Lifecycle Impacts of the Financial and Economic Crisis on Household Optimal Consumption, Portfolio Choice, and Labor Supply

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Motivation and Research Question

- Financial crisis (capital market): workers lost a substantial portion of their retirement saving
- Economic crisis (labor market): high unemployment and lower earnings; lower contributions to Social Security and private pensions

- ✓ How should individuals (optimally) react to the combined financial & economic crisis?
- ✓ Which age groups are most affected?
- ✓ What are possible long term consequences for individuals?

Our Findings

- We find both short- and long term (‘scarring’) effects of crises:

- Young workers:
  - Work less at the beginning and more later in life
  - Retire later
  - Substantially reduce consumption early and late in life
  - Invest less (more) riskier in the short (long) term; buy less longevity risk insurance

- Older workers (near retirement):
  - Work more
  - Retire later
  - Consume less
  - Invest less (more) riskier in the short (long) term; buy less longevity risk insurance

Literature & Contribution

- Recent literature on LC-portfolio choice
  - Stock returns: i.i.d. normal distributed
  - Labor income: Permanent & transitory shocks i.i.d.
  - Relation: Correlation (Cocco et al. 2005 RFS) Cointegration (Benzoni et al. 2007 JF)

- Empirical evidence
  - Finance Lit.: Time-varying investment opportunity set: bull/bear market → low/high vola & high/low mean returns (Guidolin/Timmermann 2008 RFS)
  - Macro: Countercyclical dynamics of labor income risk (Storesletten et al. 2004 JPE)

- Our Contribution
  - ✓ Extension of LC-portfolio model using joint process for stock/labor market risk under a business cycle
  - ✓ Incorporating endogenous work effort, retirement and annuitization decisions

LC-Modell Building Blocks

Utility function
(consumption & leisure)

$$V_t = \frac{\left(C_t\, L_t^{\alpha}\right)^{1-\rho}}{1-\rho} + \beta E_t\left(p_t^s V_{t+1}\right)$$

Labor market: Wage rate stochastic; eco. state dependent

Capital market: Deferred annuity, bond, eco. state dep. risky stock

Housing: Age dependent (det.) costs

Regulation: US SoSe-rules, tax rates

Household: US female; mid-income; RRA=5; α=1.3; WIR(55)=9

Numerical dynamic optimization; simulation of 100,000 life cycles

Consumption

Leisure / labor supply

Asset allocation, annuitization

Retirement

Crisis Definitions

- Financial/Economic crisis:
  - 1st year: -30% downturn in the stock market
  - First 4 years contraction (business cycle)
  - Exogenous into the model (i.e. for all 100,000 simulated LC with optimal feedback controls)

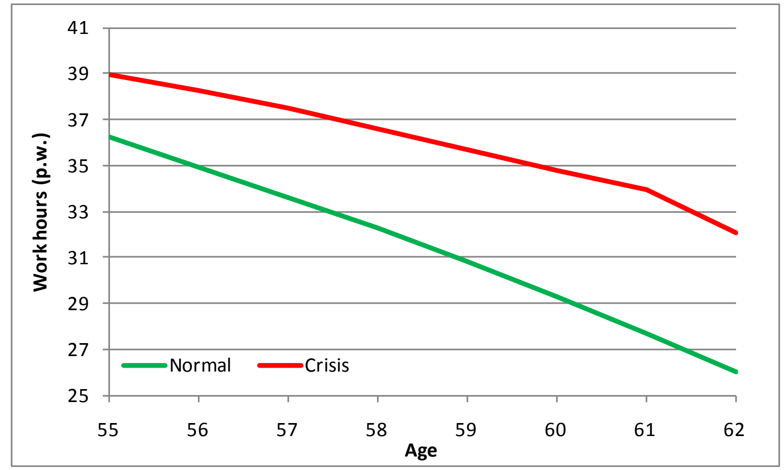
- Individual crisis:
  - Starting in financial/economic crisis
  - At least 2 years unemployed in the first 4 years;
  - Average yearly stock return before age 62 less than 1st quintile;
  - Methodology: Selection from 100,000 simulated LC-Profiles (with optimal feedback controls)

Work Hours and Retirement Age

Age 20

	Retirement Ratio (%)	
Age	Normal	Crisis
62	27.4	8.0
63	6.3	3.6
64	6.6	5.5
65	8.2	8.8
66	24.6	36.3
67	22.3	32.7
68	4.7	5.1
69	0.0	0.1
70	0.0	0.0
Avg. Ret. Age	64.82	65.80

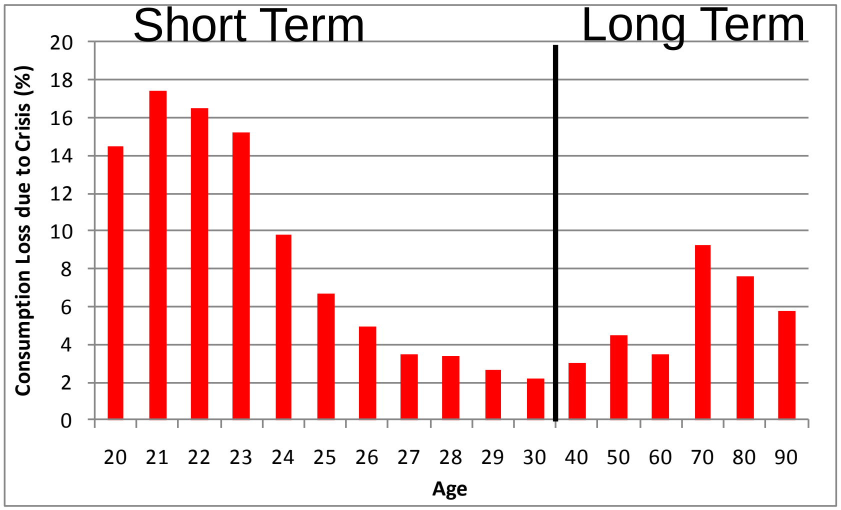
Age 55



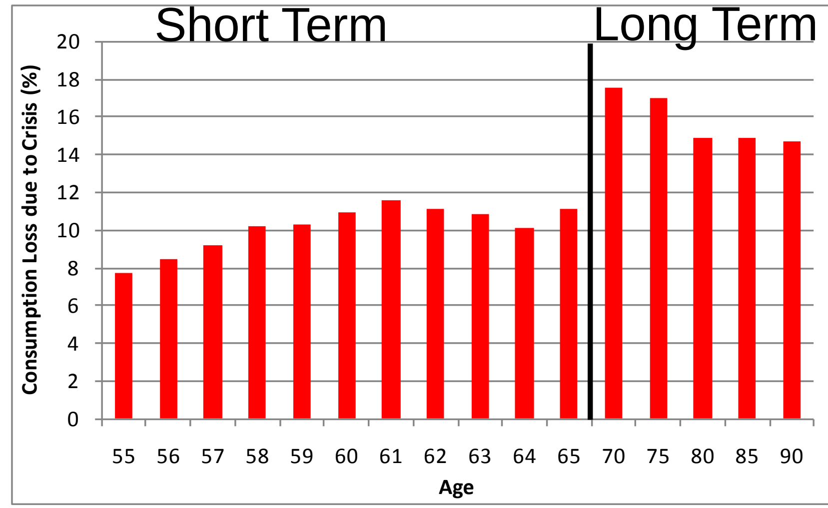
	Retirement Ratio (%)	
Age	Normal	Crisis
62	20.6	4.4
63	7.0	3.3
64	7.0	3.2
65	9.0	10.2
66	26.8	38.2
67	24.4	33.2
68	5.1	7.5
69	0.0	0.0
70	0.0	0.0
Avg. Ret. Age	65.08	66.04

Consumption Loss: Crisis relative to Normal

Age 20



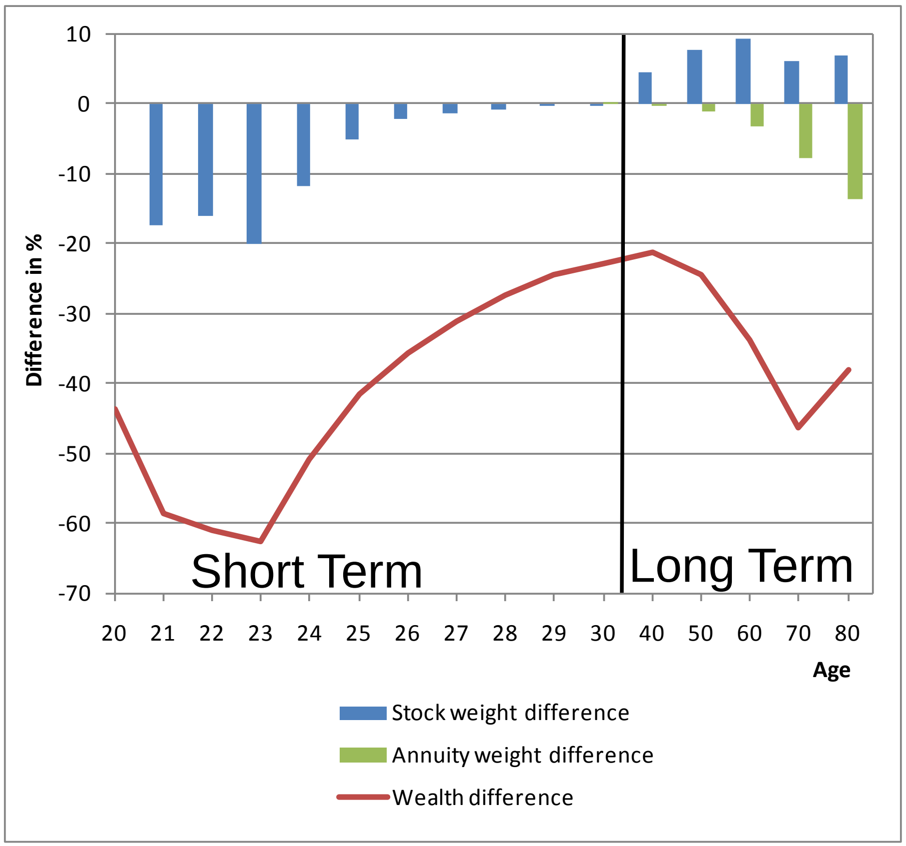
Age 55



- Substantial and persistent for both age groups
  - The Young: Initial loss partly compensated by increased leisure
  - The Elderly: Consumption loss despite higher work effort

Asset Allocation: Crisis relative to Normal

Age 20



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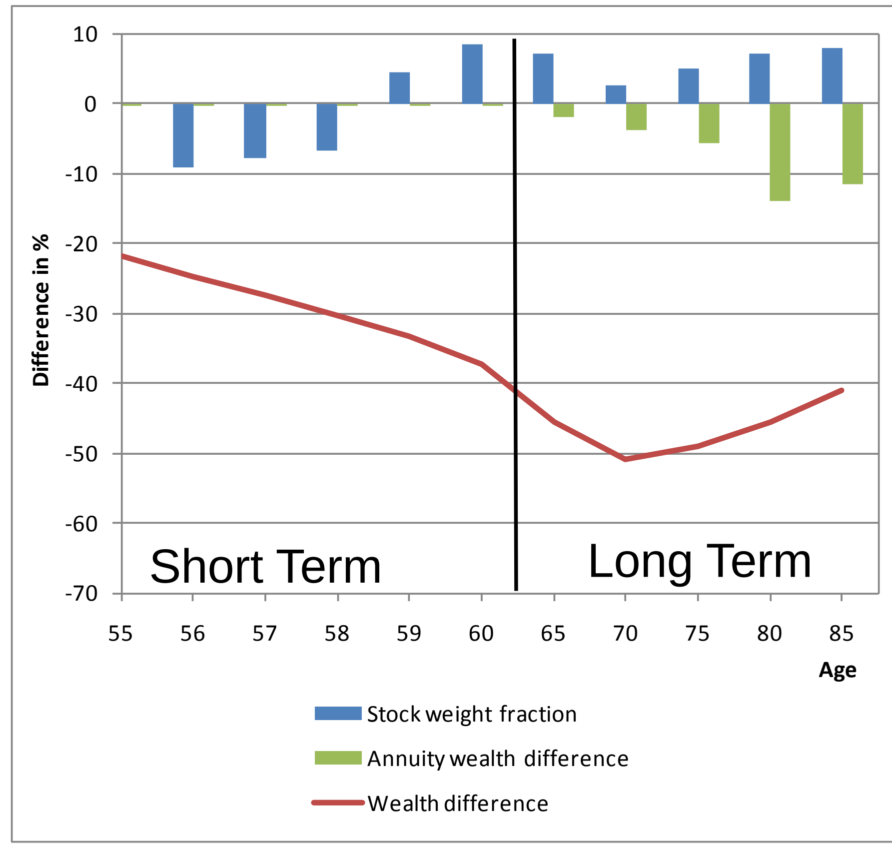

Summary

- We explore the short and long term impact of the financial/economic crisis on (optimal) portfolio choice, labor supply and retirement decisions by using LC-model;

- Incorporation of the financial/economic crisis by using a model of the business cycle driving the stochastic dynamics of stock market and labor market risk

- Short and long term (“Scarring”) effects of crises:
  - Young workers: Work less at the beginning and more later in life; retire later; substantial consumption reduction early and late in life; invest less (more) riskier early (late) in life; buy less longevity risk insurance
  - Older workers (near retirement): Work more, retire later, consume less, invest riskier ; buy less longevity risk insurance