Summary - Behavioral Macroeconomics

Content

Introduction

Definition

Behavioral economics

Combination of **psychology** and **economics** with human **limitations** and **complications**

Framing

The way in which choices are presented matters -> preferences are not reference independent

Anchoring

Preferences depending on previously set anchor

Money Illusion

- Tendency to think in terms of nominal rather than real monetary values
- Any deviation from ‚real' decision making

Historical Context

- Adam Smith: loss aversion
- I. Fisher, V. Pareto, J. M. Keynes: psychological factors in economic choices

- Kahneman & Tversky 1979, Allais, Ellsberg: Expected utility & discountet utility models

Macro Puzzles

- Existence of **involuntary unemployment**
    - fair wage hypothesis

- **Impact of monetary policy** on output and employment
    - money illusion

- Failure of **deflation** to accelerate when **unemployment** is high

- **Undersaving** for retirement
    - hyperbolic discounting

- **Excessive volatility** of **stock prices** relative to their fundamentals

- Persistence of a **self-destructive** underclass

Homo Economicus vs Human

- Unbounded Rationality vs Bounded Rationality
    - Rules of thumb
    - judgement diverges from rationality (overconfidence, optimism, anchoring, extrapolation, salience, similarity)
    - departures from rational choice (prospect theory)
- Unbounded Willpower vs. Self-Control Problems
    - self control problems, some awareness

- Unbounded Selfishness vs. Bounded Selfishness
    - Altruism
    - Selfless actions: contributions to charity
    - Volunteer work
    - Cooperation in prisoners dilemma games & public goods

Macro Overview of Behavioral Influences

Labour Market

- fairness
- sticky prices and wages

Money Market

- money illusion

Savings

- undersaving
- high correlation of consumption and income
- mental accounts

Stock market

- prospect theory
- loss aversion
- endowment effect
- mental accounts
- equity premium puzzle
- disposition effect

Growth

- loss aversion
- habit formation

Labour Market

- Rising wage proifles

Fair Wage-Effort Hypothesis

- workers have a concetpion of fair wage
- if actual wage is lower than the fair-wage, workers reduce their effort
- overpayment does not increase input (max e = 1)
- unemployment is lower for workers with greater education and skill

Model 1

$$e = min(w/w^*, 1)$$
$$Q = \alpha e L$$

α < w*	no employment, demand for labor is zero (marginal cost of production higher than labour)
α > w*	infinite labour demand until w = α

Model 2 with Two Types of Labour

$f(l_1, e(\sigma^2(w))l_2)$ the higher the labour variance, the lower the effort of l2

=> Firm will pay l2 higher wages than marginal product, because the increased effort of l2 is worth it

Rising Consumption Profiles

- wages grow faster than productivity
- people prefere rising consumption profiles

Explanations

- firm specific: human capital - encourage worker to remain in firm
- bonding contract
- risk-aversion / insurance motive
- adverse selection (first pay less than marginal productivity than more -> discourage applications from low-prod. workers)

Model

$\max_{C_t} \int_0^T U(C_t)dt$ subject to $\int_0^T C_t dt = \int_0^T W_t dt = W$ $C_t^* = (1/T)\int_0^T W_t dt.$

adding growth parameter

$$V_t = V[U(C_t), g_t]$$

$$\max_{C_t} \int_0^T V[U(C_t), g_t]dt \quad \text{subject to} \quad \int_0^T C_t dt = \int_0^T W_t dt$$

- concavity of U: pressure to consumption smoothing
- $V_2 > 0$: pressure for consumtion to rise

Money Illusion

Decisions based on nominal quantities rather than on real terms

Evidence

- **Sticky** prices & wages
- **Indexing** does not occur as often as theory would predict (contracts, traded assets,...)
    - if inflation picks up -> slow introduction of indexed contracts
    - if inflation slows down disappearance of indexed contr.
- **Conversation** among people

Explanation

- **Informational frictions** (Informations Unstimmigkeiten)
- Staggering of **contracts**
- **Cost** of price adjustment
- **Near-rationality** (rules of thumb)

Direct and Indirect Effect

Direct Effect

Direct result of individual optimization mistakes

Indirect Effect

The believe that other people‘s behavior is affected by money illusion changes your own behavior.
-> incentive to partly imitate the behavior of nonrational individuums / firms

Model

Real	R	Computer	C
Nominal	N	Human	H

RC vs NC, $\Delta P^{NC} - \Delta P^{RC}$: **individual** money illusion
RC vs RH: coordination problem
NH vs RH, $\Delta P^{NH} - \Delta P^{RH}$: **aggregate** effect of money illusion (individual + indirect effect)

$\Delta P^{NH} - \Delta P^{RH} > \Delta P^{NC} - \Delta P^{RC}$: **indirect effect** exists

Conclusion
- **Direct** and **indirect** effect -> **nominal inertia**
- price **sluggishness** much **smaller after positive** shock than after negative
- **nominal payoffs as proxy** for real
- coordination problem effect not as big as **money illusion** on nominal inertia

Hyperbolic Discounting and Saving

- Self-control problems -> commitment through illiquid assets

Hyperbolic Discounting Functions

- hight discount rate over short horizons
- low discount rate over long horizons
- **time inconsistent preferences**

Model: Income-Consumption Co-movement

Problem with classical model
- to simulate co-movement high discount rate is needed (-> poor economy, everything consumend immediately)

New Model

$$U_t = E_t[u(c_t) + \beta \sum_{\tau=1}^{T-t} \delta^\tau u(c_{t+\tau})]$$

β hyperbolic discount factor
δ discount factor

- consumer has liquid an illiquid assets
- self commitment through illiquid assets needed because of hyperbolic discount function (else he would consume everything)
- in equilibrium consumption equals current level of cash flow

$$c_t = y_t + R_t x_{t-1}$$

- if income in next period is high individuum will invest more in illiquid assets to prevent himself from consuming too much in next period

Problems with the model
- no mention about capital accumulation
- usually not consume all liquid assets -> hold some liquidity
- social commitment devices (marriage, work, friendship,..)

Mental Accounts

3 categories
- current income
- net assets
- future income

Problem with financial innovations

Credit Cards,..
-> MPC of illiquid assets is rising because you can get credit on your illiquid assets immediately
--> no more commitment effect

- first effect positive -> bigger choice set
- second effect negative -> **people would not save enough**

Conclusions

- correlation between consumption and income (-> no consumption smoothing)

- mental accounts
- ricardian equivalence does not hold (taxes have inpact on consumption)
- financial innovation -> savings decline
- financial innovations reduce welfare by providing too much liquidity

Prospect Theory

Kahneman Tversky

$$v(x) = \begin{cases} x^{\hat{\alpha}} & \text{if } x \geq 0, \\ -\lambda(-x)^{\hat{\beta}} & \text{if } x < 0, \end{cases}$$

$$V = \sum_{i \,\epsilon\, gains} w_i^{+} v(x_i) + \sum_{i \,\epsilon\, losses} w_i^{-} v(x_i),$$

Weighted probability function	w
Utility Function	v/V