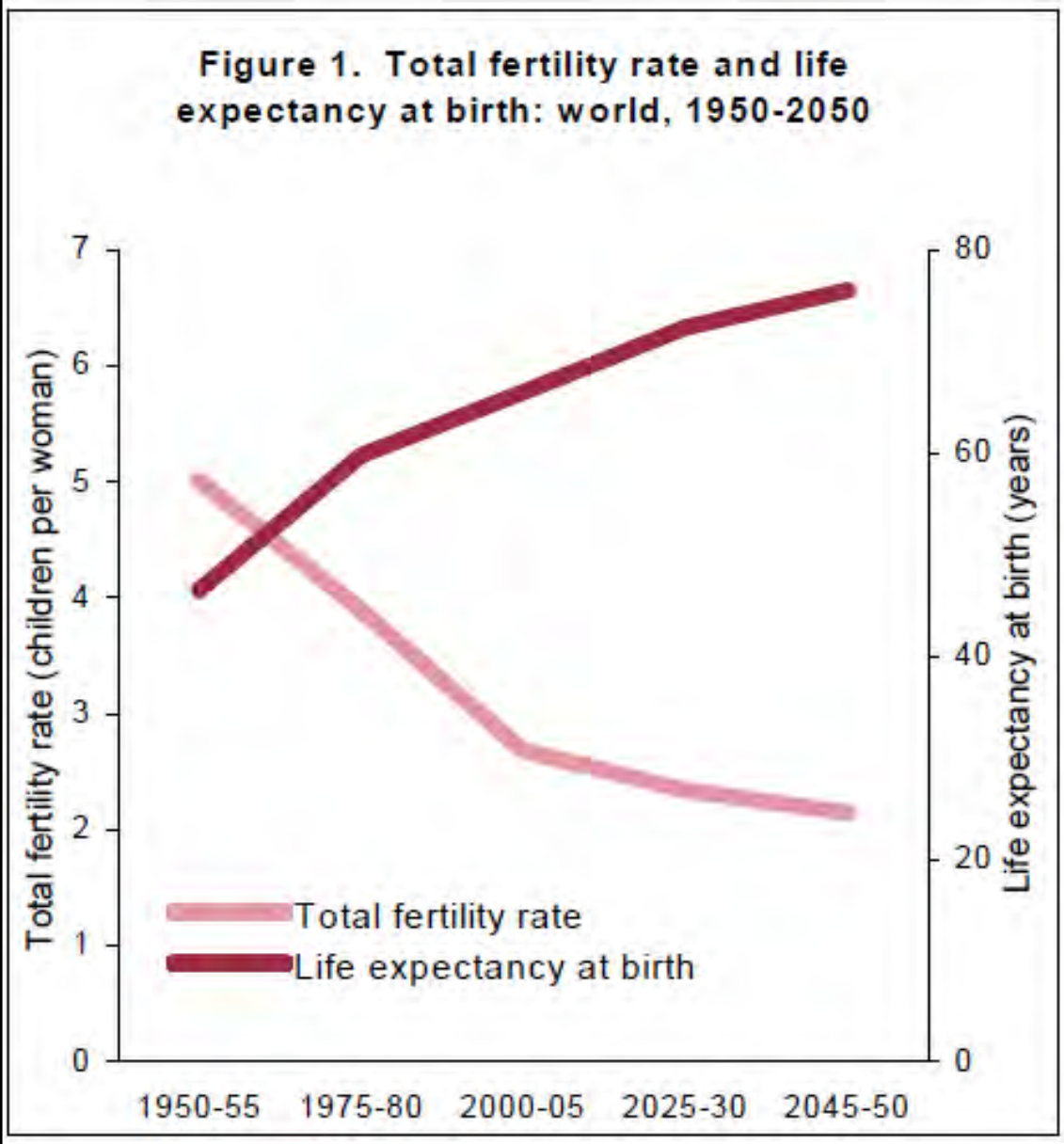
Population aging has profound implications

for many facets of human life.

Source: http://www.un.org/esa/population/publications/worldaging19502050/

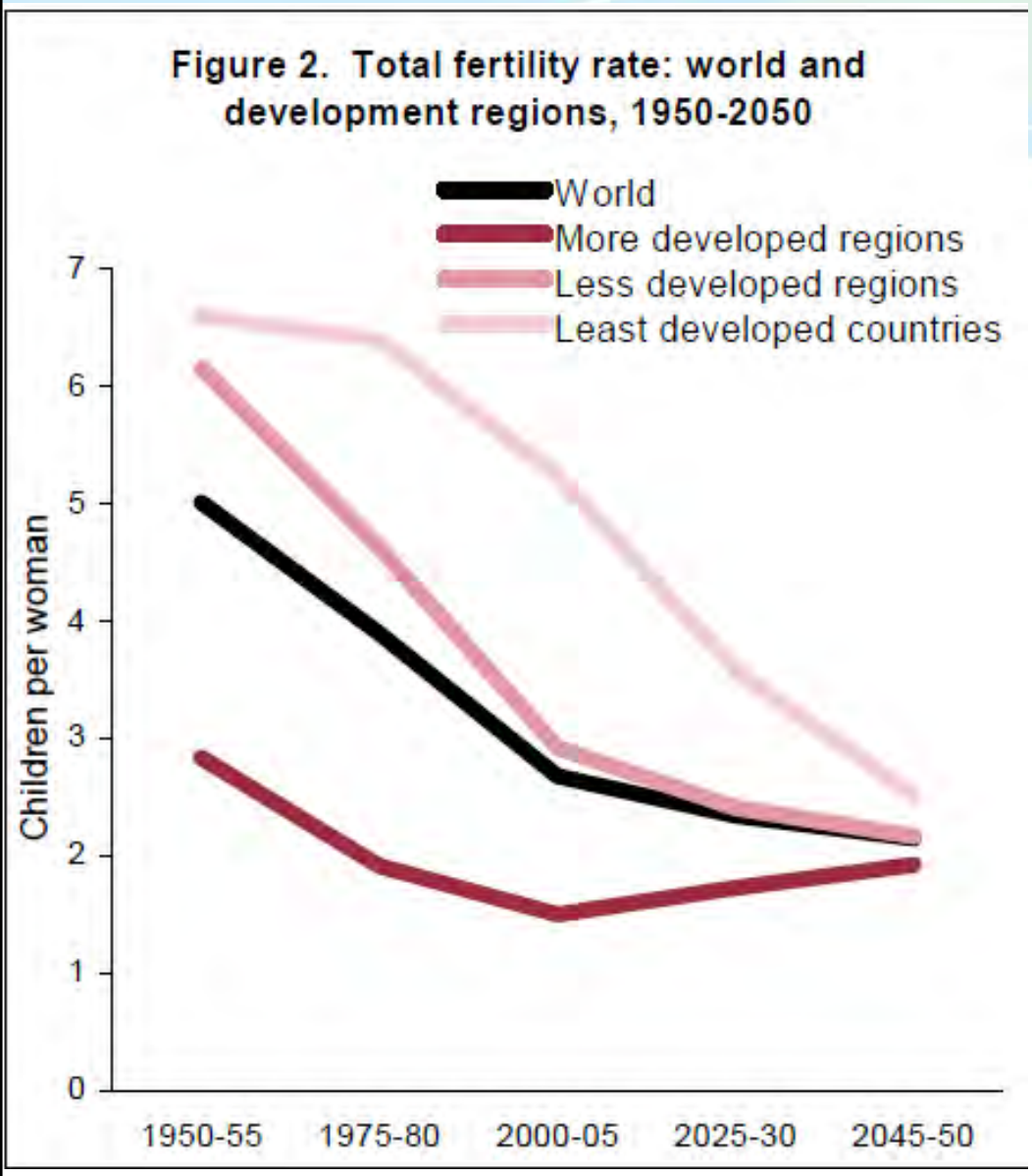
What is the Problem, Anyway?

- Population growth rates all over the world are slowing quickly
  - The earth cannot support an ever-growing population
  - In rural economies, children are an asset
  - In urban economies, children are a liability
    - According to MoneySense.ca, the average ***cost*** of ***raising a child*** to age 18 is $243,660



The Demographic Transition

- Mortality falls first; then fertility
- Effect is an initial population that grows rapidly with an average age that is very young
- A young population creates both costs & benefits

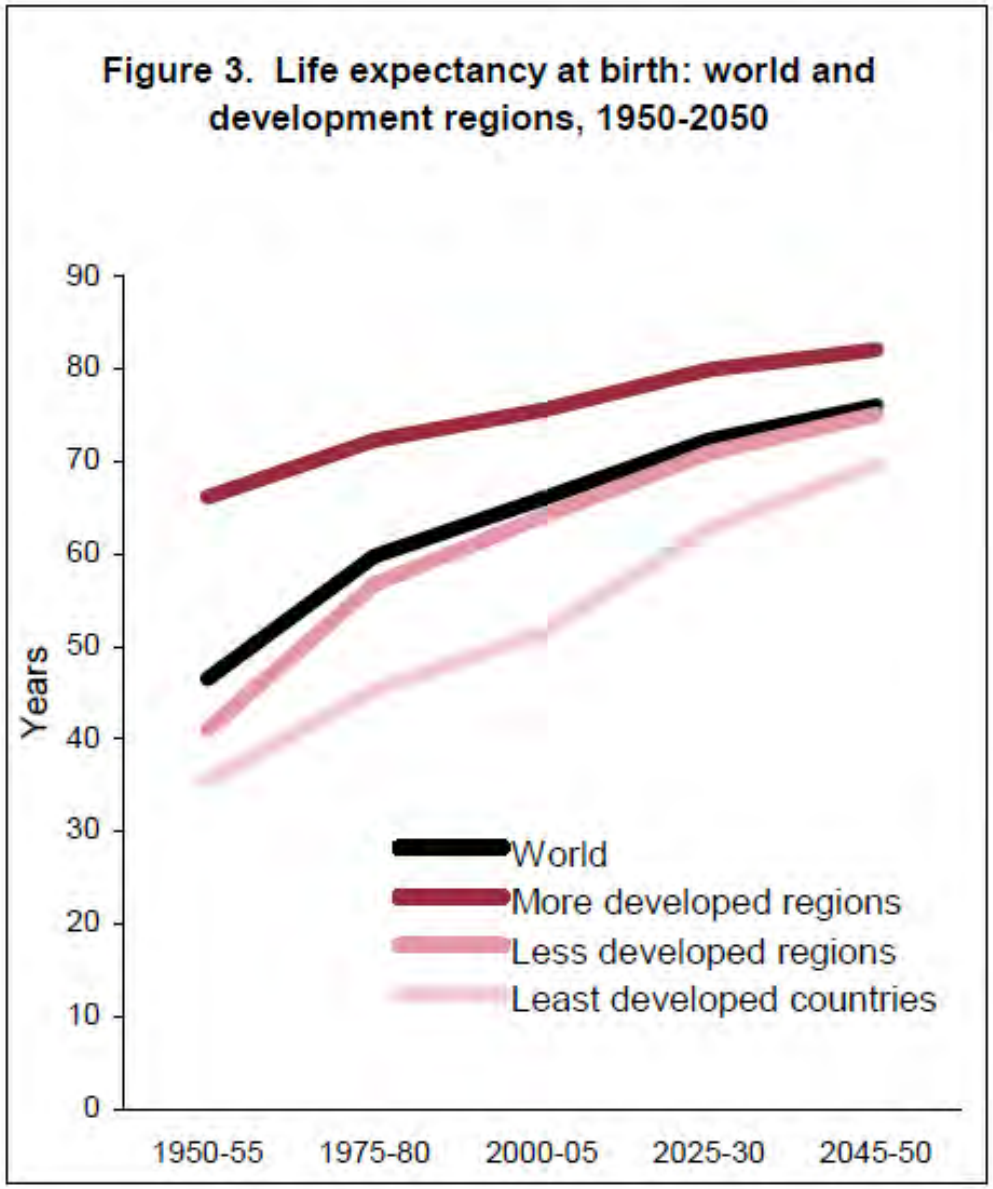


- Over the last ½ century, global average fertility fell from 5.0 children to 2.7 children per female.
- In the least developed regions, fertility is now 5.2 children per female.
- In 19 developed countries fertility is now below 1.3 children per female

Fertility: Children Per Female

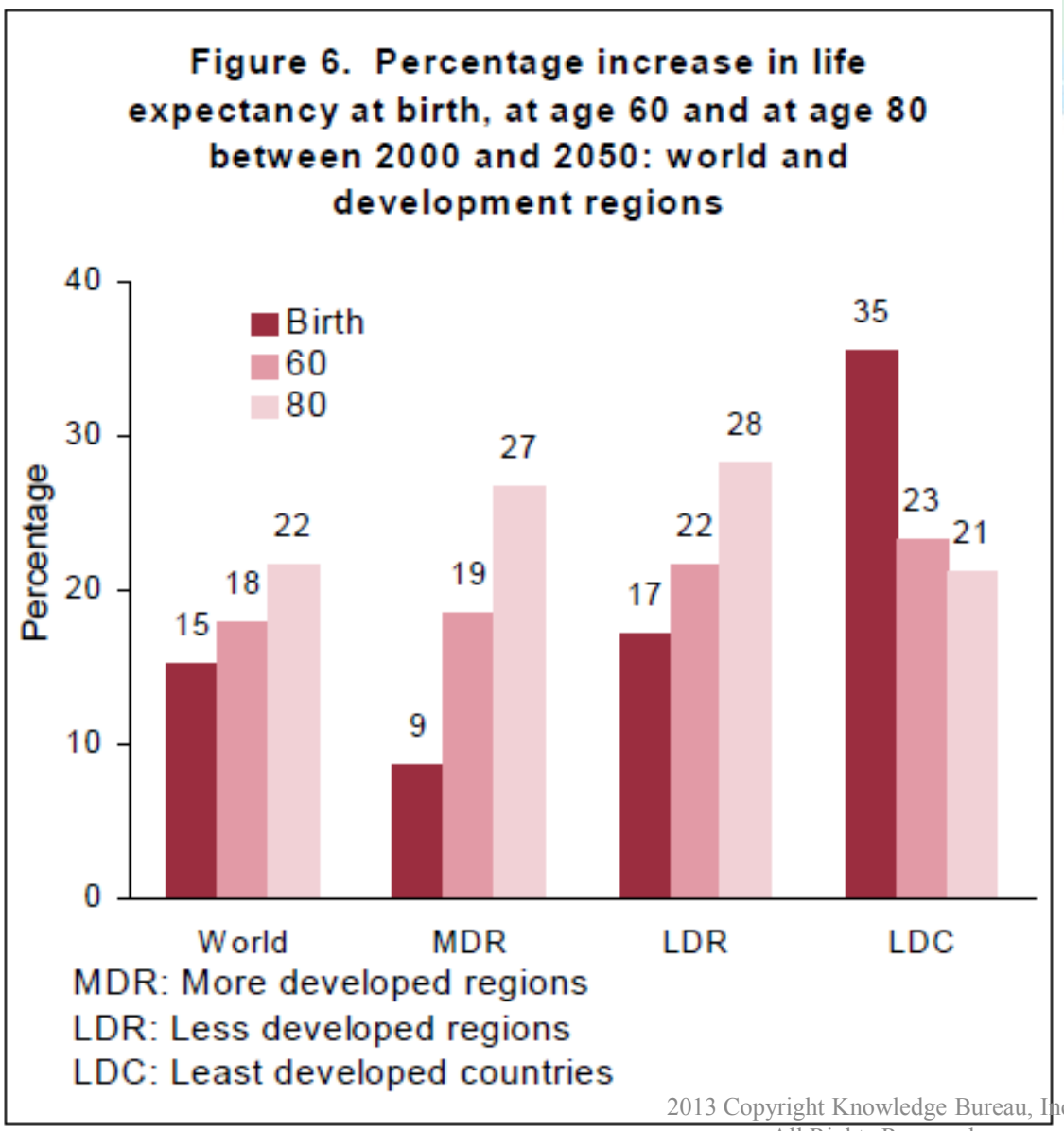
Country	Children per Female
U.S.	2.1
France	1.9
U.K. & Canada	1.6
Germany	1.4
Italy, Spain & Japan	1.3
India	2.8
Indonesia	2.6
China	1.35

An economy needs a fertility rate of 2.1 for a population to maintain itself.



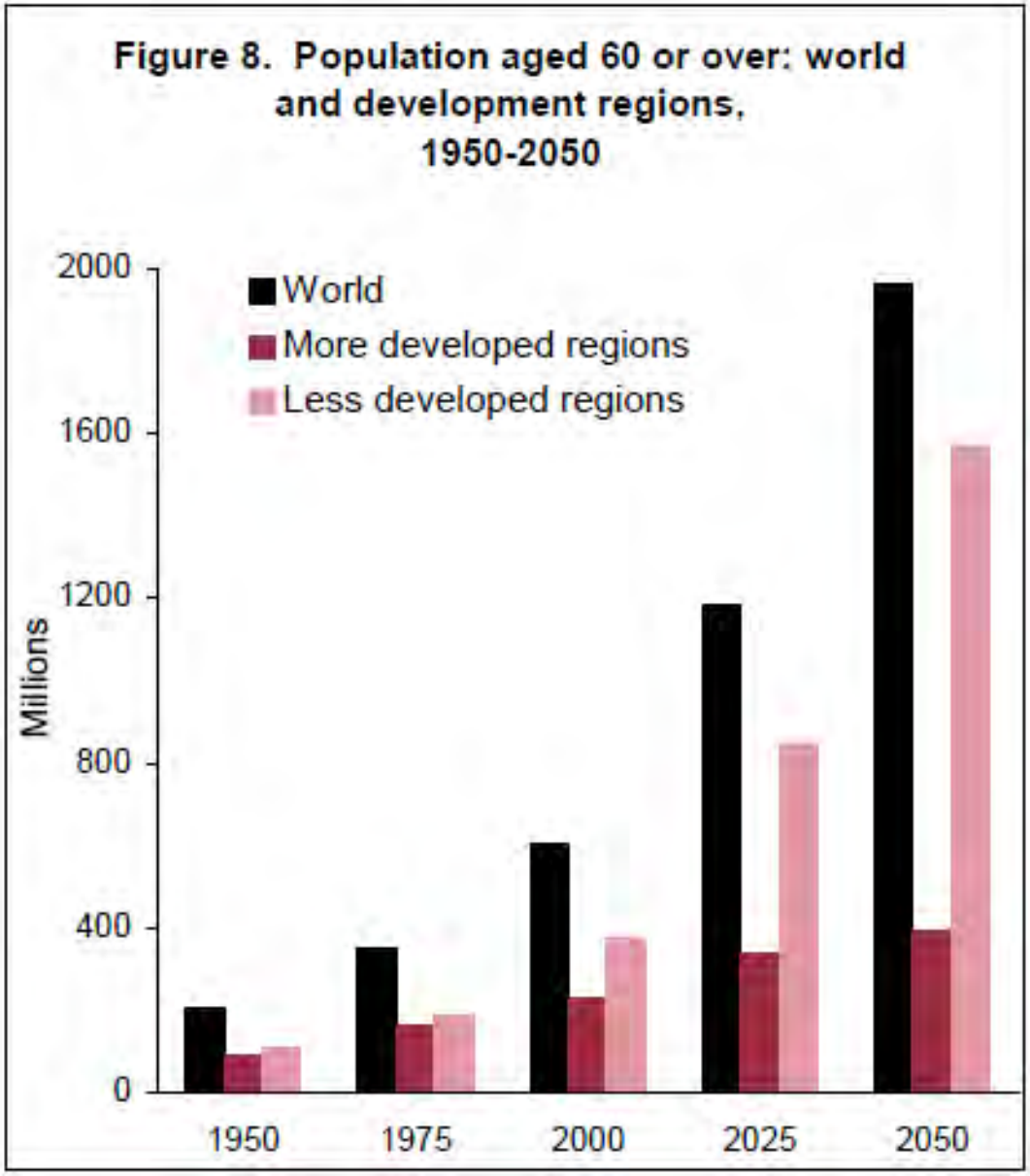
Mortality

- Expected life spans have increased rapidly due to better health care, better nutrition & safer working environments.
- Coupled with falling fertility has led to an increase in the average age of the population.
- Globally, life expectancy at birth has increased from 46.5 years in 1950 to 66.0 years in 2005.
- In Botswana, Mozambique & Swaziland, life expectancy is only 39 years (due to HIV).

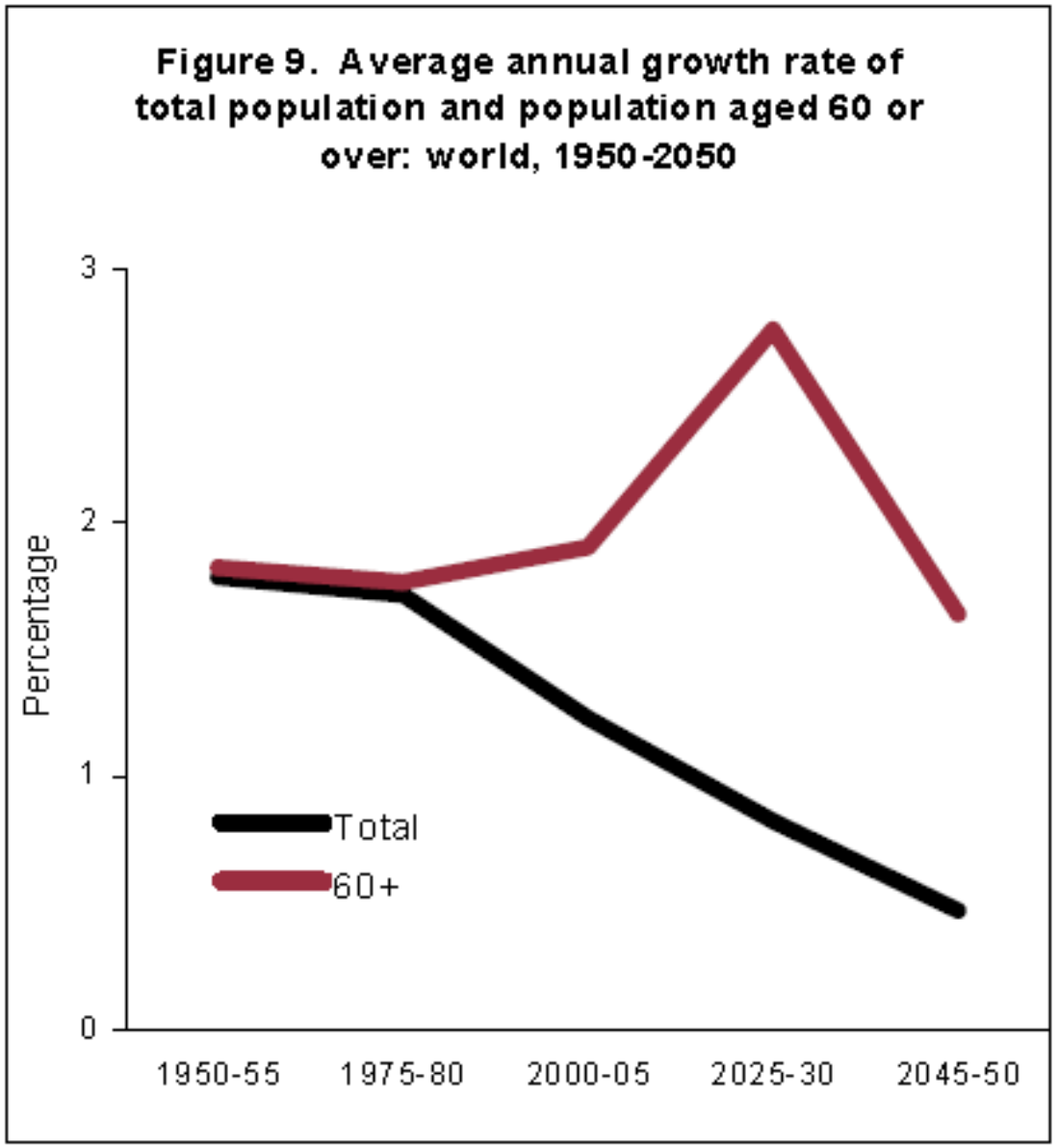


People are living longer

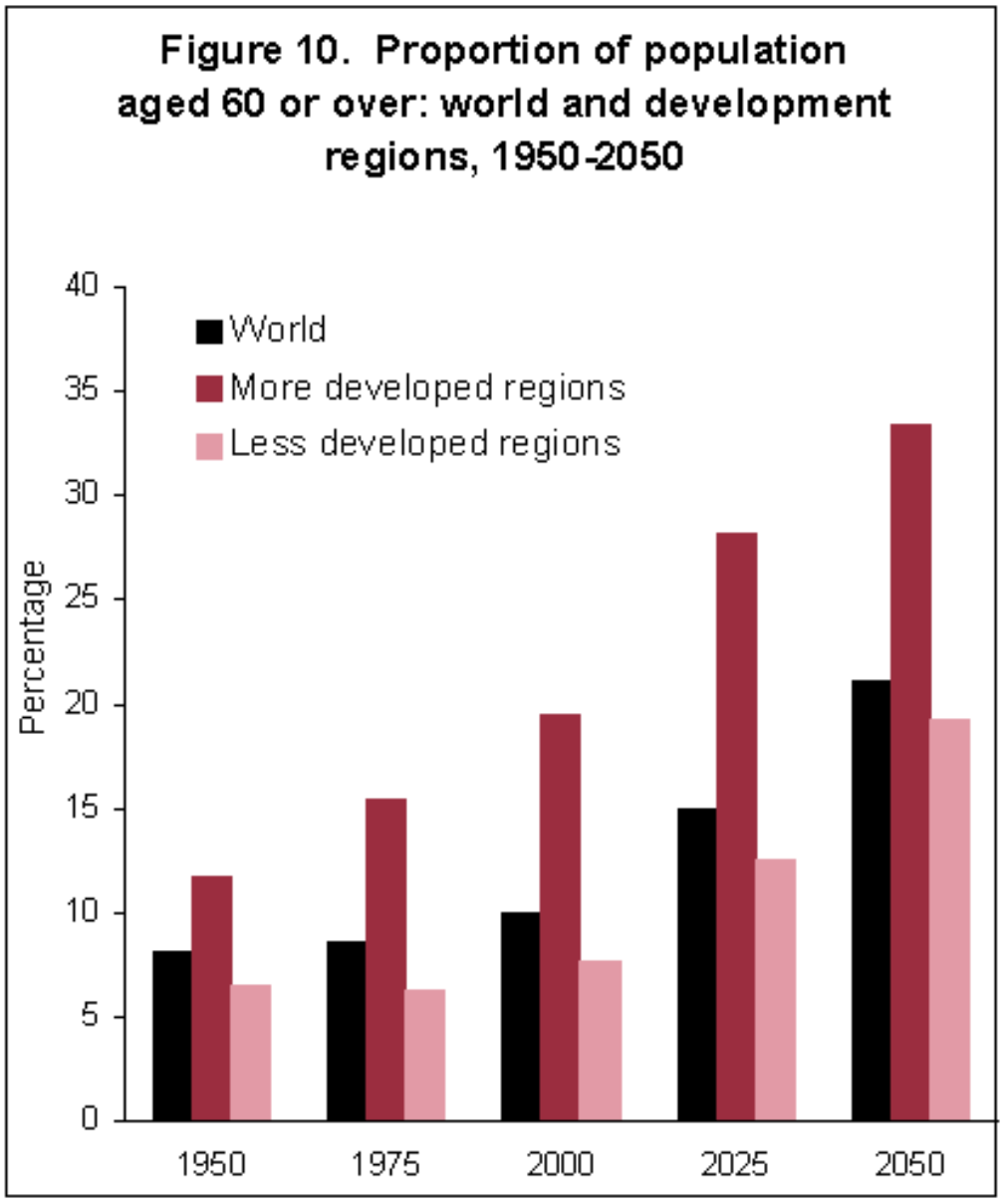
- Not only are more people surviving to old age, once there they are living longer
- In the MDRs the percentage gain in life expectancy is largest in the oldest age cohorts.
- Between 2000 and 2050 life expectancy at age 80 will increase by 22% in the MDR of the world.



- In 1950, there were 205 million persons aged 60 or over
- By the year 2000 there were slightly more than 600 million people aged 60 or older.
- By the year 2050, there will be nearly 2 billion people aged 60 or older.
- Note that many of these people will reside in the less developed regions of the world.

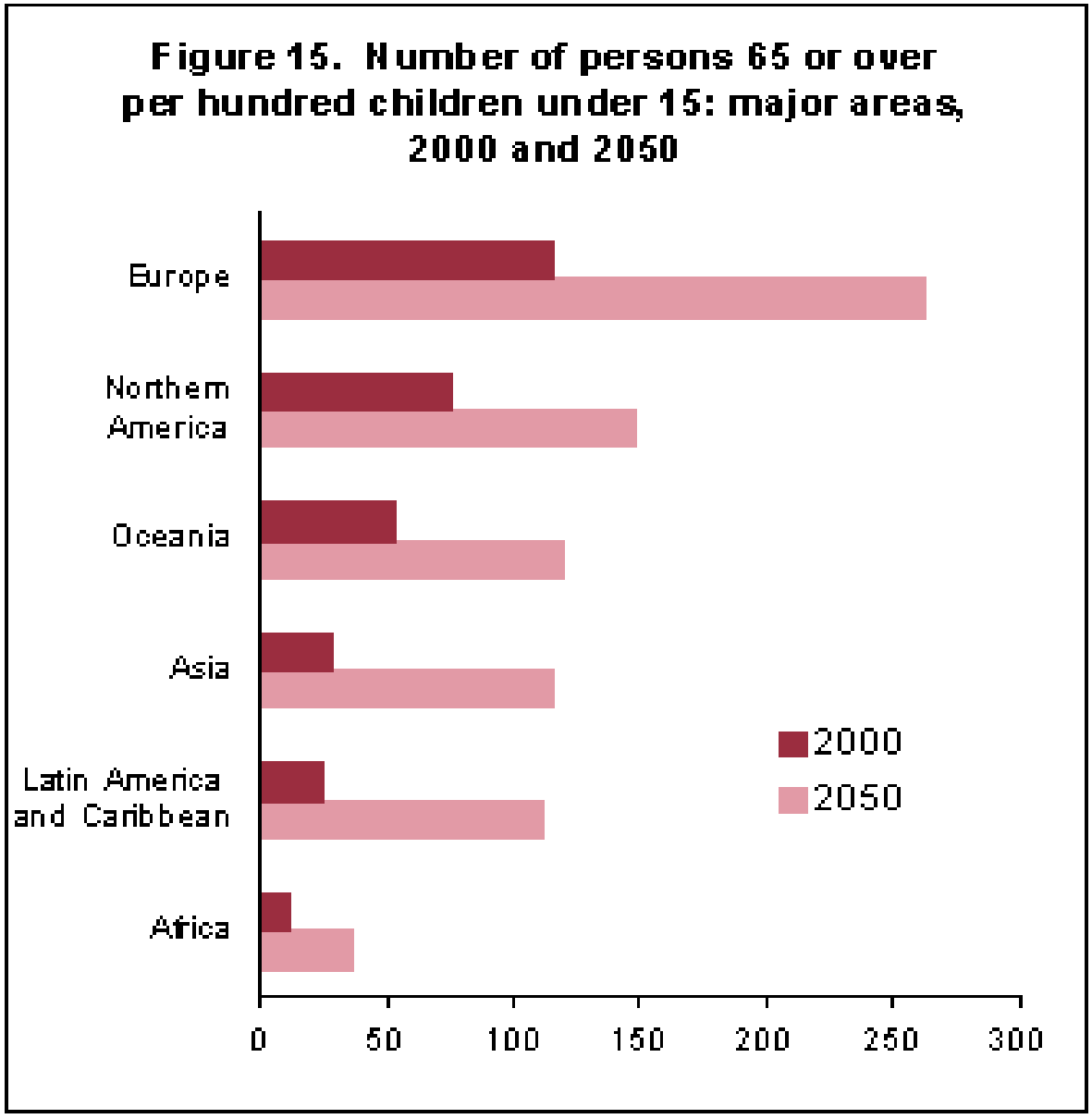


- The 60+ age cohort is growing much faster than any other age cohort in the world.
- By 2030 the 60+ population will be growing 3.5 times as fast as the total population.



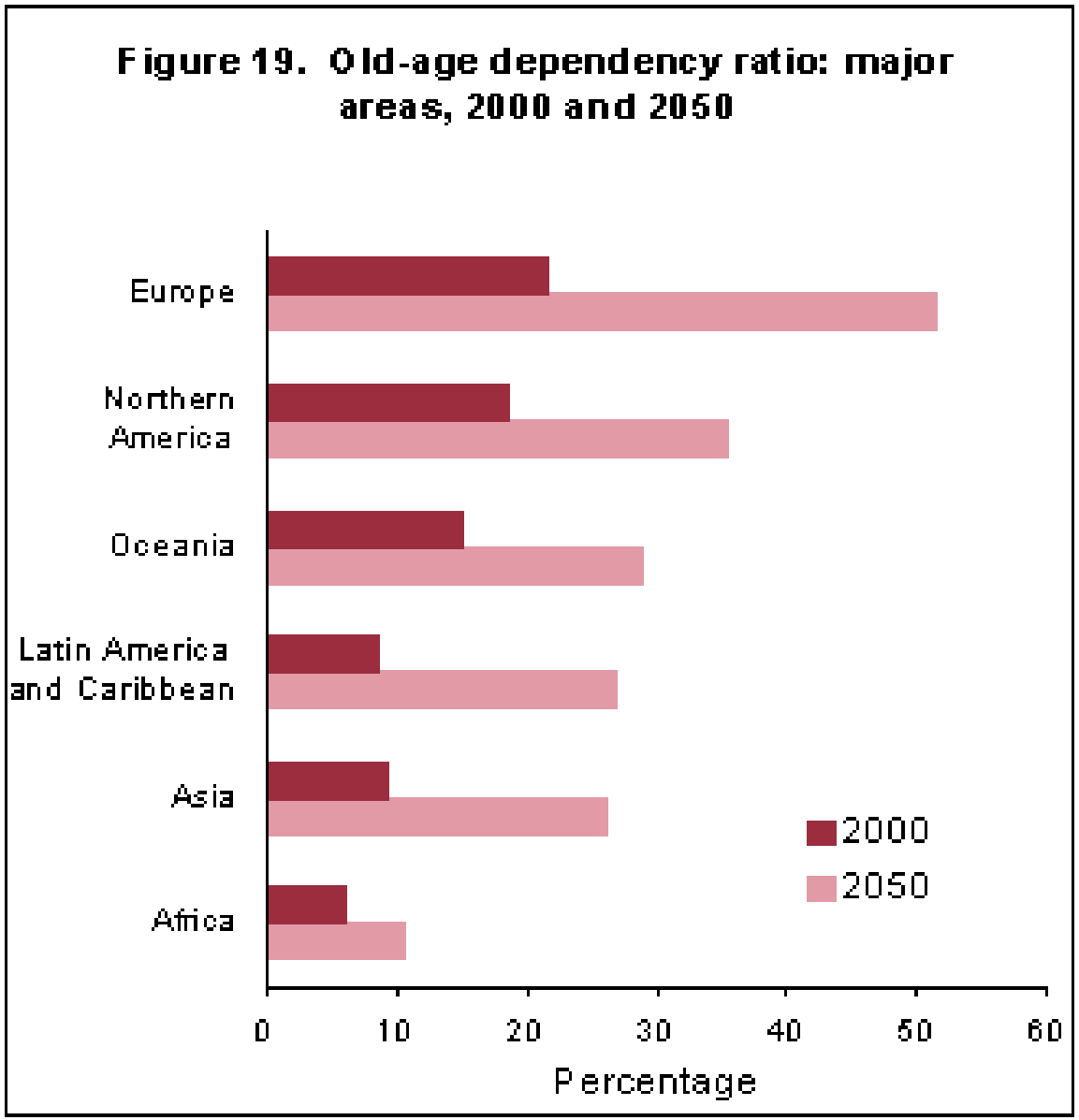
By 2050:

- 1 of every 3 people in the world will be 60+
- In the countries of Austria, Czech Republic, Greece, Italy, Japan, Slovenia & Spain about 40% of the population will be 60+



Children Versus Seniors

- In 1950 there were 24 people 60+ for each 100 children younger than 15 (global average)
- By 2000 Europe had 116 aged 60+ for each 100 children
- By 2050 there will be 263 Europeans aged 60+ for each 100 children
- In Italy and Spain the ratio is expected to reach 400 aged 60+ for each 100 children.



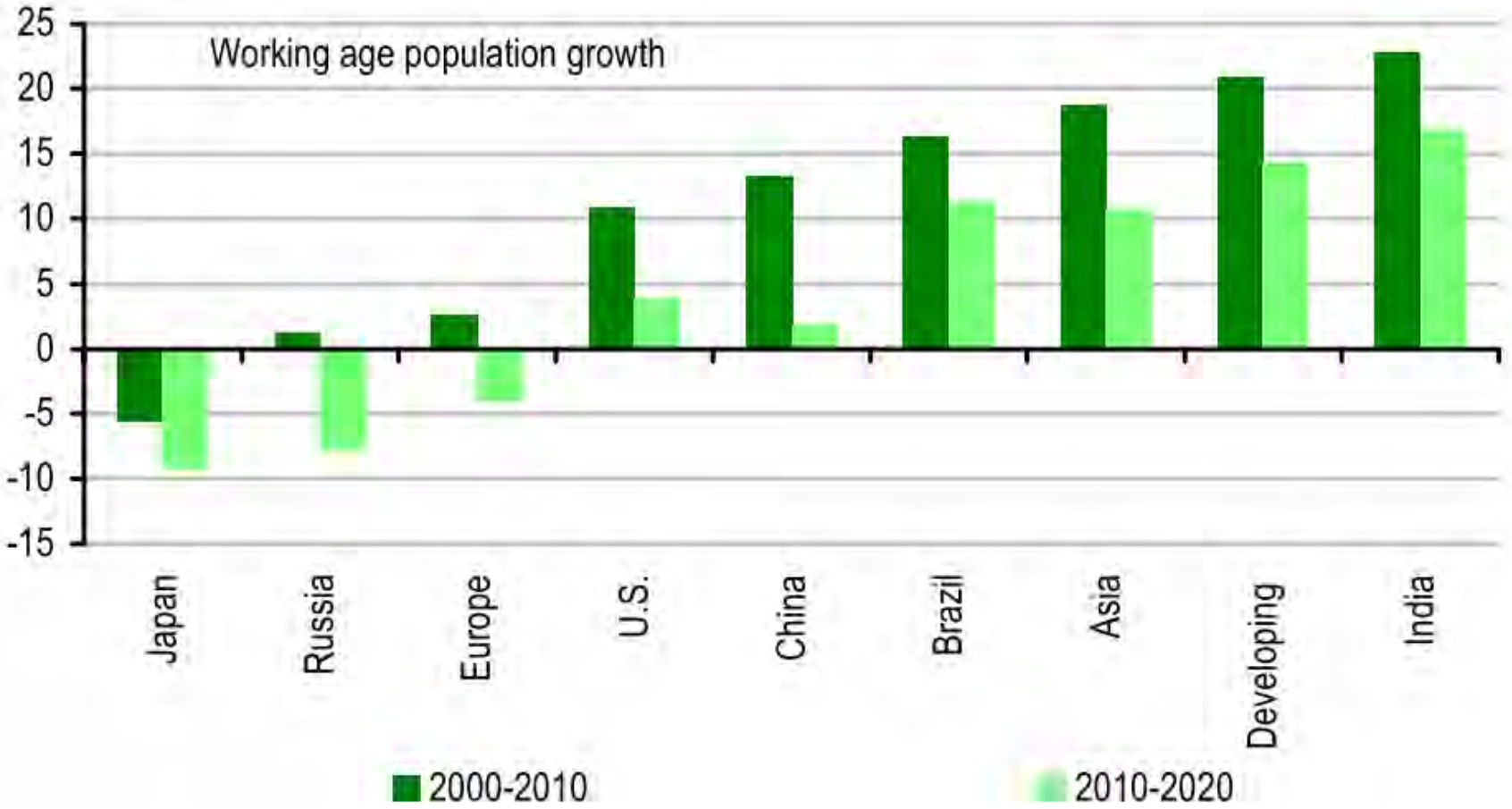
Old Age Dependency Ratio

- The number of people aged 65+ to the number of people of working age (15-64). Shown as per 100 people of working age.
- In Europe, is expected to rise from 22 to 51 over the period from 2000 to 2050
- In 2050 Spain's ratio will be 74, Japan's will be 71 and Italy's will be 68

Support Ratios

	1950	1980	2010	2030	2050
Japan	10.0	6.7	2.6	1.8	1.2
Germany	6.2	3.7	3.0	2.0	1.6
Canada	7.1	6.2	4.5	2.5	2.1
United States	7.0	5.1	4.6	2.8	2.6
Singapore	20.3	11.8	6.5	2.0	1.6
China	11.6	10.3	7.8	3.8	2.4
Brazil	15.3	11.3	8.6	4.6	2.6
India	15.7	13.0	11.0	7.2	4.5

Support Ratio: The number in a population aged 20 – 64 divided by those aged 65 and over.
Source: Markets & the Lure of a Demographic Dividend, Globe Investor, P. B14, Thursday, May 19, 2011



Source: "Is the World Economy Hitting a BRIC Wall?" Global Economics Research, UBS, P.8, September 6, 2013

Implications

- The world is entering a demographic transformation of unprecedented dimensions.
  - "When this revolution has run its course, the impact will have been as powerful as that of any of the great economic and social movements of the past"

    Alan Pifer & Lydia Bronte, "Squaring the Pyramid"

Figure 1: Countries Whose Median Age Is Projected to Be 50 or Over in 2050*

Taiwan	56.3	Hong Kong, SAR	54.0	Armenia	52.3
Japan	56.2	Ukraine	54.0	Croatia	52.1
Bulgaria	55.9	Romania	53.9	Cuba	52.0
South Korea	55.5	Slovakia	53.9	Germany	51.8
Slovenia	55.3	Latvia	53.8	Belarus	51.7
Czech Republic	55.0	Italy	53.5	Hungary	51.2
Poland	54.4	Greece	53.3	Portugal	51.1
Singapore	54.3	Lithuania	52.8	Austria	50.9
Spain	54.2	Bosnia & Herzegovina	52.7	Georgia	50.2

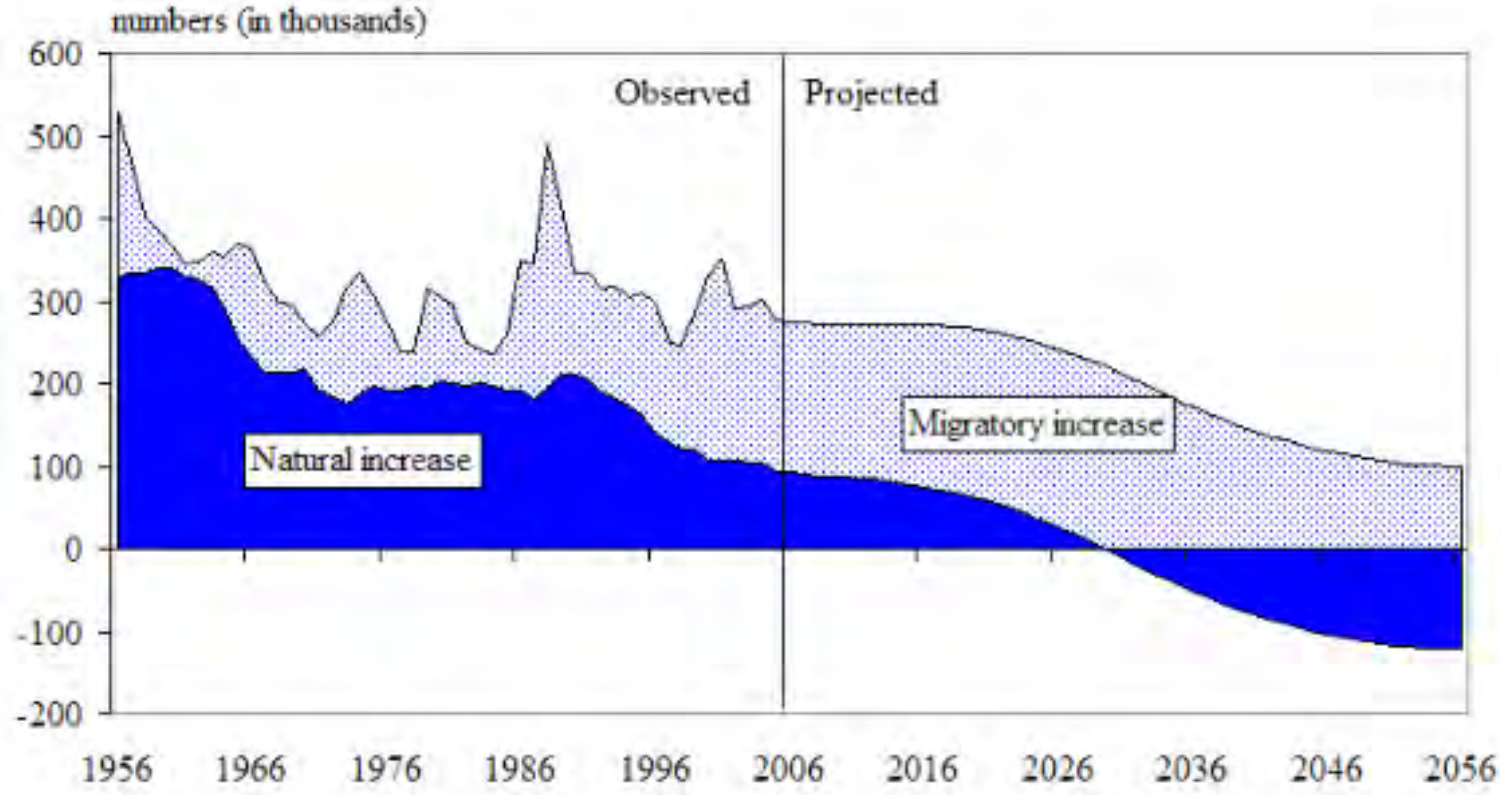
*Excludes countries with populations of less than 1 million.
Source: *World Population Prospects* (UN, 2007); and Population Projections for Taiwan Area, 2006-2051, Council for Economic Planning and Development, Taiwan, http://www.cepd.gov.tw/encontent/. For demographic scenario, see *The Graying of the Great Powers*, appendix 1, section 3.

Figure 2: Countries Projected to Have Declining Populations, by Period of the Decline's Onset*

Already Declining		Decline Beginning: 2009-2029		Decline Beginning: 2030-2050	
Hungary	(1981)	Italy	(2010)	Azerbaijan	(2030)
Bulgaria	(1986)	Slovakia	(2011)	Denmark	(2031)
Estonia	(1990)	Bosnia & Herzegovina	(2011)	Belgium	(2031)
Georgia	(1990)			Thailand	(2033)
Latvia	(1990)	Greece	(2014)	North Korea	(2035)
Armenia	(1991)	Serbia	(2014)	Singapore	(2035)
Romania	(1991)	Portugal	(2016)	Netherlands	(2037)
Lithuania	(1992)	Cuba	(2018)	Switzerland	(2040)
Ukraine	(1992)	Macedonia	(2018)	UK	(2044)
Moldova	(1993)	Spain	(2019)	Hong Kong, SAR	(2044)
Belarus	(1994)	Taiwan	(2019)	Puerto Rico	(2044)
Russian Federation	(1994)	South Korea	(2020)	Kazakhstan	(2045)
Czech Republic	(1995)	Austria	(2024)		
Poland	(1997)	Finland	(2027)		
Germany	(2006)	China	(2029)		
Japan	(2008)				
Croatia	(2008)				
Slovenia	(2008)				

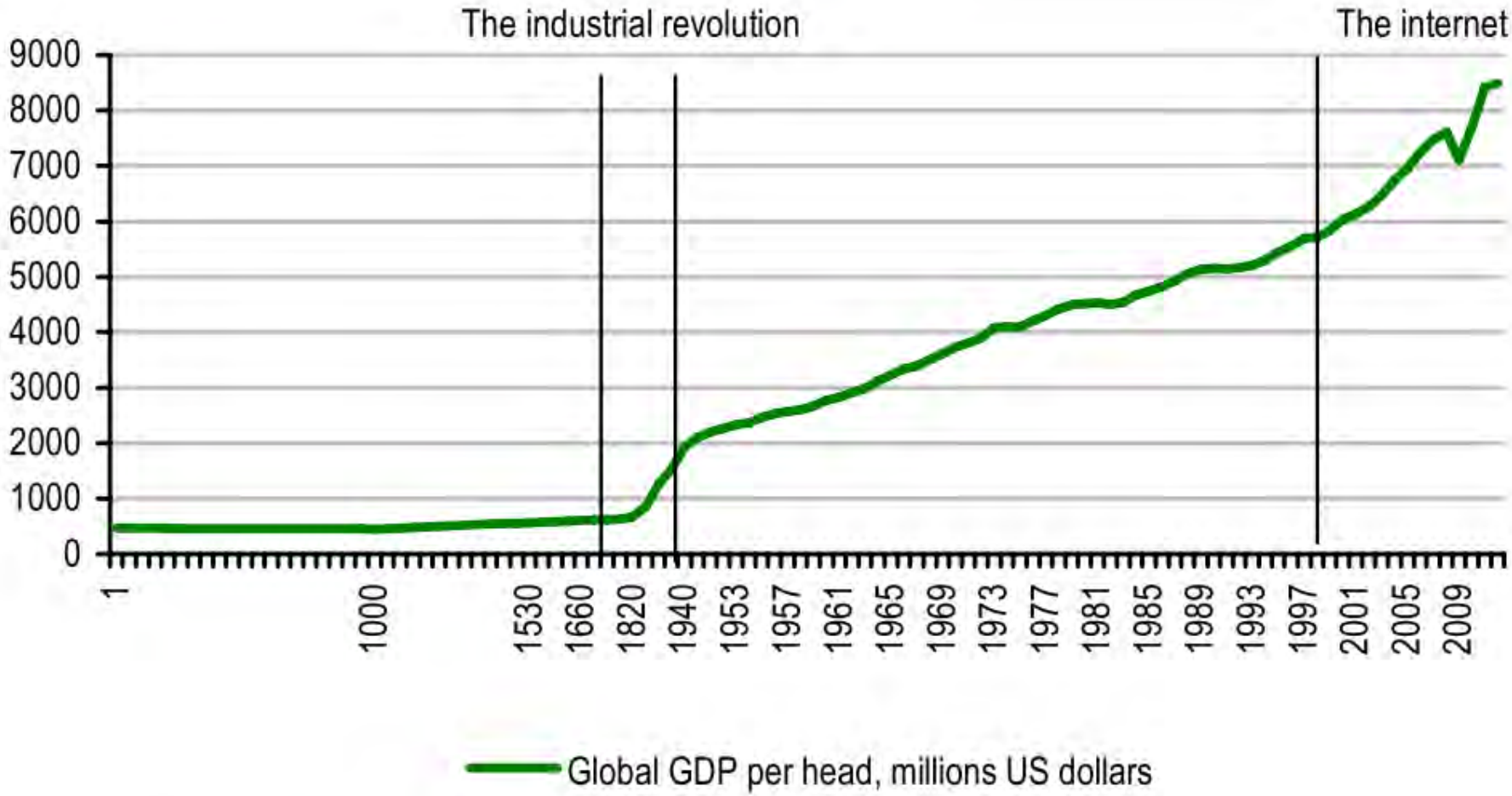
*Excludes countries with populations of less than 1 million.
Source: See figure 1.

Migratory and natural increase of the Canadian population, 1956 to 2056



Data sources: Statistics Canada, 2005, *Population Projections for Canada, Provinces and Territories, 2005-2031,* Statistics Canada Catalogue number 91-520-XIE, scenario 3, and Demography Division, annual population estimates from 1956 to 2005.
Figure source: Statistics Canada, 2007, Canadian Demographics at a Glance, Catalogue number 91-003-XWE.

Global labour productivity over the last two centuries



Source: Madison *www.worldeconomics.com/Data/MadisonHistoricalGDP*

A Shrinking World?

- It will affect everything we do
  - "We are about to witness the greatest sustained reduction in European populations since the Black Death of the 14th Century"

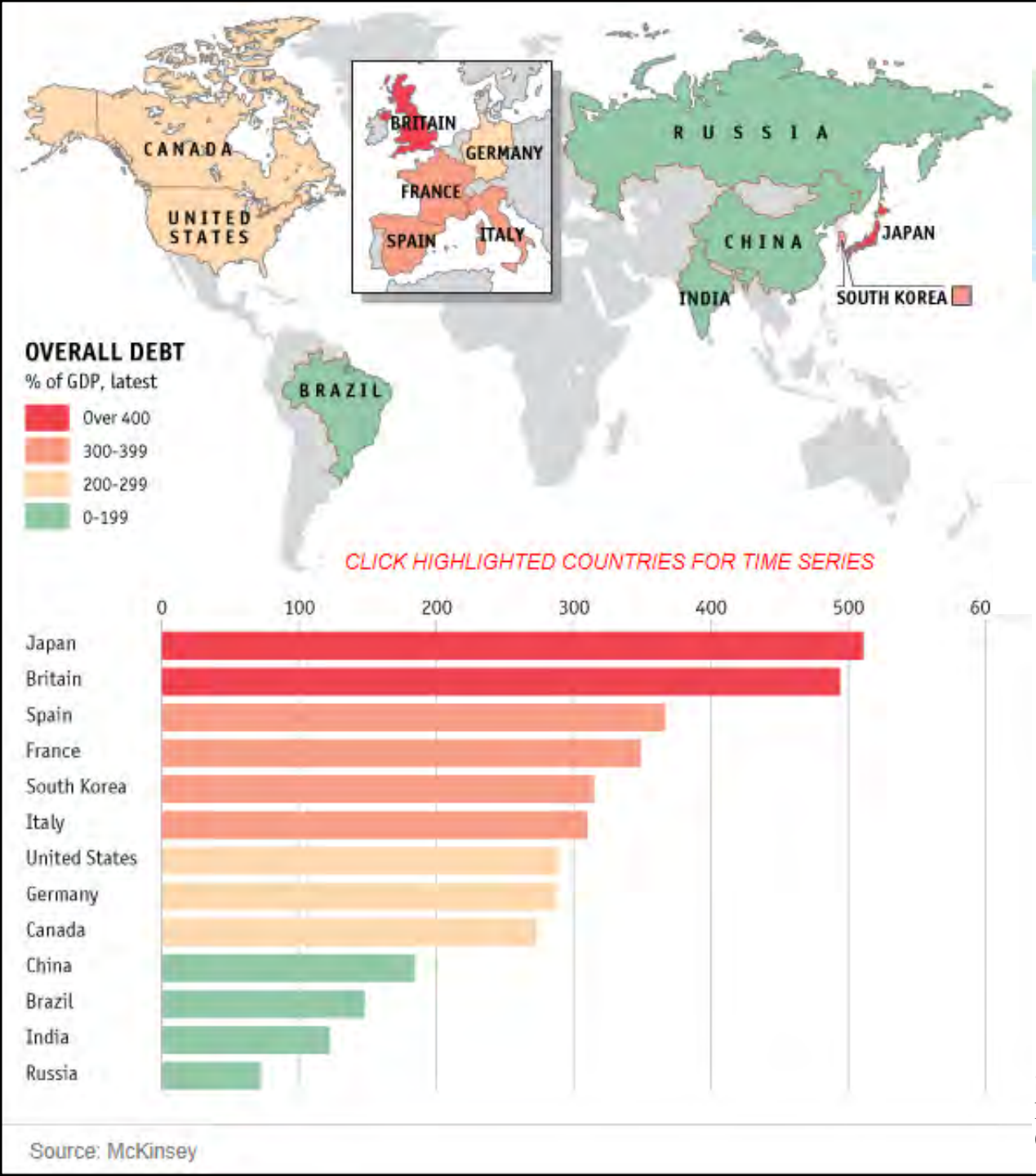
    Niall Ferguson, "Eurabia?", The New York Times Magazine, April 4th, 2004
  - The population in some countries is shrinking at 1.5% per year.
    - Over a 35 year period, that is about a 40% reduction in population.
    - What might be the implications of this?

More Implications of Changing Demographics

- The coming transformation is both certain and lasting. There is almost no chance that it will not happen – or that it will be reversed in our lifetimes!
  - Anyone over the age of 40 in the year 2050 has already been born and can be counted.
  - Because of demographic momentum, population growth takes a long time to slow down. Once stopped, it takes a long time to speed up again.

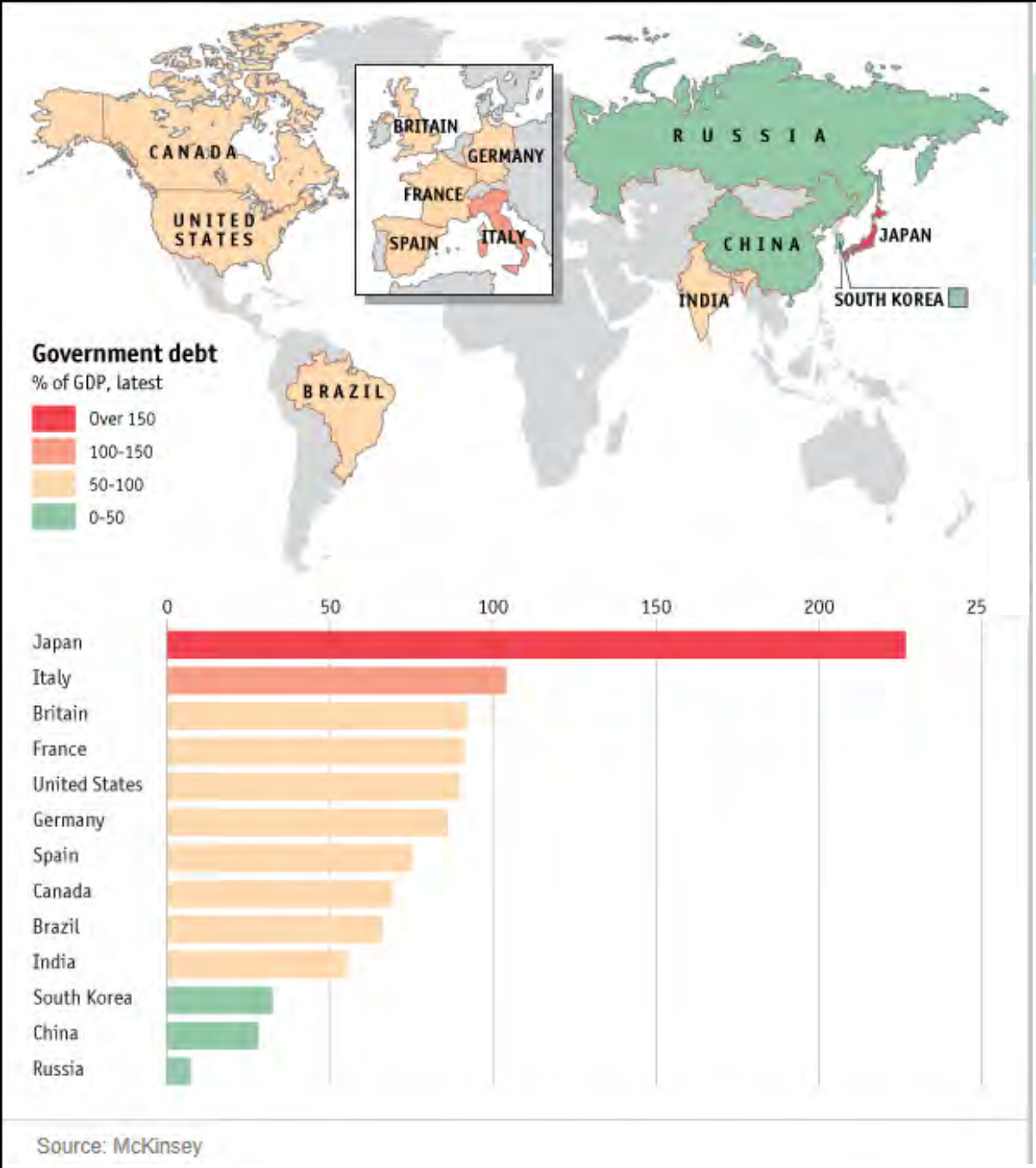
Changes in Economic Performance

- Workforces will shrink from one decade to the next
- GDP may stagnate or fall
- As populations age
  - Employees become less adaptable & mobile
  - Innovation & entrepreneurship decline
  - Rates of saving & investment fall
  - Public sector deficits may rise
  - Current account balances may turn negative
  - **A Global Debt Crises ensues!!**



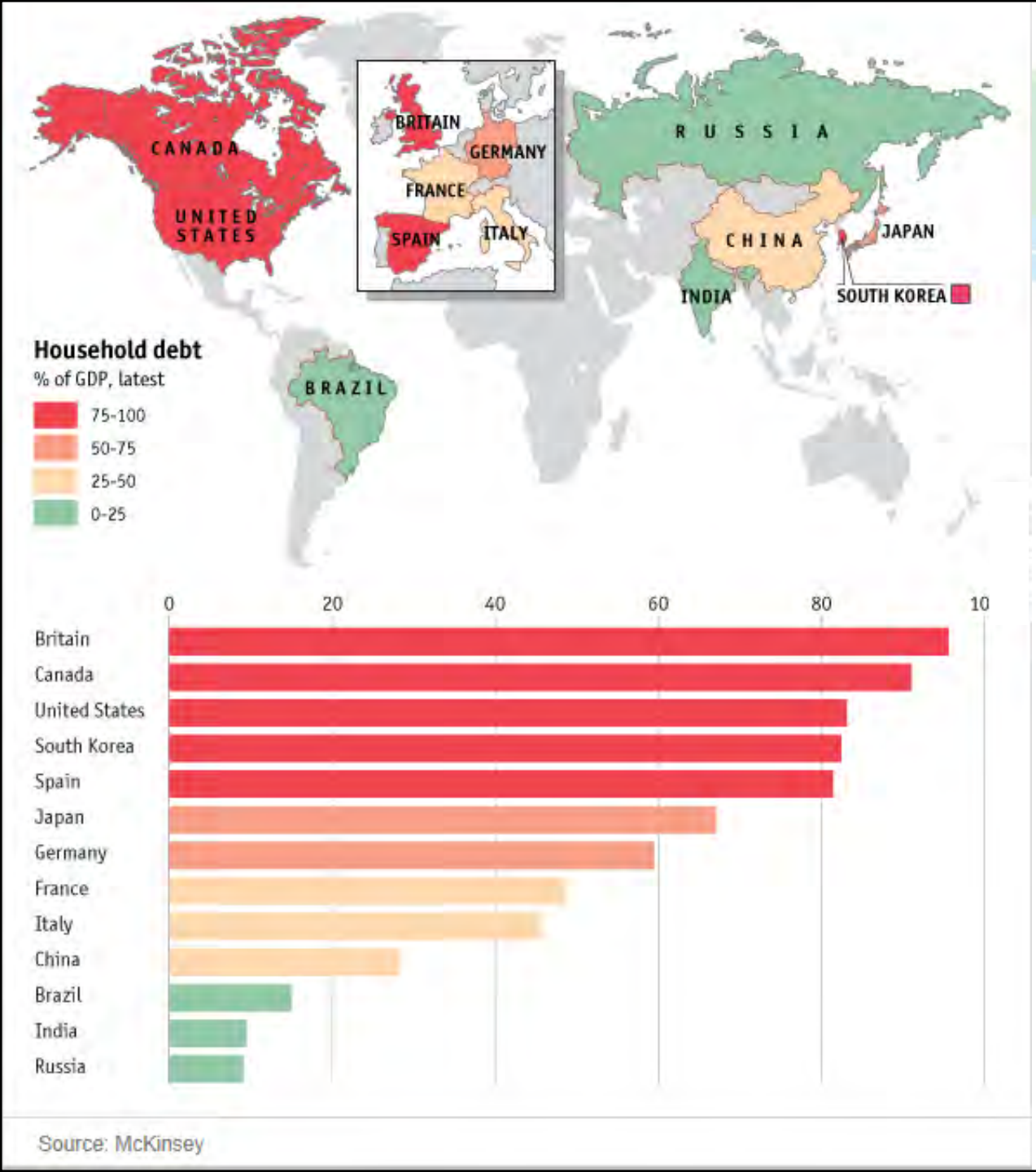
Between the first quarter of 2004 and the first quarter of 2009, private-sector non-financial debt rose by an average of 43% of GDP in the Western countries shown (excluding Germany).

Source: http://www.economist.com/blogs/graphicdetail/2012/09/global-debt-guide



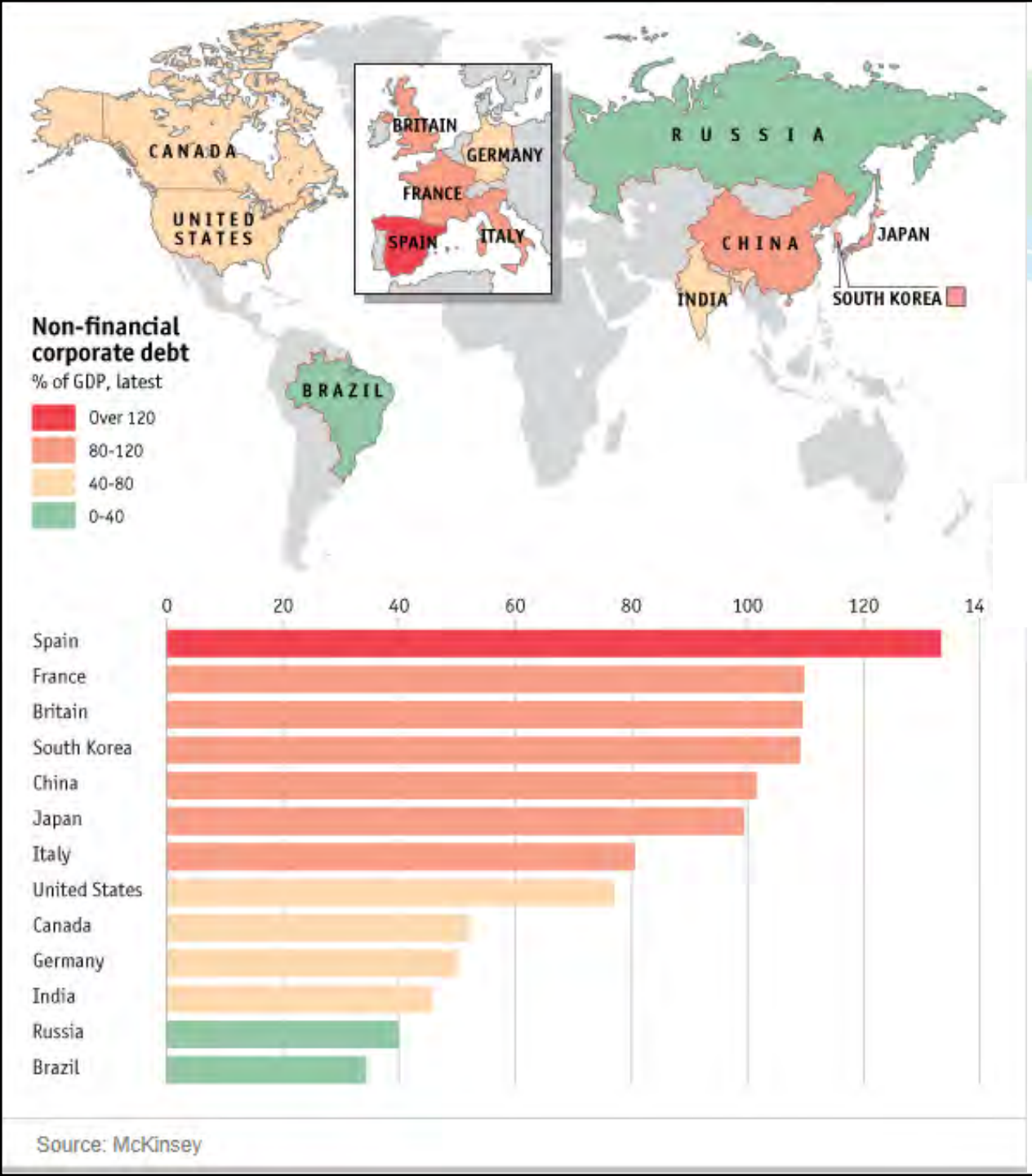
Since the crisis the debt burden has spread to the public balance-sheet. The costs of bail-outs and fiscal stimulus, and the effects of slow economic growth on tax revenues, have sent the ratio of government debt to GDP spiralling.

Source: http://www.economist.com/blogs/graphicdetail/2012/09/global-debt-guide



Household debt has grown very fast in many countries as consumers respond to the incentives offered by low to zero interest rates.

Source: http://www.economist.com/blogs/graphicdetail/2012/09/global-debt-guide



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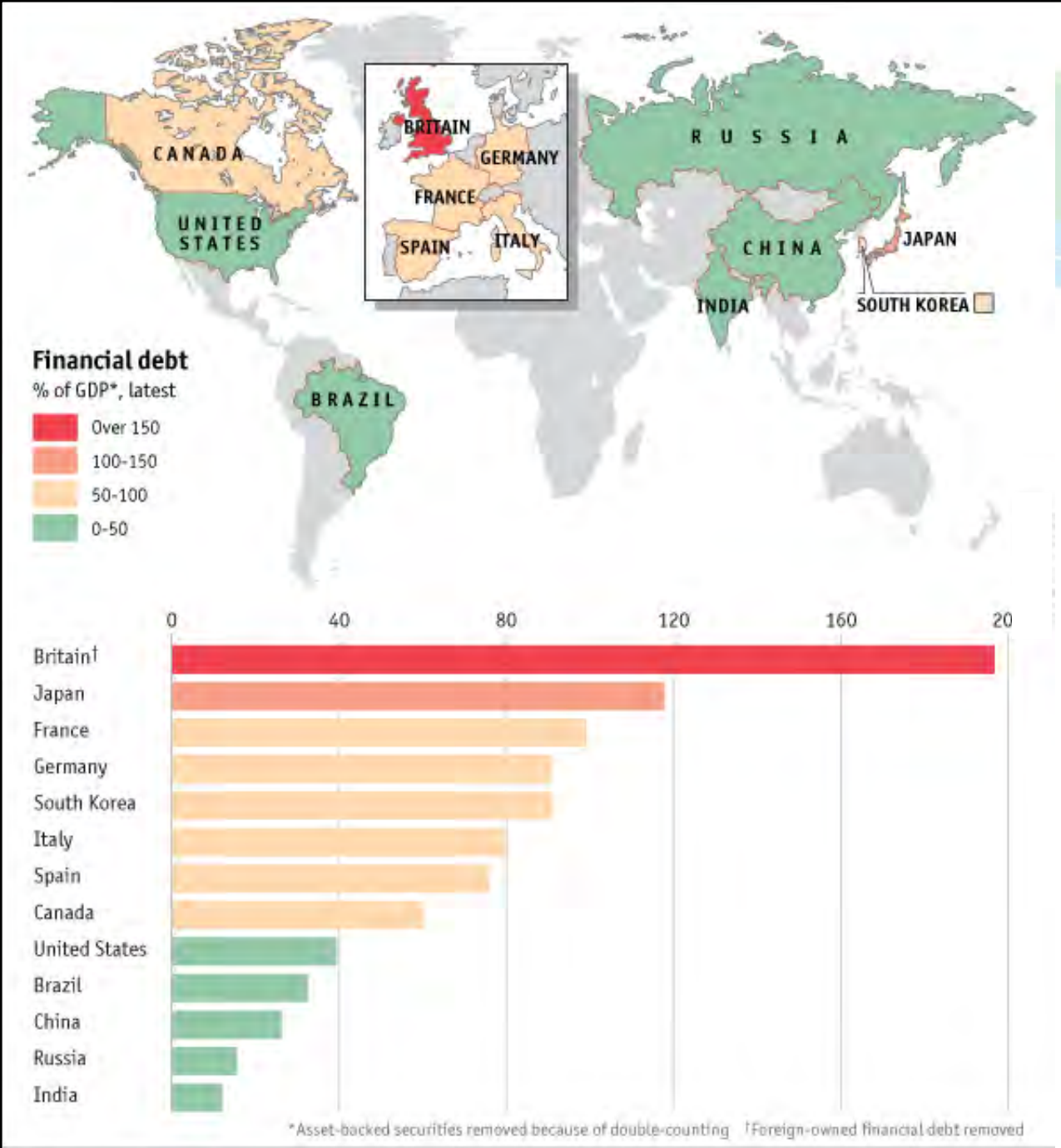

A financial sector that is too large for the country can overwhelm the ability of government to respond when the financial sector gets into trouble.

Source: http://www.economist.com/blogs/graphicdetail/2012/09/global-debt-guide

Debt to GDP: IMF Data

Country	2000	2012	2017
China	16.4%	22%	10.1%
France	57.4%	89%	84.6%
Germany	60.1%	78.9%	71%
Greece	103.4%	153.2%	136.8%
Ireland	37.5%	113.1%	109.2%
Italy	108.5%	123.4%	118.9%
Japan	140.1%	235.8%	256.6%
Portugal	48.4%	112.4%	109.2%
Spain	59.4%	79%	91.6%
U.K.	40.9%	88.4%	86.8%
U.S.	54.8%	106.6%	113%

Source: IMF, April 2012 World Economic Outlook

The Bigger Picture

- *Official debts in the form of bonds do not include the far larger unfunded liabilities of welfare schemes like US Medicare, Medicaid and Social Security.*
- *The most recent estimate for the difference between the net present value of federal government liabilities and the net present value of future federal revenues is $200 trillion, nearly thirteen times the debt as stated by the U.S. Treasury (Laurence Kotlikoff, Boston University).*
- *These figures, too, are incomplete, since they omit the unfunded liabilities of state and local governments, which are estimated to be around $38 trillion.*

Niall Ferguson, economic historian

What, Me Worry?

Two Ways Forward

The Pessimistic Outcome

The Optimistic Outcome

Changes in Social Mood

- Older societies more conservative & risk-averse
- Prone to lock in current spending priorities at the expense of new priorities
- Smaller families may make the public less willing to risk scarce youth in war
- Immigration & higher minority fertility may undermine civic cohesion

Changes in Social Mood

- In some countries, the demographic transition will be so extreme
  - (Russia – lose 1/3 of its population by 2050)
  - Or is arriving so rapidly (China – may become old before it becomes rich)
  - That it might trigger an economic or political crises

Geopolitical Implications

- The population & GDP of the developed world will shrink steadily as a share of the world totals.
  - Developed world had 25% of the world's population in 1930. This had fallen to 13% by 2005. Projected to fall below 10% by 2050.
- Global influence of the developed world will decline

Geopolitical Implications

- Most nations in sub-Saharan Africa and some nations in the Muslim world will possess large ongoing youth bulges that could render them chronically unstable until at least the 2030s
  - As the youth bulge rises, so does the likelihood of civil unrest, revolution and war

2020s: Maximum Danger

- Throughout the world, the 2020s will likely emerge as a decade of maximum geopolitical danger
  - Global aging will hit hardest
  - Workforces stagnant or falling
  - Ratio of senior to workers rising rapidly
  - Big youth bulges in many Muslim & Latin American countries
  - Russia & Eastern Europe will enter their decade of fastest workforce decline.

The Wild Cards That Could Change Everything

- To increase output, a country needs either:
  - A growing population
  - Increasing productivity of its existing population
- The optimistic outlook is for rising productivity due to:
  - Technology
  - Healthcare

Conclusion

- Demographic change is inevitable
- The impact will vary dramatically from country to country
- We must understand it and understand how to work with it
- The winners will be those that embrace change and move ahead of the crowd

Thank You!!