

Global Demographics Macro Implications: Growth, Debt, Asset Prices & Pensions

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DISCLOSURE APPENDIX AT THE BACK OF THIS REPORT CONTAINS IMPORTANT DISCLOSURES AND ANALYST CERTIFICATIONS.

Demographics is about “People as *Consumers & Workers*”

Peter Drucker (1999): “Demographics is the single most important factor that nobody pays attention to, and when they do pay attention, they miss the point.”

D • Discount rates, **Deficits and Debt**

E • **Economic growth**, **Emerging markets**

M • Mortality risk, **Mega-cities**

O • Organisation structure & behaviour

G • Geopolitical Risks

R • Retirement risk, **Real estate**, **Ratings**

A • **Asset prices**, **Asset allocation**

P • Pensions

H • **Health**, **Housing**

I • **Inflation**, **Infrastructure**, **Individuals**

C • Commodities, **Current account**

S • **Sectors**, **Society**, **Sustainability**

Popular misconceptions

1. Demographics is Long-term
2. Age-related
3. Predictable

It affects

income statements and
balance sheets

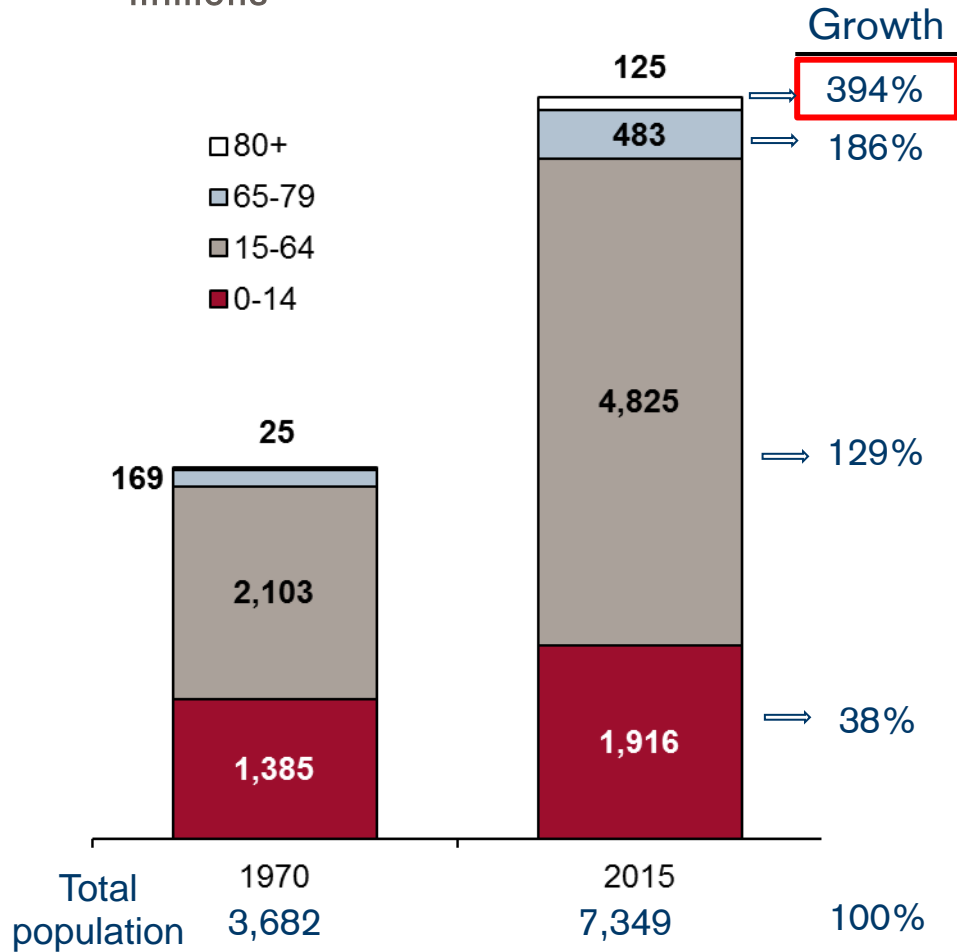
of

households, **corporates**
and **countries.**

The Growth of the Super-old (80+): a new challenge

World Population Change: 1970 vs. 2015

millions



Share of 60+ population

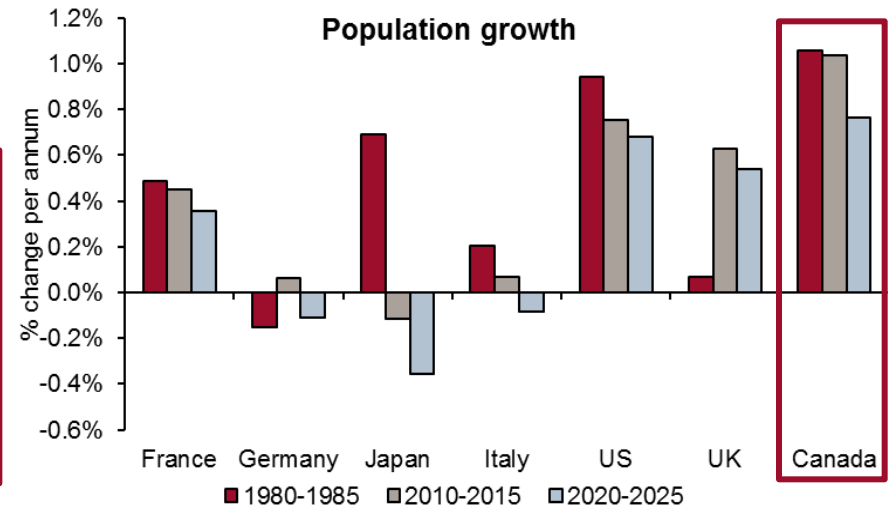
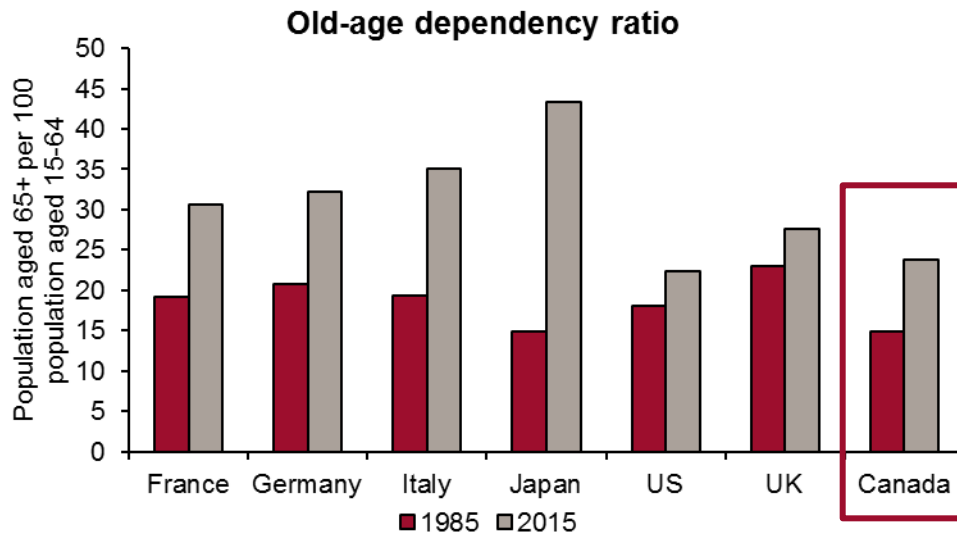
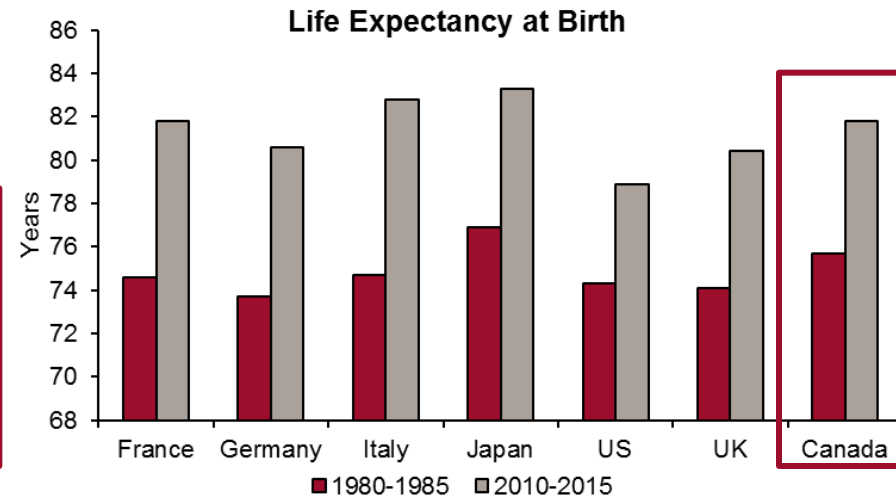
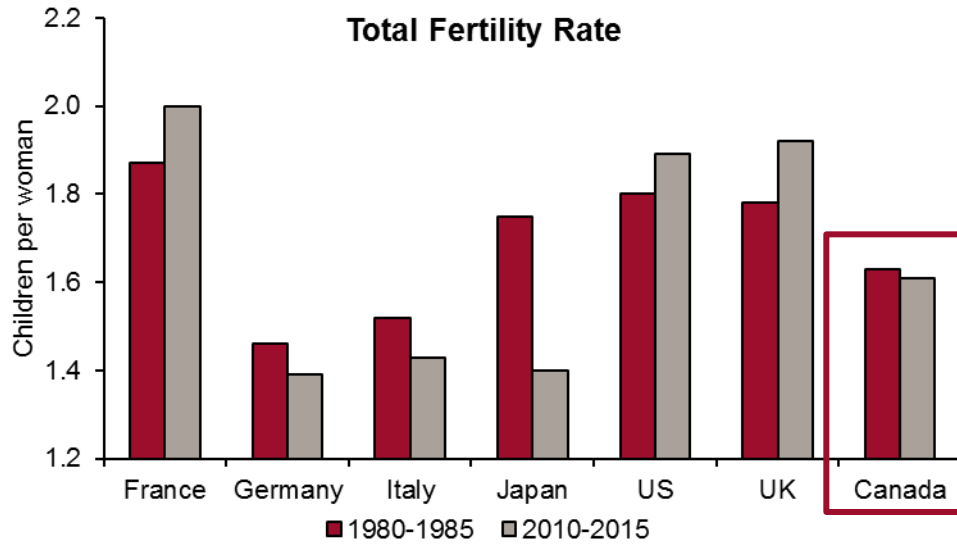
	1970	2015
UK	19%	23%
US	14%	21%
Germany	20%	28%
Japan	11%	33%
France	18%	25%
Italy	16%	29%
Canada	12%	22%

Share of 80+ population

	1970	2015
UK	2%	5%
US	2%	4%
Germany	2%	6%
Japan	1%	8%
France	2%	6%
Italy	2%	7%
Canada	2%	4%

Source: UN, Credit Suisse Demographics Research

Core demographics: G6 and Canada



Source: UN, Credit Suisse Demographics Research

Demographics Overview - Canada

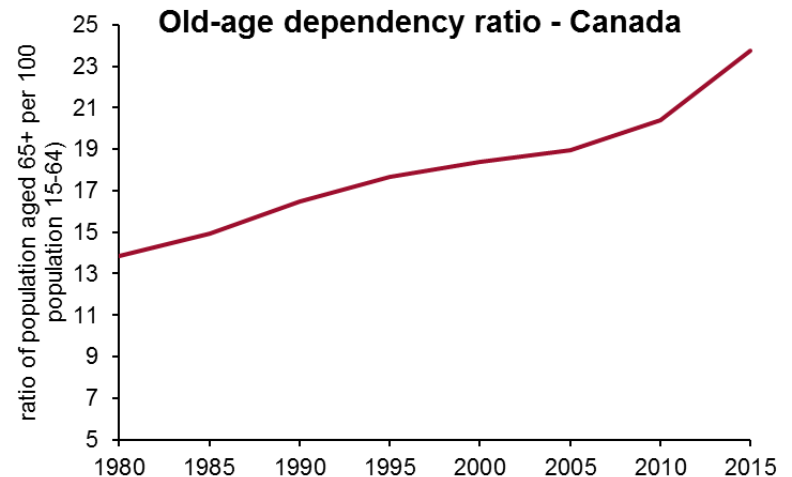
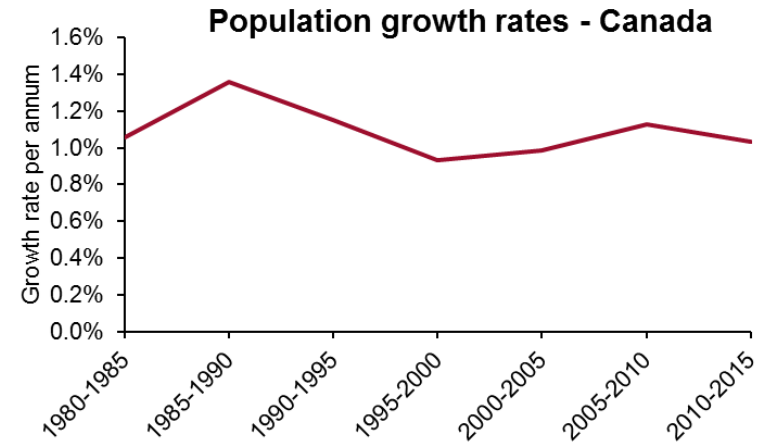
		1970	2015
Median Age	Years	26.1	40.6

		Men		Women	
		1980	2008	1980	2008
Mean age at first marriage	Years	25.7	31.1	23.5	29.1

		Women	
		1980 - 1985	2010 - 2015
Mean age of child bearing	Years	27.2	30.3

		1980-1985	2010-2015	2020-2025	2050-2055
Total Fertility rate	Children per women	1.63	1.61	1.56	1.69
Life expectancy at birth	Years	75.7	81.8	83.5	87.3

		Men	Women
		Years	
Official retirement age	2012	65.0	65.0
Effective retirement age	2007-2012	63.8	62.5



Source: UN, Statistics Canada, OECD, Credit Suisse Demographics Research

Credit Suisse's Demographic Manifesto (2000)

Abolition of mandatory retirement ages combined with flexible enabled retirement

Increased female labour participation rates with use of technology to facilitate women to better balance work and family

Outsourcing and off-shoring

Selective immigration policies

Retirement ages: effective & official

	Men		Women	
	Effective 2007-2012	Official 2012	Effective 2007-2012	Official 2012
Mexico	72.3	65	68.7	65
Korea	71.1	60	69.8	60
Chile	69.4	65	70.4	60
Japan	69.1	65	66.7	65
Portugal	68.4	65	66.4	65
New Zealand	66.7	65	66.3	65
Switzerland	66.1	65	63.9	64
Sweden	66.1	65	64.2	65
US	65.0	66	65.0	66
Norway	64.8	67	64.3	67
Canada	63.8	65	62.5	65
UK	63.7	65	63.2	61.2
Netherlands	63.6	65	62.3	65
Denmark	63.4	65	61.9	65
Turkey	62.8	60	*63.6	58
Spain	62.3	65	63.2	65
Germany	62.1	65.1	61.6	65
Greece	61.9	65	60.3	63.5
Finland	61.8	65	61.6	65
Italy	61.1	66	60.5	62
France	59.7	65	60.0	65

*Grey cells: effective retirement age > official retirement age

Source: UN, OECD, Credit Suisse Demographics Research

How Increasing Longevity Affects Us All?

Individual & families

- Challenge existing asset & time allocation frameworks & intergenerational dynamics

Governments & Societies

- Policy changes in labour, education, health, pensions & social benefits necessary

Asset managers, pension funds, insurance cos., SWFs.

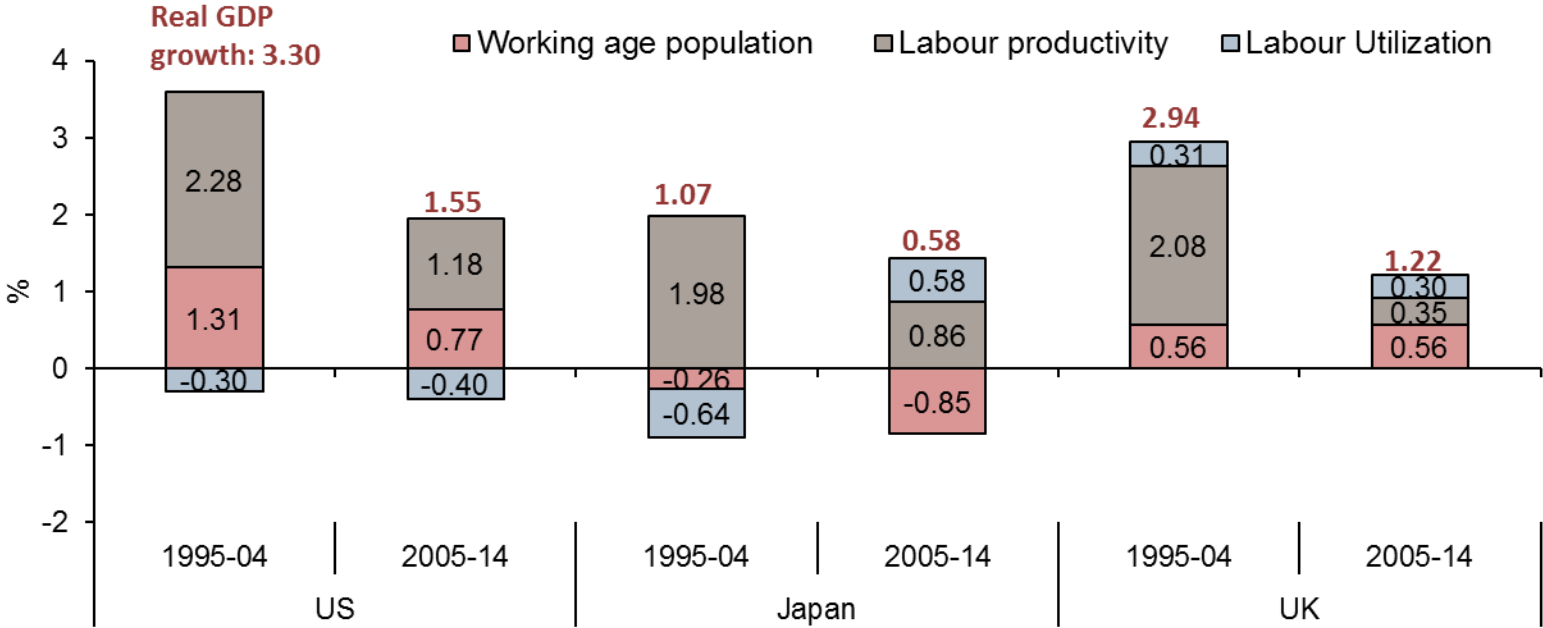
- Re-assess frameworks & assumptions. Develop new solutions for clients & new approaches to understanding longevity

Significant change in thinking and mind-set needed

Source: Credit Suisse Demographics Research, IPE Pension awards key note speech (Noordwijk, 2013)

Demographic Drivers of Real GDP Growth

Working-age Population Growth working-age population = population aged 15-64	Labour Productivity Growth labour productivity = real GDP / hours worked	Labour Utilisation Growth labour utilisation = hours worked / working-age population
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Source: UN, GGDC, Credit Suisse Demographics Research

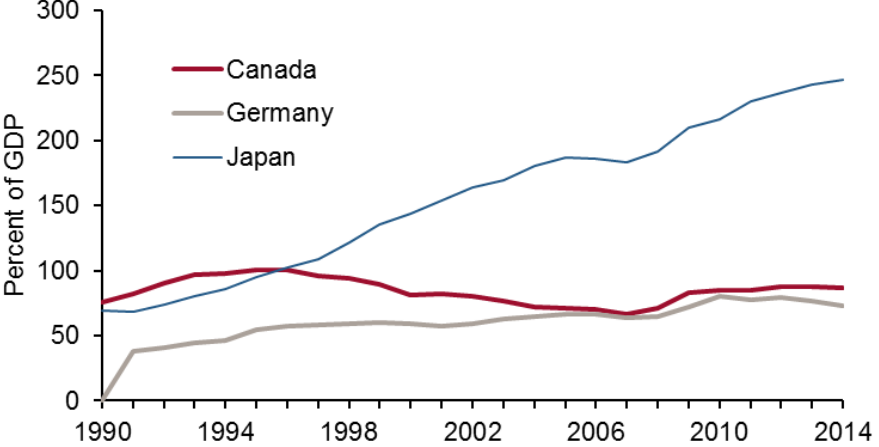
GDP decomposition – Canada



Source: UN, GGDC, Credit Suisse Demographics Research

Fiscal sustainability - Canada

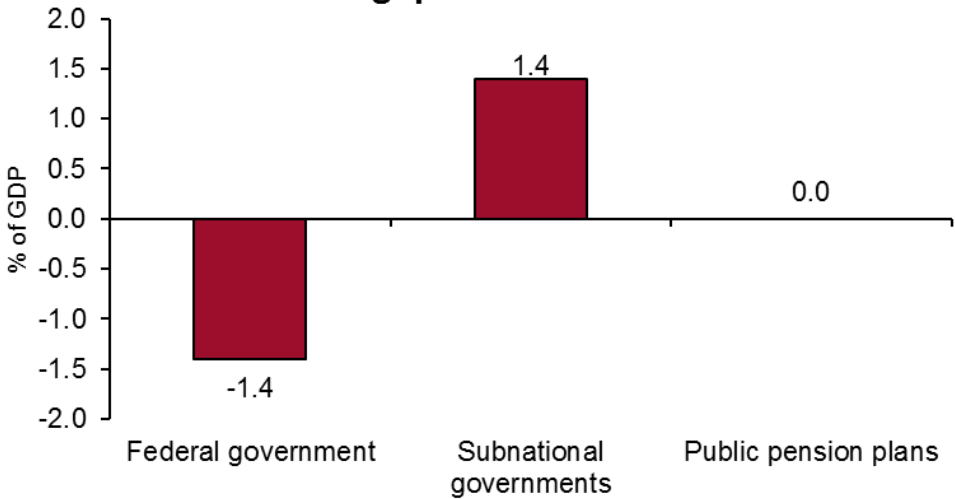
General government gross debt



- The federal government does not have a fiscal gap, while the provincial governments do.
- The fiscal gap is driven mostly by the projected ageing and excess cost growth (especially health care spending)

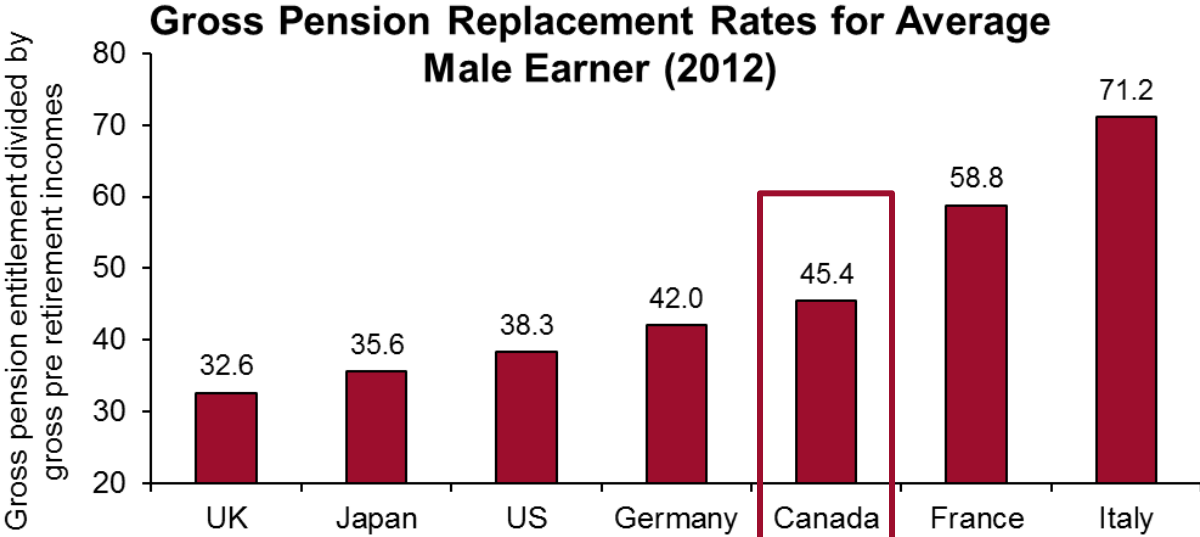
Projection for public spending - Canada			
% of GDP	Average 2006-2010	2060	
		Cost-pressure	Cost-containment
Healthcare	5.8	12.2	8.3
Long-term care	1.2	2.5	1.9
Total	7.1	14.6	10.2

Fiscal gap estimates - Canada



Source: PBO, CIHI, Statistics Canada, Credit Suisse Demographics Research

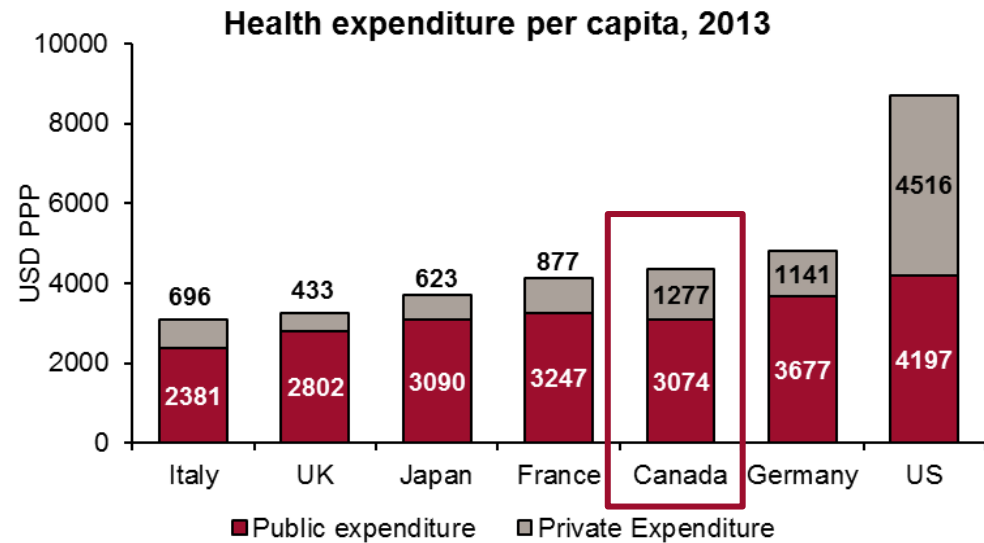
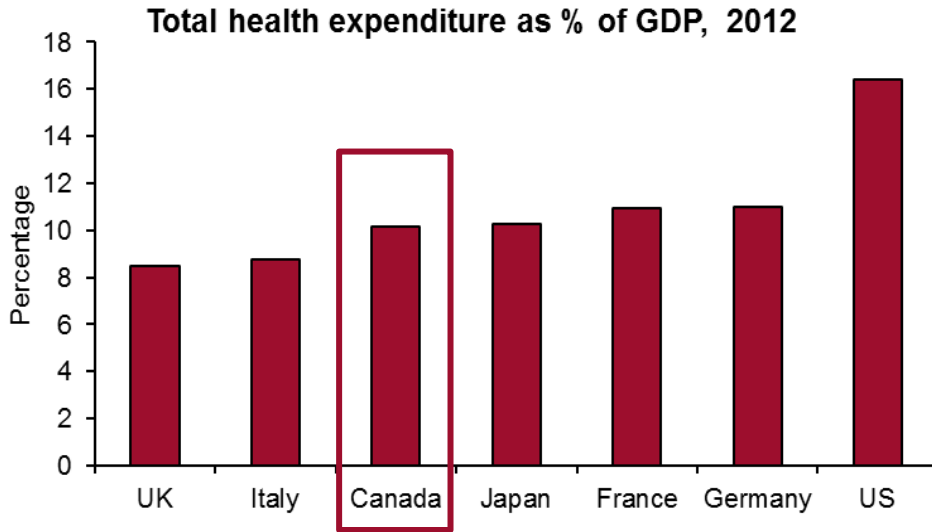
Pensions: wide divergences



Gross Pension Wealth for Average Earner (2012)		
Gross pension wealth is the total value of lifetime flow of pension incomes, measured as a multiple of gross annual individual earnings		
	Men	Women
UK	5.1	5.6
US	5.9	6.6
Japan	6.5	7.5
Canada	7.3	8.3
Germany	8.2	9.6
France	9.5	11.4
Italy	11.9	13.7

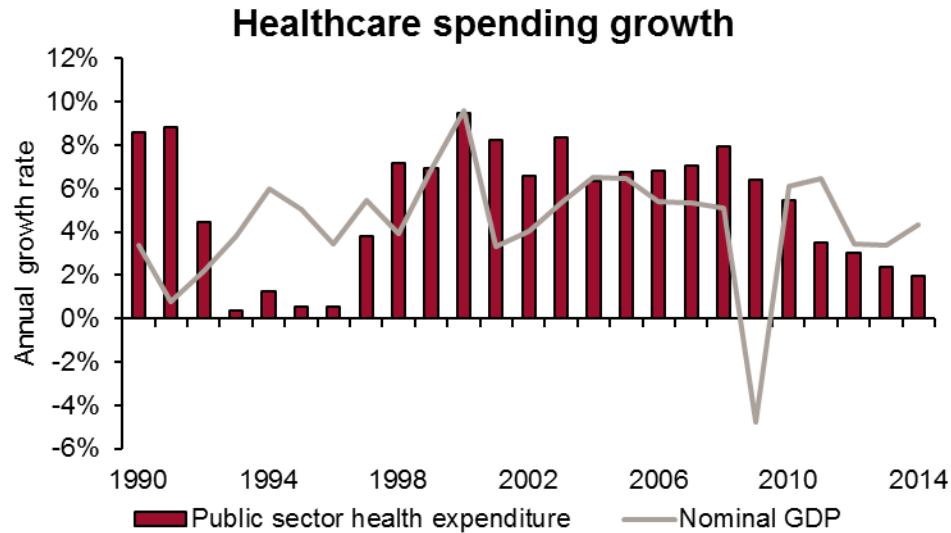
Source: OECD, Credit Suisse Demographics Research

Healthcare expenditure

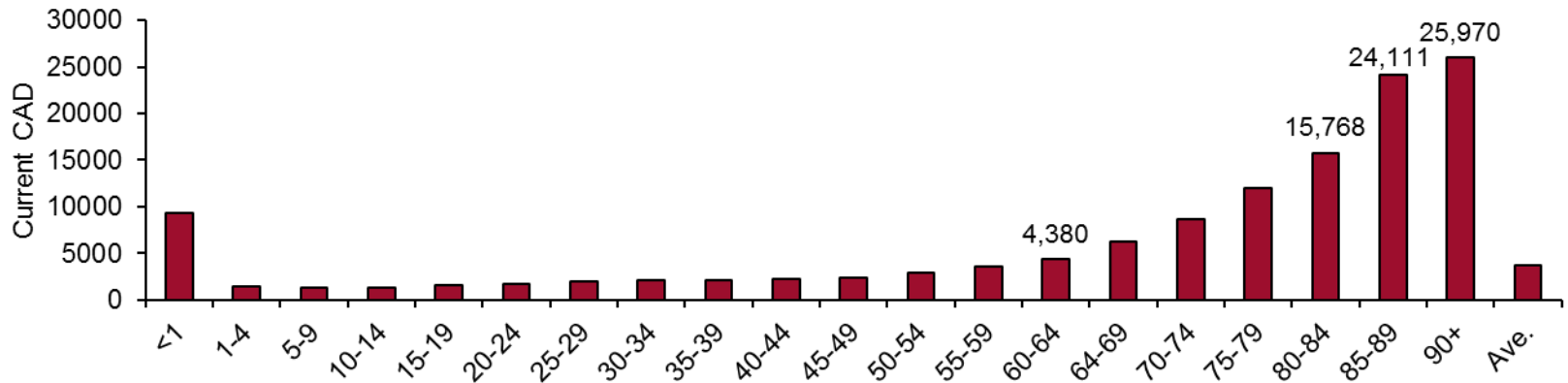


Source: IHME, OECD, Credit Suisse Demographics Research

Healthcare expenditure - Canada



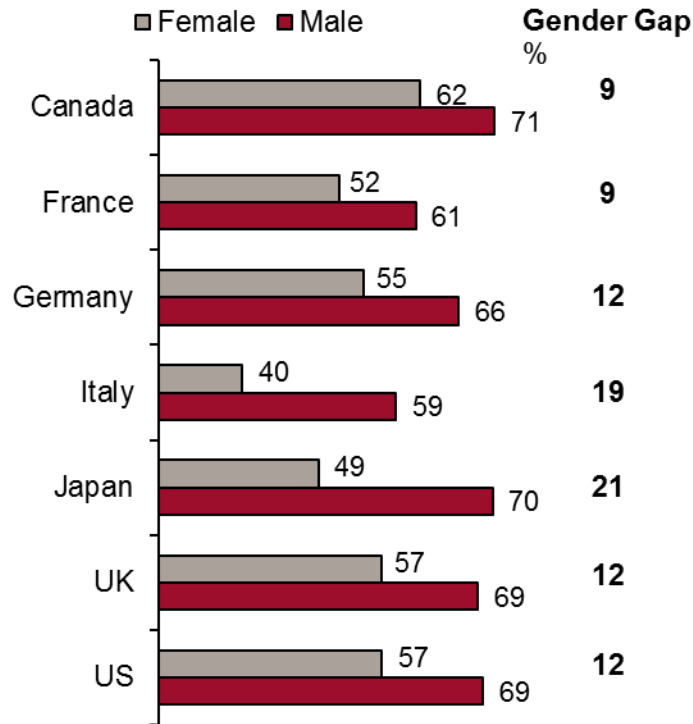
Government health expenditures per capita by age - Canada, 2010



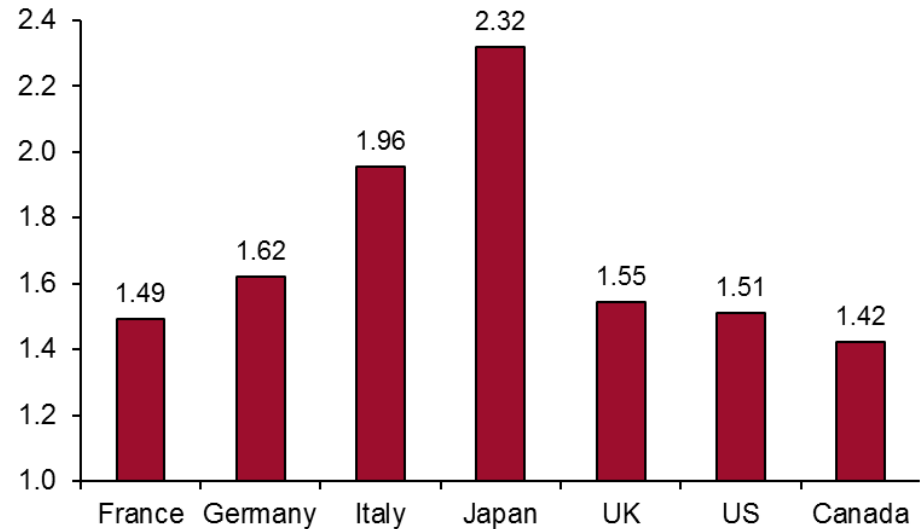
Source: CIHI, Statistics Canada, Credit Suisse Demographics Research

Economic Activity Rates, Men vs. Women

Labour force participation rate, 2014
in percentage, G6 + Canada



Income multiples of men over women, 2013
Income measure: GNI per capita in US\$,
constant 2011 PPP

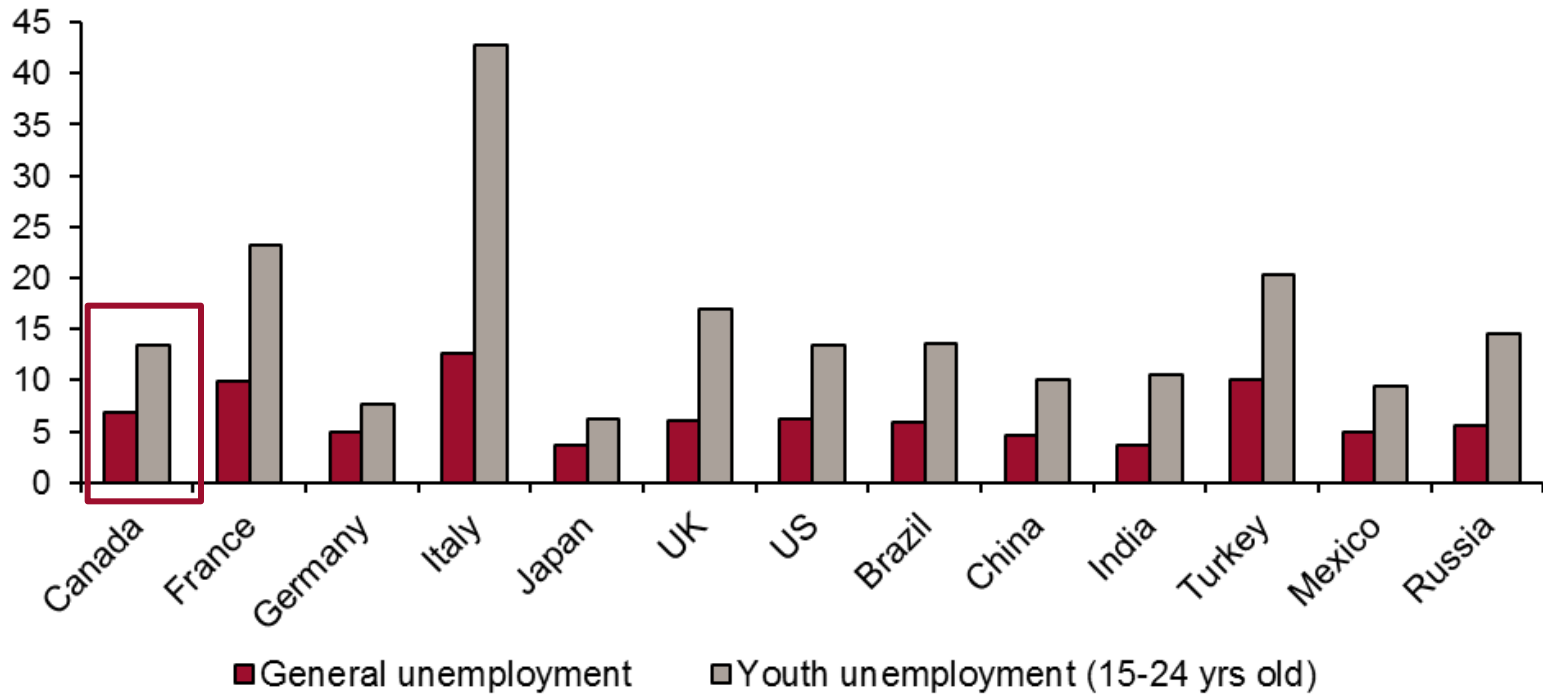


Source: ILO, Credit Suisse Demographics Research

Rising Youth Unemployment

Youth unemployment, 2014

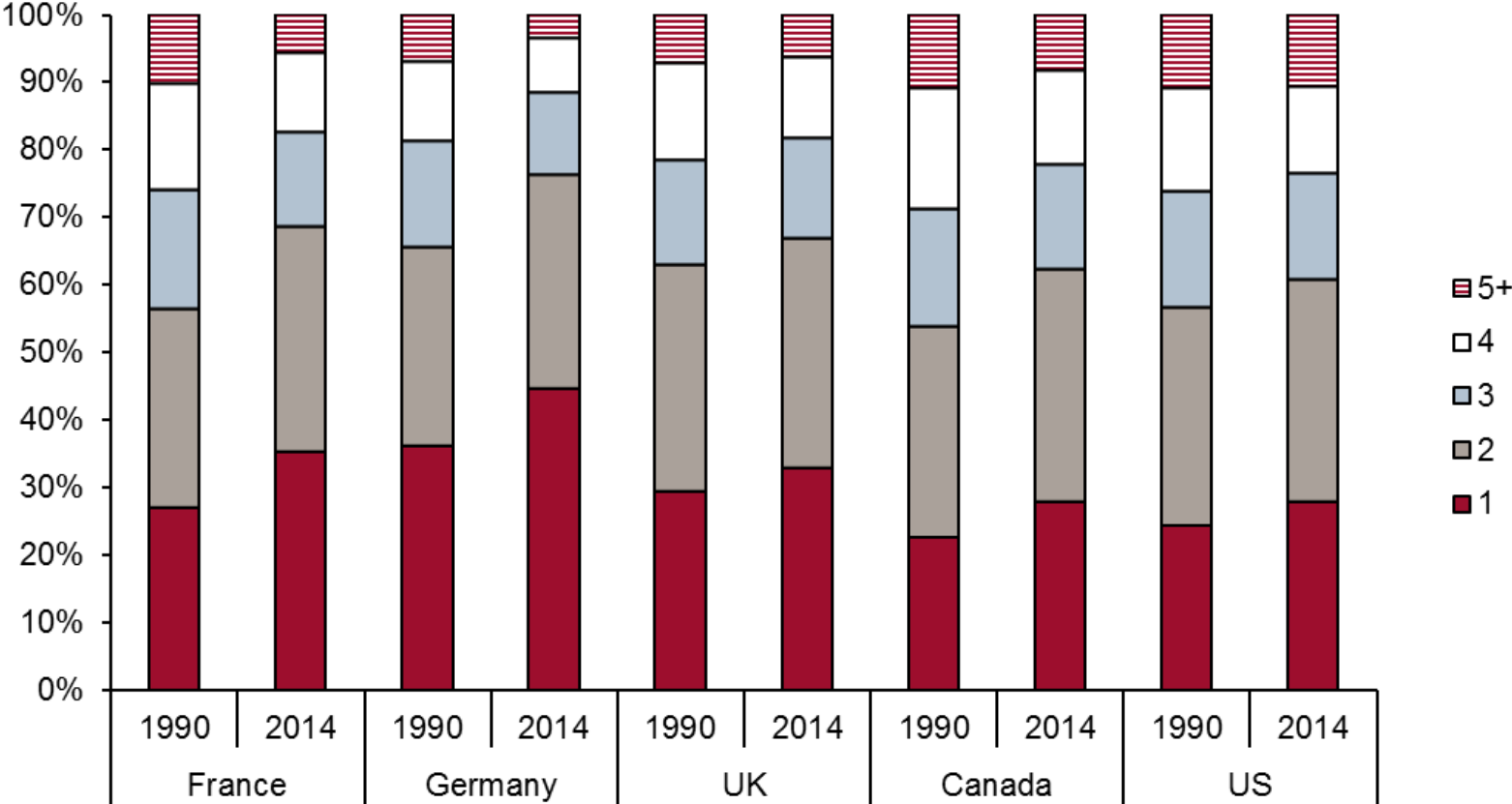
In percentage, data for EMG6 is from 2013



Source: ILO, World Bank, Credit Suisse Demographics Research

Consumers: The Changing Family Structure

Share by household size (number of members in household) in percentage



Source: Euromonitor, Credit Suisse Demographics Research

Household spending by age - Canada

Average expenditure by household - by age of reference person, 2013						
	All classes	< 30 yrs	30 - 39 yrs	40 -54 yrs	55 - 64 yrs	65+
Total current consumption (CAD)	58592	56239	64580	68227	58631	41821
% of total current consumption						
Food expenditures	13.6%	13.2%	14.0%	13.3%	13.2%	14.6%
Shelter	28.0%	27.3%	29.8%	28.3%	26.2%	27.6%
Household operations	7.4%	7.1%	8.7%	7.0%	7.1%	7.4%
Household furnishings and equipment	3.4%	3.4%	3.2%	3.3%	3.7%	3.5%
Clothing and accessories	6.1%	6.6%	6.2%	6.4%	5.8%	5.0%
Transportation	20.6%	20.6%	20.3%	20.8%	21.5%	19.1%
Health care	4.1%	2.9%	3.1%	3.3%	4.3%	7.6%
Personal care	2.1%	2.2%	2.1%	2.0%	2.2%	2.2%
Recreation	6.7%	6.1%	6.4%	6.9%	7.2%	6.5%
Education	2.6%	5.6%	1.7%	3.3%	2.2%	0.5%
Others	5.5%	4.9%	4.6%	5.4%	6.6%	6.0%

Source: Statistics Canada, Credit Suisse Demographics Research

Changing global consumers

Internet users

- Nationality, education and socio-economic groups are also major influencers of online internet use, not limited to age group

Internet users among 55-74 year-olds by educational attainment level, 2013

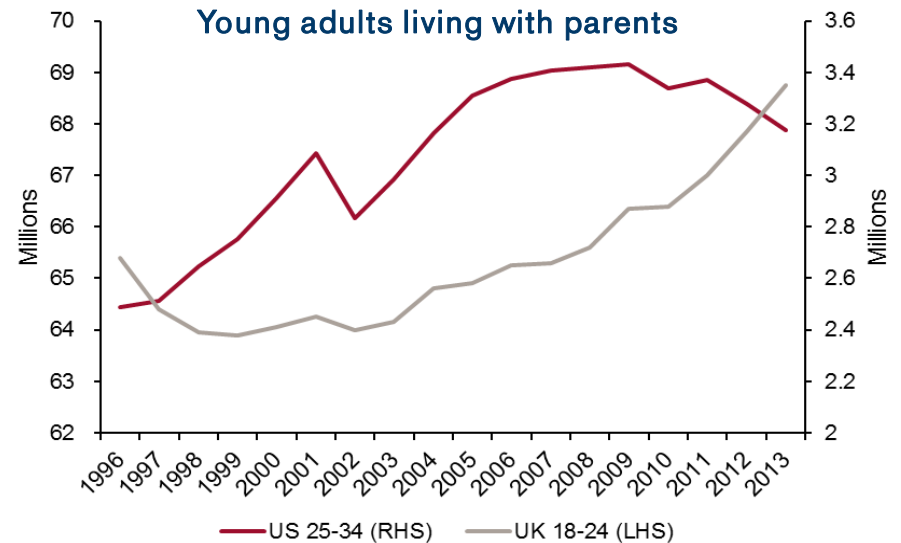
	55-74 year-olds	High attainment	Low attainment
	As a percentage of 55-74 year-olds in each educational attainment group		
UK	74.56	92.68	49.47
US	64.25	86.02	55.40
Germany	61.74	84.40	35.66
France	60.21	90.24	42.68
OECD	55.01	84.67	37.99

Women

- Are new consumers with increasing no. of them getting educated, working and richer.
- Share of highly educated women remaining childless into mid-40s fallen significantly over past 20 yrs

Young adults

- Young adults are entering the workforce and start accumulating assets later
- They most likely live at their parents house until 28-30 years old



Source: OECD, ONS, US Census Bureau, Credit Suisse Demographic Research

Key Sectors Impacted by Demographic Change

INFRASTRUCTURE

- Changing needs for infrastructure in developed world
- Mega-cities growing in the developing world
- Residential, manufacturing, transport, environmental considerations to name a few

NATURAL RESOURCES

- Changing manufacturing processes/locations
- Demands for new products very different from the demand for older products—derived demands too
- Increased demands for hard and soft commodities. Water/Drinking water supplies

LEISURE & LUXURY

- Work-Leisure trade-off changes for old as well as young.
- Wealth of retirees, ease of travel, ease of shopping
- Lower costs of communication, travel and insurance
- Information and Technology advances

EMERGING MARKETS

- Growing importance due to economic power
- Global labour force
- Global manufacturing locations
- Outsourcing
- Demand side

PHARMA & BIOTECH

- Longer post-retirement life of growing number of retirees.
- Desire of retirees to enjoy a good quality of life
- New pharma and biotech needed for mental health and new illness
- Genomics, pharma and biotech research need to find new cost-effective drugs and treatments

FINANCIAL SERVICES

- Active Asset allocation, New product development and Risk Management will be cornerstones
- DB to DC shifts
- Newer ways of delivering pensions and insurance
- Technology

“The reason these sectors are positively affected is not merely due to the fact that the number of people in the elderly population has increased, but also that the composition, family structure and behavioural characteristics of the elderly, as well as the young population, is vastly different compared to the past”

Demographics & Monetary Policy

Our view since 2005

Effects of Interest Rates:

The **young**: long on human capital & short on assets

The **old**: long on assets & short on human capital

Monetary policy impact is different based on **relative fractions of young & old**

Credit restrictions:

The more people in the latter parts of their working lives and in retirement and the fewer the young workers—the less important are credit constraints

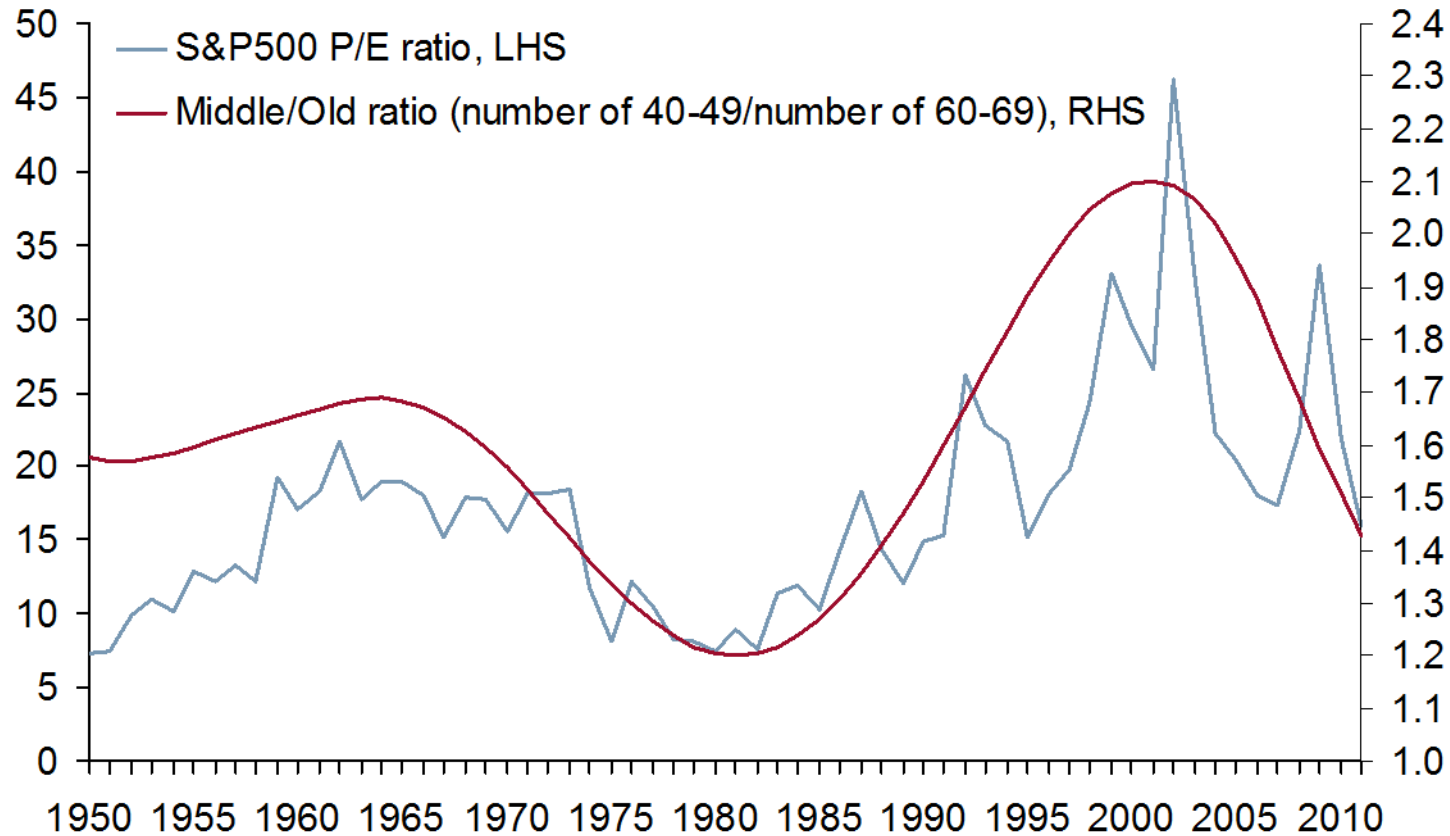
Patrick Imam, IMF
(2013)

To obtain the same impact on output and inflation, ceteris paribus, **interest rate changes** will have to **become larger** in older societies than in younger ones.

James Bullard, et
al. (2012)

Ageing population structures like those in Japan may contribute to observed **low rates of inflation** or even deflation

US: S&P 500 P/E Ratio and Middle/Old Ratio

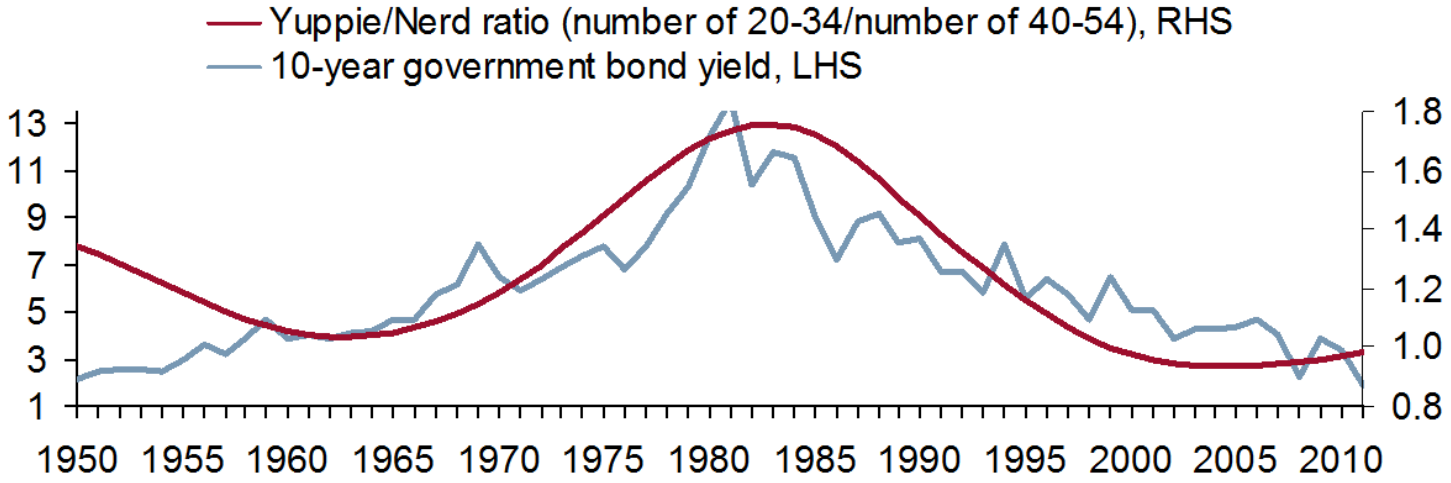


- Weak correlation for France, Germany and Japan

Source: UN, Online Data Robert Shiller, Credit Suisse Demographics Research

Demographics & Interest Rates

Yuppie/Nerd ratio & nominal 10-year government bond yield: US



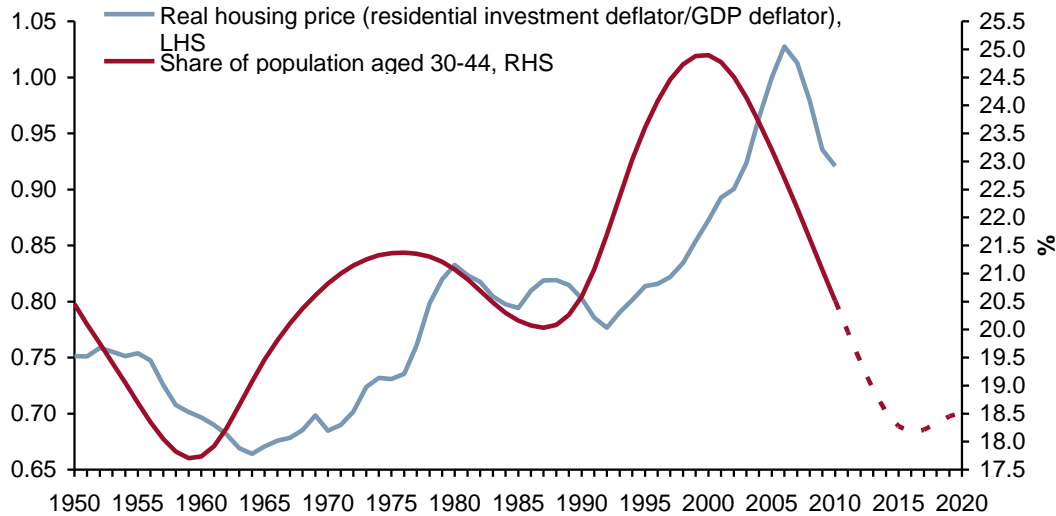
Correlation between Yuppie/Nerd ratio & nominal 10-year government bond yield

	US	UK	Japan	France	Germany
Time period	1950-2011	1958-2011	1972-2011	1950-2011	1950-2011
Correlation	0.8	0.81	0.57	0.83	0.69

Source: Global Financial Data, UN, Credit Suisse Demographics Research

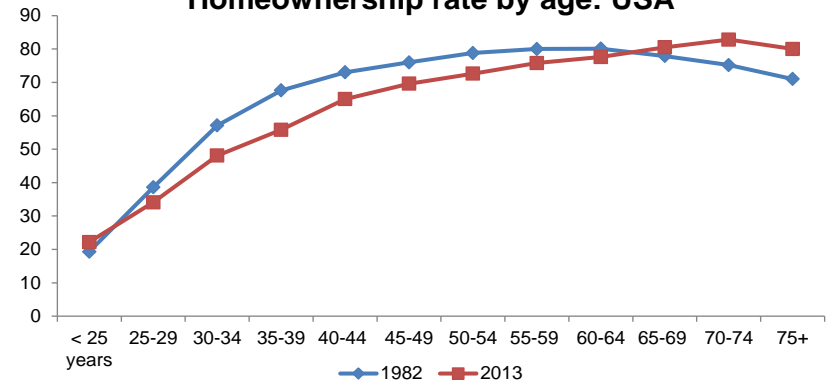
Housing and Share of Population Aged 30-44, US

Real housing price & share of population aged 30-44, US



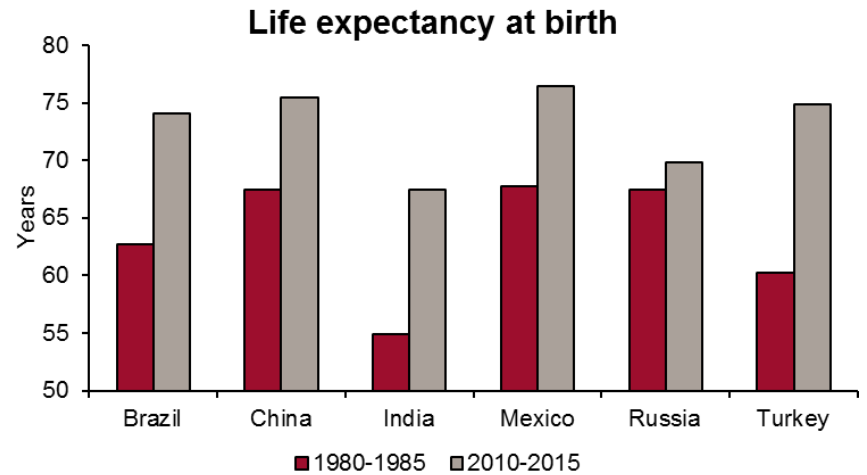
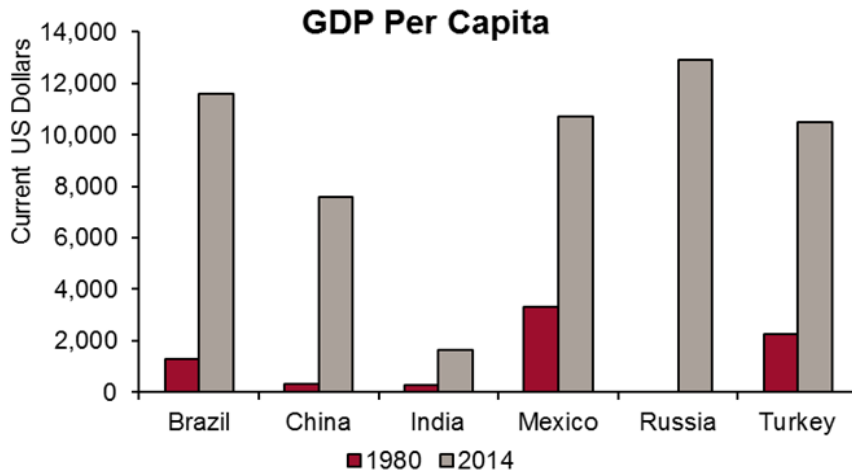
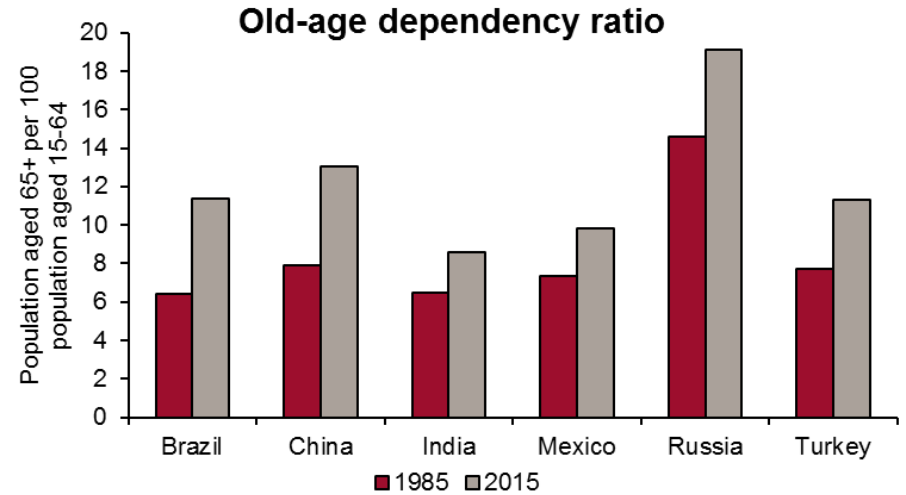
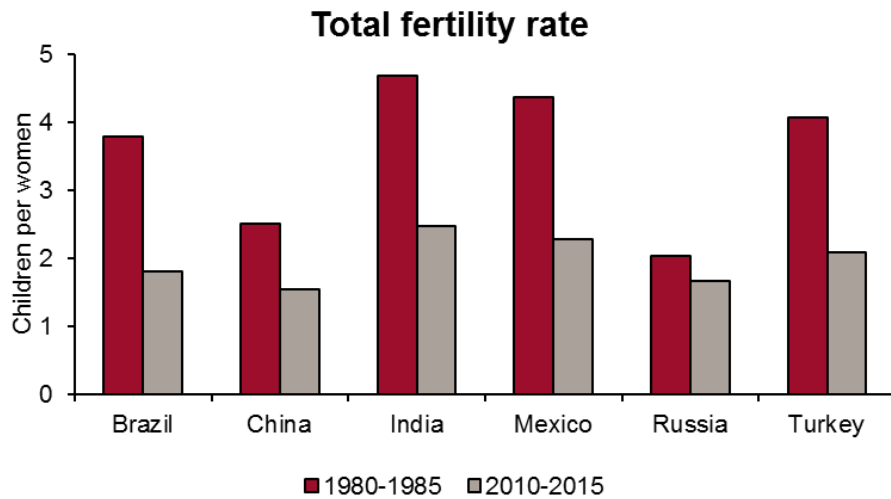
Real housing price is the residential investment deflator divided by the GDP deflator

Homeownership rate by age: USA



Source: Bureau of Economic Analysis, US Census Bureau UN, Credit Suisse

Core demographics: EMG6



Source: UN, IMF, Credit Suisse Demographics Research

China – labour mobility, migration, urbanisation, consumers

Hukou Reform

- Rural vs. urban Hukou holders differ in consumption patterns largely due to differences in (i) access to education (ii) health care (iii) housing and (iv) social benefits
- Cost of conversion per Hukou is 80,000 RMB per person
- Issue is which of the govts bears the cost? National, city, municipal, provincial or local.

People-Centred Urbanisation

Type of cities	Size of cities	Number / world total	Measures	Notes
Towns and small cities	<0.5 mn	-	Full removal of hukou restrictions	Only migrants with legal and stable work and accommodation
Mid-sized cities	0.5 – 1 mn	156 / 538	Gradual ease of restrictions	Most dodgy government debts are in these cities - migration will impose additional strains on city finance
Big cities	1 – 5 mn	89 / 428	Reasonable conditions for settlement	
Mega-cities	> 5 mn	17 / 73	Strict control of population	Most new jobs are created in these cities

Source: NBS, IMF, The State Council, UN, Credit Suisse Demographics Research

Beyond GDP & GDP per capita: Qualitative Indicators

Human Development Index				Global Gender Gap Index 2014			Corruption Perception Index			Democracy Index 2014		
Rank	Country	Values		Rank	Score	2014	Rank	Score	Rank	Score		
		1990	2013									
1	Norway	0.85	0.94	Finland	2	0.85	Denmark	1	92	Full Democracies		
3	Switzerland	0.84	0.92	Norway	3	0.84	Sweden	4	87	Norway	1	9.93
4	Netherlands	0.84	0.92	Sweden	4	0.82	Norway	5	86	Sweden	2	9.73
5	US	0.88	0.91	Denmark	5	0.80	Switzerland	5	86	Iceland	3	9.58
6	Germany	0.80	0.91	Switzerland	11	0.78	Singapore	7	84	New Zealand	4	9.26
8	Canada	0.85	0.90	Germany	12	0.78	Netherlands	8	83	Canada	7	9.08
9	Singapore	0.76	0.90	Netherlands	14	0.77	Canada	10	81	Germany	13	8.64
10	Denmark	0.82	0.90	France	16	0.76	Germany	12	79	UK	16	8.31
12	Sweden	0.82	0.90	Canada	19	0.75	UK	14	78	US	19	8.11
14	UK	0.78	0.89	US	20	0.75	Japan	15	76	Japan	20	8.08
20	France	0.78	0.88	Australia	24	0.74	US	17	74	France	23	8.04
24	Finland	0.80	0.88	UK	26	0.74	Japan	15	76	Flawed democracies		
26	Italy	0.77	0.87	Singapore	59	0.70	France	26	69	India	27	7.92
27	Spain	0.76	0.87	Italy	69	0.70	Spain	37	60	Italy	29	7.85
29	Greece	0.77	0.85	Brazil	71	0.69	Turkey	64	45	Brazil	44	7.38
57	Russia	0.73	0.78	Russia	75	0.69	Brazil	69	43	Indonesia	49	6.95
69	Turkey	0.57	0.76	Mexico	80	0.69	Greece	69	43	Mexico	57	6.68
71	Mexico	0.65	0.76	China	87	0.68	Italy	69	43	Hong Kong	66	6.46
79	Brazil	0.59	0.74	Greece	91	0.68	India	85	38	Hybrid regimes		
91	China	0.50	0.72	Indonesia	97	0.67	Thailand	85	38	Turkey	98	5.12
108	Indonesia	0.48	0.68	Japan	104	0.66	China	100	36	Iraq	111	4.23
135	India	0.41	0.59	India	114	0.65	Mexico	103	35	Authoritarian regimes		
				Turkey	125	0.62	Indonesia	107	34	Russia	132	3.39
							Russia	136	27	China	144	3

Source: Economist Intelligence Unit, UNDP, World Economic Forum, Transparency International

Pension Fund Asset Allocation: Largest 7 Pension markets

Pension Fund Asset Allocation (2001 vs. 2014)								
	2001				2014			
	Equities	Bonds	Cash	Other	Equities	Bonds	Cash	Other
Australia	62%	19%	5%	14%	51%	15%	8%	26%
Canada	62%	26%	2%	10%	41%	35%	2%	22%
Japan	52%	46%	0%	2%	33%	57%	3%	7%
Netherlands	44%	44%	11%	1%	30%	55%	0%	15%
Switzerland	36%	35%	20%	9%	29%	36%	7%	28%
UK	67%	18%	5%	10%	44%	37%	3%	16%
US	65%	28%	2%	5%	44%	25%	2%	29%

DB-DC Asset Split (2001-2014)				
	2001		2014	
	DC	DB	DC	DB
Australia	83%	17%	85%	15%
Canada	3%	97%	4%	96%
Japan	0%	100%	3%	97%
Netherlands	2%	98%	5%	95%
Switzerland*	49%	51%		
UK	8%	92%	29%	71%
US	52%	48%	58%	42%

*DC assets in Switzerland are cash balance plans and are excluded from the analysis in 2014.

Total Pension Assets - 2014		
	Total Assets (USD billion)	% of GDP
Australia	1,675	113%
Canada	1,526	85%
Japan	2,862	60%
Netherlands	1,457	166%
Switzerland	823	121%
UK	3,309	116%
US	22,117	127%
Total global pension assets	36,119	84%

Source: Towers Watson (2015)

An “Asset Allocation Puzzle”

In a 1997 study, 4 financial advisors provided asset allocation recommendations for different types of investors—conservative, moderate and aggressive

Their advice on the ratio of bonds to stocks varied with investor-type. This is contrary to Markowitz and was considered a puzzle by the authors

Asset Allocation Puzzle				
Advisor and investor type	% of portfolio			ratio of bonds to stocks
	cash	bonds	stocks	
Fidelity				
Conservative	50	30	20	1.5
Moderate	20	40	40	1
Aggressive	5	30	65	0.46
Merrill Lynch				
Conservative	20	35	45	0.78
Moderate	5	40	55	0.73
Aggressive	5	20	75	0.27
Jane Bryant Quinn				
Conservative	50	30	20	1.5
Moderate	10	40	50	0.8
Aggressive	0	0	100	0
New York Times				
Conservative	20	40	40	1
Moderate	10	30	60	0.5
Aggressive	0	20	80	0.25

Source: Mankiw et al (1997)

Conclusions

- Global demographics **affect macro fundamentals** that influence economic growth and asset prices. Unprecedented demographic changes are rendering **macro-policy ineffective** due to misdirection and neglect of demographic changes.
- **Worker dynamics** (activity rates, wages, unemployment, youth unemployment) all affect growth in combination with technology and capital.
- **Global consumer changes** affect sectors & have macro implications. Financial services face new opportunities/challenges: **product development, risk management and asset allocation**
- Macro-finance models need to be evaluated in context of **regime changes, greater complexity, high degree of heterogeneity and incomplete markets.**
- EM challenges are different: employment, education, infrastructure & inequality.
- **DISTRIBUTIONS MATTER. PEOPLE BEHAVIOUR MATTERS.**

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