

Econ 710  
Population Economics  
Course Outline

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Winter 2020

Monday 10:30am to 12:00pm and Thursday  
2:00pm to 3:30pm  
Room: KTH 334.

# COURSE OBJECTIVES

The course will introduce students to the analysis of the economic consequences of demographic change; emphasis will be placed on analytical techniques drawn from demography as well as economics.

## 1 GENERAL READINGS AND RESOURCES

Selected web sites of interest:

1. QSEP (McMaster Research Institute for Quantitative Studies in Economics and Population) Research Program: <http://socserv.mcmaster.ca/qsep/>. Working papers on various aspects of population changes in relation to economics, with a Canadian focus of interest (the program is hosted at McMaster).
2. SEDAP (Social and Economic Dimensions of an Aging Population) Research Program: <http://socserv.mcmaster.ca/sedap/>. A program led by QSEP, with a specific focus on aging (active 2005-2012).
3. Statistics Canada: <http://www.statcan.ca/start.html>. Go to data, select Population as a theme to see downloadable data on the Canadian population. Life tables can be found here: <https://www150.statcan.gc.ca/n1/en/catalogue/84-537-X>. An interesting tool on dynamic historical age pyramids for Canada can be found here: <https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/pyramid/pyramid.cfm?type=1&geo1=01>
4. NBER (National Bureau of Economic Research): <http://www.nber.org/>. The US-based NBER supports various programs of research in economics, among which is a program on aging. They publish working papers (those on aging are available at <https://www.nber.org/papersbyprog/AG.html>.) News about the research program on aging can be found at: <https://www.nber.org/programs/ag/>
5. Population Reference Bureau. The PRB is a US based private not-profit organization funded by the WHO, the US Bureau of Census, Johns Hopkins School of Public Health, among others, to collect and analyze data on global and reproductive health as well as changes in

the world population. Explore this site for up-to-date world population estimates and analysis, including the “[latest] World Population Data Sheet”: <http://www.prb.org/>. Their 2018 World Population Data Sheet With Focus on Changing Age Structures (<https://www.prb.org/2018-world-population-data-sheet-with-focus-on-changing-age-structures/>) is of particular interest.

6. Gapminder: a great source of data and tools about population (among other topics), including presentations (Ted Talks) by Hans Rosling, the founder of Gapminder: <https://www.gapminder.org/>
7. Scott Manning, compendium of data on the world population since the apparition of homo sapiens: <https://scottmanning.com/content/year-by-year-world-population-estimates/>

## 2 COURSE EVALUATION

There will be up to four assignments and a major paper on an agreed topic. The major paper will count for half of the final grade, the assignments and class participation for the other half. The first two assignments will be due at the end of weeks 3 and 6; the major paper will be due July 15.

## 3 COURSE READINGS

1. INTRODUCTION (week 1)
  - (a) F.T. Denton and B.G. Spencer, “Population Aging and Its Economic Costs: A Survey of the Issues and Evidence”, *Canadian Journal on Aging* (2000).
  - (b) Ronald Lee, *Macroeconomics, Aging and Growth*, NBER Working Paper 22310 (2016)
2. DEMOGRAPHIC BACKGROUND AND ANALYSES (weeks 2 and 3)
  - (a) Life tables, some historical context, and projections:
    - i. Statistics Canada, (Detailed) Life Tables, Canada, 2015-2017

- ii. for a detailed reference document, see Statistics Canada, “Methods for Constructing Life Tables for Canada, Provinces and Territories”, 84538X.
  - iii. Jim Oeppen and James W. Vaupel, “Broken Limits to Life Expectancy” *Science*, Vol 296, 10 May 2002 [www.sciencemag.org](http://www.sciencemag.org)
  - iv. Cutler, David and Meara, Ellen. “Changes in the Age Distribution of Mortality Over the 20th Century”, <http://ideas.repec.org/p/nbr/nberwo/8556.html>
- (b) Definition of ‘Old’: Frank T. Denton and Byron G. Spencer, “How Old Is Old? Revising the Definition Based on Life Table Criteria”, *Mathematical Population Studies*, Vol. 7, No. 2, 1999.
  - (c) Frank T. Denton and Byron G. Spencer, “Some Demographic Consequences of Revising the Definition of Old to Reflect Future Changes in Life Table Probabilities”, *Canadian Journal on Aging*, Vol 21, No 3, 2002.
  - (d) John B. Shoven and Gopi Shah Goda, *Adjusting Government Policies for Age Inflation* NBER Working Paper 14231, August 2008.

### 3. IMPLICATIONS OF POPULATION CHANGE FOR GOVERNMENT EXPENDITURES AND SUPPORT RATIOS (week 4)

- (a) Frank T Denton and Byron G Spencer, “Prospective Changes in Population and Their Implications for Government Expenditures” in Courchene, Conklin, and Cook, eds., *Ottawa and the Provinces: The Distribution of Money and Power (Toronto, Ontario Economic Council, 1985)*; Appendix material only.
- (b) Frank T. Denton and Byron G. Spencer, “Population Aging and the Maintenance of Social Support Systems” *Canadian Journal on Aging* 1997, pp. 485-98.
- (c) Havi Echenberg, James Gauthier, André Leonard, *Some Public Policy Implications of an Aging Population*, Library of Parliament, <http://www.lop.parl.gc.ca/content/lop/researchpublications/cei-07-e.htm>
- (d) Ronald Lee and Ryan Edwards, “The Fiscal Effects of Population Aging in the US: Assessing the Uncertainties”, in Poterba (Ed.)

*Tax Policy and the Economy*, Vol 16, MIT Press, <http://www.nber.org/chapters/c10865>

4. DEMOGRAPHIC CHANGE AND THE MACROECONOMY (Weeks 5 and 6)

- (a) Frank T. Denton and Byron G. Spencer, “A Simulation Analysis of the Effects of Population Change on a Neoclassical Economy” *Journal of Political Economy*, March/April 1973.
- (b) Frank T Denton and Byron G Spencer, “Population Aging, Older Workers, and Canadas Labour Force”, *Canadian Public Policy*, Vol. 35, No. 4, pp. 481-492, December 2009.
- (c) Nicole Maestas, Kaitlin J. Mullin and David Powell, *The effect of population aging on economic growth, the labor force and productivity*, NBER 22452, July 2016.

5. AGING, SAVINGS AND RETIREMENT (weeks 7 and 8)

- (a) Aging and optimal public saving in a neo-classical economy (Ramsey framework): David M Cutler, James M Poterba, Louise M Sheiner, and Lawrence H Summers, *An Aging Society: Opportunity or Challenge?*, Brookings Papers on Economic Activity, 1990(1). This is a long paper (73 pages) and we will focus our discussion on sections 2 (pages 16 to 28) and 5 (pages 45-53) as well as the discussions by George Akerlof (pages 57-62) and Martin Baily (pages 63-67).

Section 2: 1st model, ratio of capital to worker kept constant. Discuss the main equations describing such an economy, describe the simulation (mostly the Solow effect) in words (intuition). Use our spreadsheet to find the consumption per capita path that would keep this ratio (capital per worker) constant in an economy going through the boom-bust sequence.

Section 2: 2nd model, optimal saving rate (through fiscal policy). Comment on the social planner utility function and the constraint (intuitions and realism). Search how to solve the social planner problem and whether you agree with their solution (this is a Ramsey framework). Comment on their main finding regarding saving and fiscal policy. Using the spreadsheet, try to find an optimal

saving rate (maximize consumption per capita). Discuss the basic intuition behind the Ramsey framework: infinite horizon with a time discount rate. Do you think it is realistic? (Requires you research the meaning of the TDR the optional, recommended paper by Martin Feldstein might help: Martin Feldstein, 1964, "The Social Time Preference Discount Rate in Cost Benefit Analysis", *The Economic Journal*, 75(294): 360-79).

Section 5: discuss their comment on inter-generational transfers (pages 54-55). Also discuss their discussion of further development pages 55, particularly #1 and #3 (we will discuss #2 and 4 extensively in our next session). For point 1, the optional reading by Paul Beaudry et al. 2005: Paul Beaudry, Fabrice Collard and David Green, 2005, "Explaining productivity growth: the role of demographics", *International Productivity Monitor*, 10: 45-58 will be most helpful.

6. Aging and private saving: Overlapping Generations (OLG) and the Life-Cycle Hypothesis (LCH)

- (a) David N Weil, 1997, "The Economics of Population Aging", Chapter 17 in in Mark Rosenzweig and Oded Stark (editors) *Handbook of Population and Family Economics*, Handbook in Economics 14, North-Holland, Elsevier. Section 4, 'Aging in a life cycle model' (pages 994-1000)
- (b) John Burbidge & James B. Davies, 1994, "Household Data on Saving Behavior in Canada", in James Poterba (editor), *International Comparisons of Household Saving*, University of Chicago Press.
- (c) Angus Deaton, 1997, *The Analysis of Household Surveys A Microeconomic Approach to Development Policy*, World Bank and Johns Hopkins University Press, Baltimore and London: Chapter 6 Saving and consumption smoothing; pages 335-7 (introduction), 337-350 (section 1: Life-cycle interpretations of saving), and 383-393 (section 5: Saving, consumption, and inequality).
- (d) Optional (complementary): A paper examining the hypothesis among population of hunter-gatherers, not by economists, but intriguing: Hillard Kaplan, Kim Hill, Jane Lancaster, and A. Mag-

dalena Hurtado, 2000 “A Theory of Human Life History Evolution: Diet, Intelligence, and Longevity”, *Evolutionary Anthropology* 9(4): 156-185

- (e) Optional (complementary): Martin Browning and Thomas Crossley, 2001, “The Life-Cycle Model of Consumption and Saving”, *Journal of Economic Perspectives* 15(3): 3-22

7. The role of pension plans:

- (a) David N Weil, 1997, “The Economics of Population Aging”, Chapter 17 in in Mark Rosenzweig and Oded Stark (editors) *Handbook of Population and Family Economics*, Handbook in Economics 14, North-Holland, Elsevier. Section 5, ‘Social security and other government programs’ (pages 1000-1006) only.
- (b) Andrea Ferrero, Carlos Cavahlo, and Fernando Nechio, 2015 *Demographics and Real Interest Rates: Inspecting the Mechanism*, paper prepared for the 2015 Conference on “Post-Crisis Slump”, European Commission, Brussels October 1-2.
- (c) Chulhee Lee, 2001 “The expected length of male retirement in the U.S.: 1850-1990”, *Journal of Population Economics*, 14: 641-650.
- (d) Optional (complementary): Elod Takats, 2010, *Ageing and asset prices*, Bank for International Settlements, Working Paper 318 (25 pages).

8. The determinants of retirement age and the political economy of pensions:

- (a) Michael Hurd, 1997, “The Economics of Individual Aging”, Chapter 16 in Mark Rosenzweig and Oded Stark (editors) *Handbook of Population and Family Economics*, Handbook in Economics 14, North- Holland, Elsevier, section 2.4 “Models to explain retirement”, (pages 905-912).
- (b) Tammy Schirle, 2008, *Greener Pastures: Understanding the Impact of Retirement Incentives in Defined-benefit Pension Plans*, C.D. Howe Institute Commentary, 262.
- (c) Dora Costa, 1998, “The Problem of Old Age”, and “The Evolution of Retirement”, chapters 1 (pages 1 to 5) and 2 (pages 6 to 31)

of *The Evolution of Retirement: An American Economic History, 1880- 1990*, University of Chicago Press.

- (d) Theodore C. Bergstrom and John L. Hartman, 2005 *Demographics and the Political Sustainability of Pay-as-you-go Social Security*, Working Paper, University of California Santa Barbara (published as chapter 5 of *Pensions strategies in Europe and the United States*, Robert Fenge, Georges de Menil, and Pierre Pestieau editors, MIT Press, 2008.)
- (e) Optional: Michael Hurd, James Smith and Julie Zissimopoulos, 2004, “The effects of subjective survival on retirement and social security claiming”, *Journal of Applied Econometrics* 19: 761-775; An interesting contribution on models to explain retirement decisions (do individuals plan ahead?)
- (f) Optional: Miguel Gouveia, 1997 “Majority rule and the public provision of a private good”, *Public Choice*, 93: 221-244. A seminal paper on the political economy of public programmes.
- (g) Optional: Vincenzo Galasso and Paolo Profeta, 2004, “Lessons for an Aging Society: the Political Sustainability of Social Security Systems”, *Economic Policy*, 19(38): 63-115. An ambitious exercise at calibrating a general equilibrium model of political choice over pensions.

## 9. AGING AND HEALTH (weeks 9 and 10)

- (a) Quantifying health at the population level
  - i. David M. Cutler, Elizabeth Richardson, Theodore E. Keeler and Douglas Stayer, 1997, *Measuring the Health of the US Population* Brookings Papers on Economic Activity, Microeconomics, 217-82
  - ii. John Mullahy 2001 “Live long, live well: Quantifying the health of heterogeneous populations”, *Health Economics*, 10:429-440
  - iii. Optional: Luis Prieto & José A. Sacristan, 2003 “Problems and solutions in calculating quality-adjusted life years (QALYs)”, *Health and Quality of Life Outcomes*, 1:80

- iv. Optional: Dora L. Costa, 2002 “Changing chronic disease rates and long-term declines in functional limitation among older men”, *Demography*, 39(1): 119-137
  - v. Optional: Paul Dolan and Robert Metcalfe, 2012, “Valuing Health: A Brief Report on Subjective Well-Being versus Preferences”, *Medical Decision Making*, 32(4): 578-82
- (b) Age as time to death rather than time from birth: the Red Herring
- i. Andreas Werblow, Stefan Felder and Peter Zweifel, 2007, “Population ageing and health care expenditures: A school of ‘red herrings’?”, *Health Economics* 16: 1109-1126
  - ii. Brigitte Dormont, Michel Grignon, and H el ene Huber 2006, “Health Expenditure Growth: Reassessing the Threat of Ageing”, *Health Economics*, 15: 947-963.
  - iii. Illustration 1: Thai T Dang, Pablo Antolin and Howard Oxley 2001 *Fiscal Implications of Ageing* OECD Economic Department WP 305 and OECD 2006 *Projecting OECD Health and Long-Term Care Expenditures*, OECD Economic Department WP 477
10. SPECIAL TOPICS AND PROJECT PRESENTATIONS (weeks 11 and 12)
- (a) Fertility
- i. James Feyrer, Bruce Sacerdote, and Ariel Dora Stern, 2008, “Will the Stork Return to Europe and Japan? Understanding Fertility within Developed Nations”, *The Journal of Economic Perspectives*, 22(3): 3-22.
  - ii. V Joseph Hotz, Jacob Alex Klerman and Robert J Willis, 1997 “The Economics of Fertility in Developed Countries”, in Mark Rosenzweig and Oded Stark (editors) *Handbook of Population and Family Economics*, Handbook in Economics 14, North-Holland, Elsevier. Focus on sections 2 (277-290), 3 (291-308), 5.1 (322-332) and 5.2 (333-334).
- (b) Migrations and the wage rate
- i. Rachel M. Friedberg and Jennifer Hunt, 1995 “The Impact of Immigrants on Host Country Wages, Employment and Growth” *The Journal of Economic Perspectives*, Vol. 9, No. 2: 23-44

- ii. Jennifer Hunt, 1992 “The Impact of the 1962 Repatriates from Algeria on the French Labor Market” *Industrial and Labor Relations Review*, Vol. 45, No. 3: 556-572
- iii. Optional: David Card, “The Impact of the Mariel Boatlift on the Miami Labor Market”, *Industrial and Labor Relations Review*, 43: 245-257, January 1990
- iv. Optional: Timothy J. Hatton and Jeffrey G. Williamson. Chapter 14 “The Labor Market and Fiscal Impact of Immigration” (pages 289-312) and Chapter 18 “World Mass Migration: Past, Present, and Future” (pages 393-404), in *Global Migration and the World Economy Two Centuries of Policy and Performance*. MIT Press, Cambridge Mass. and London, 2005.

## **IMPORTANT NOTICES**

### **COURSE MODIFICATION NOTICE**

The instructor and university reserve the right to modify elements of the course during the term. The university may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. It is the responsibility of the student to check his/her McMaster email and course websites weekly during the term and to note any changes.

### **FACULTY OF SOCIAL SCIENCES E-MAIL COMMUNICATION POLICY**

In order to encourage participation outside of class, we will use the discussion tools of Avenue To Learn. Students should be aware that, when they access the electronic components of this course, private information such as first and last names, user names for the McMaster e-mail accounts, and program affiliation may become apparent to all other students in the same course. The available information is dependent on the technology used. Continuation in this course will be deemed consent to this disclosure.

Effective September 1, 2010, it is the policy of the Faculty of Social Sciences that all e-mail communication sent from students to instructors (including TAs), and from students to staff, must originate from the students own McMaster University e-mail account. This policy protects confidentiality and confirms the identity of the student. It is the students responsibility to ensure that communication is sent to the university from a McMaster account. If an instructor becomes aware that a communication has come from an alternate address, the instructor may not reply at his or her discretion.

## **ALTERNATE/ACCESSIBLE FORMAT**

If you require this information in an alternate/accessible format, please contact the Department of Health, Aging & Society at 905.525.9140 ext. 27227 or [hasdept@mcmaster.ca](mailto:hasdept@mcmaster.ca)

## **ACADEMIC INTEGRITY**

Academic Integrity: You are expected to exhibit honesty and use ethical behaviour in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity.

Academic dishonesty is to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage. This behaviour can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: “Grade of F assigned for academic dishonesty”), and/or suspension or expulsion from the university.

It is your responsibility to understand what constitutes academic dishonesty. For information on the various types of academic dishonesty please refer to the Academic Integrity Policy, located at <http://www.mcmaster.ca/academicintegrity>

The following illustrates only three forms of academic dishonesty:

1. Plagiarism, e.g. the submission of work that is not ones own or for which other credit has been obtained.
2. Improper collaboration in group work.
3. Copying or using unauthorized aids in tests and examinations.

## **Academic Accommodation of Students with Disabilities**

Students who require academic accommodation must contact Student Accessibility Services (SAS) to make arrangements with a Program Coordinator. Academic accommodations must be arranged for each term of study. Student Accessibility Services can be contacted by phone 905-525-9140 ext. 28652 or e-mail [sas@mcmaster.ca](mailto:sas@mcmaster.ca). For further information, consult McMaster University's Policy for Academic Accommodation of Students with Disabilities: <http://www.mcmaster.ca/policy/Students-AcademicStudies/AcademicAccommodation-StudentsWithDisabilities.pdf>

## **Avenue to Learn**

In this course we will be using Avenue to Learn. Students should be aware that, when they access the electronic components of this course, private information such as first and last names, user names for the McMaster e-mail accounts, and program affiliation may become apparent to all other students in the same course. The available information is dependent on the technology used. Continuation in this course will be deemed consent to this disclosure. If you have any questions or concerns about such disclosure please discuss this with the course instructor.