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# Household Consumption in Denmark

**Mikael Randrup Byrialsen**
randrup@business.aau.dk

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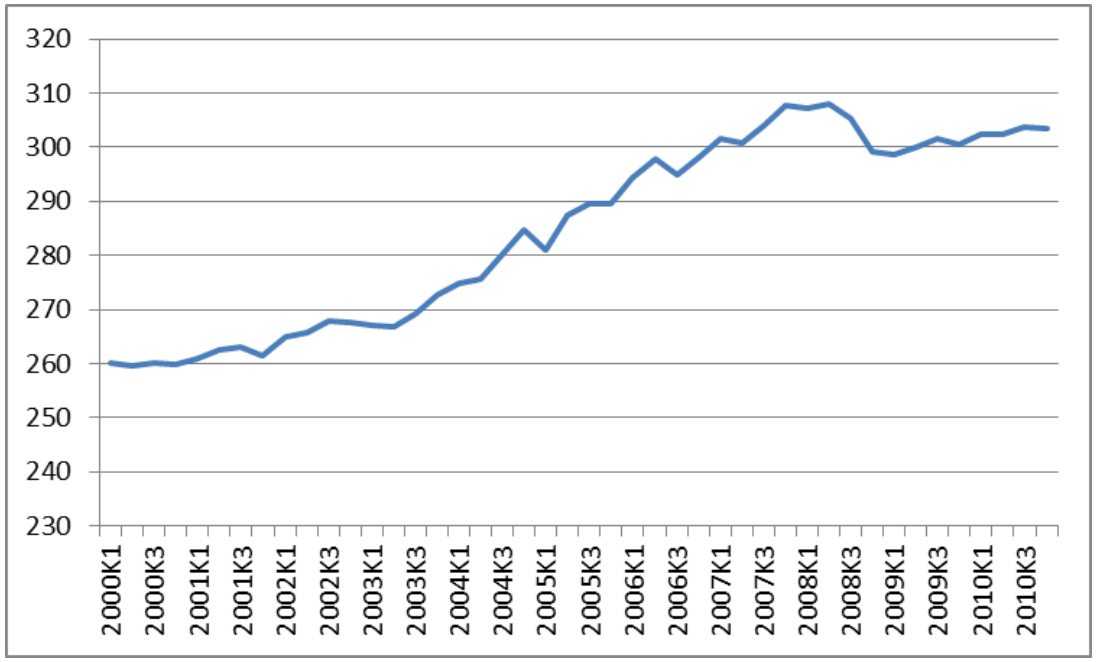
## The Danish Households

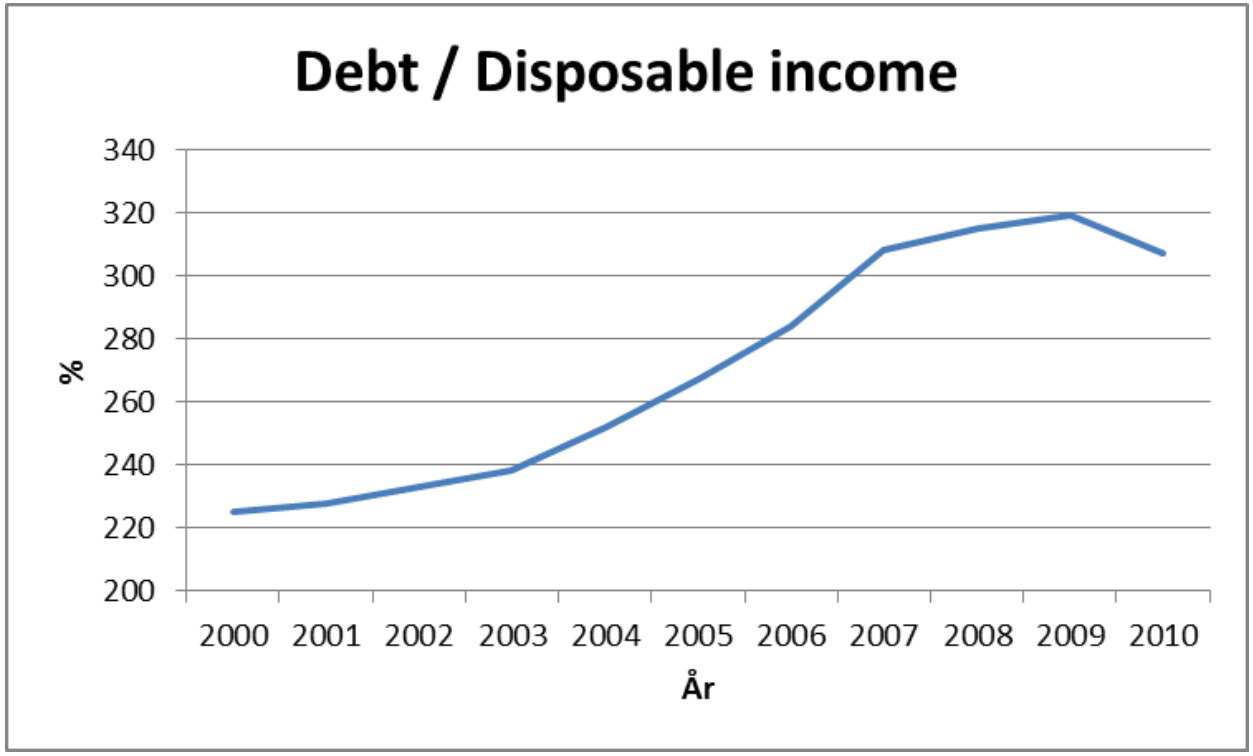
# Real Consumption 2000-2010



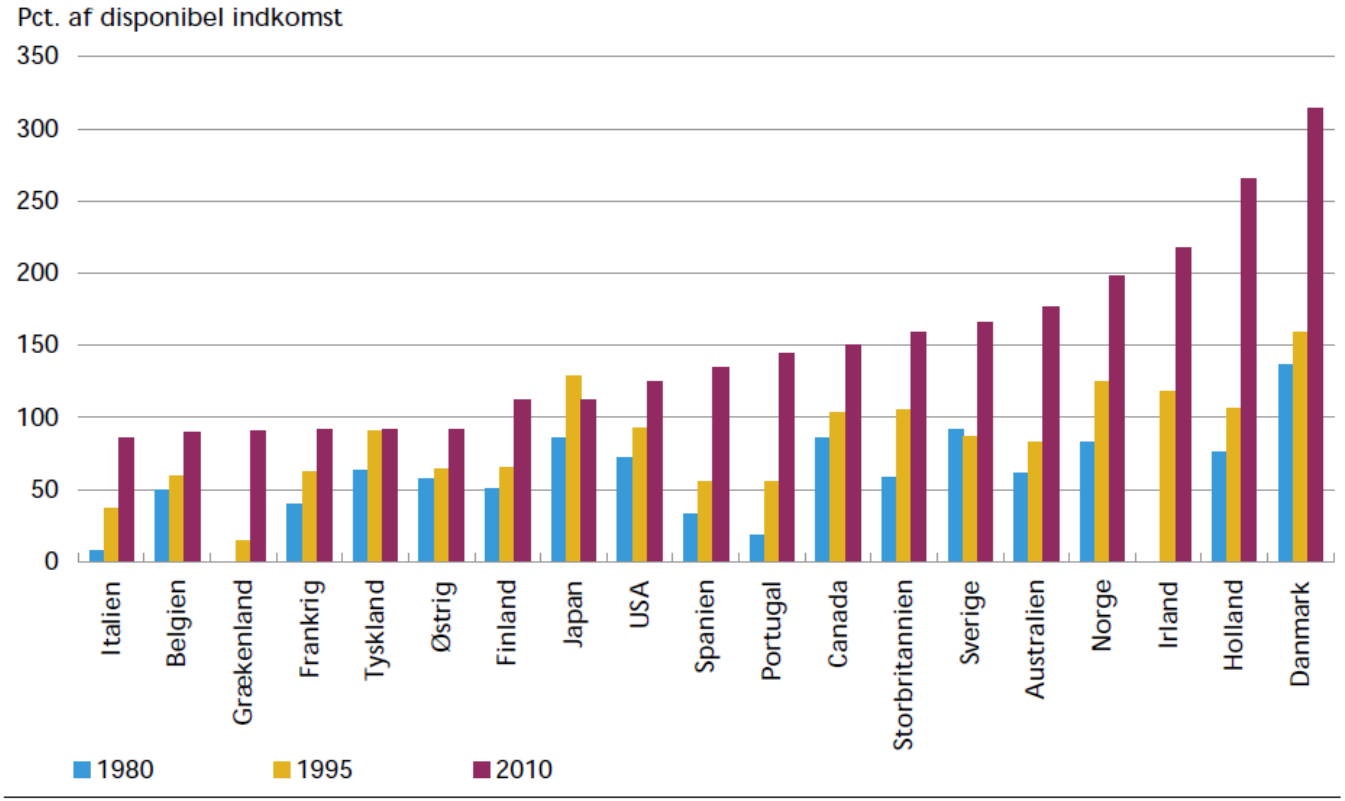
# What Created this Change in Consumption?

- *The Danish Central Bank explains the rising consumption by several phenomena*
  - *Long run: Net wealth and income*
  - *Short run: changes in net wealth, changes in income, unemployment, expected changes in income, inflation, real interest rate and changes in credit restrictions and deviations from the long run solution*

# The Danish Households



# The Danish Households




Anm.: For Tyskland 2010: data er for 2009. For Norge 1980: data er for 1987.

# What Created this Change in Consumption?

- *The Danish Central Bank(2006, 2010, 2011, 2012 & 2013) uses Life Cycle Hypothesis Model to describe the household decisions.*

- *Financial behavior is therefore a part of this rational plan*
  - *Debt is part of an optimal consumption plan and there is no reason to expect that debt should become either excessive or unsustainable.*

- *The agents are isolated, so no room for social effects*

- *Debt is a part of the net wealth*

# Hypothesis

- *"The behavior of the Danish household during the 00's was driven by social processes more than rational planning. This social element, along with an increase in credit-restraints set the stage for not just a bubble but also a recession in the Danish Economy".*

# Motivation

- *Why concentrate on social effects?*

- *"life-cycle model is inadequate by itself to understand moderne (American) consumption"*
- *"social interaction feeds through social norms to affect the way individuals choose to consume and the way that they finance their consumption"* Cynamon and Fazzari (2013)

- *"There are strong psychological and sociological reasons for supposing that preferences are in fact interdependent"* Duesenberry (1967)
- *"The analysis of the forces causing impulses to consume shows that these arise when an individual makes an unfavorable comparison of his living standard with that of someone else."* Duesenberry (1967)

# Motivation

- *Why concentrate on the role of household debt?*
- *"One might have expected debt to be at the heart of most mainstream macroeconomic models – especially the analysis of monetary and fiscal policy" (Eggertsson, Krugman 2012)*
- *"Overall, there is no accepted wisdom about whether and how gross debt may restrain economic activity"(IMF – World Economic Outlook 2012)*

# Topic

- *"This social element, along with an increase in credit restraints set the stage for not just a bubble but also a recession in the Danish Economy"*

- The possible outcome of a model with consumption imitation and debt accumulation

# The Economy

- Closed economy without public sector
- 2 households
- Firms
- Banks

# The Model

Household 1:

$$YD_1 = W + i_d D_2 - rent - i_l L_1$$

$$C_1 = \alpha_{10} YD_1^f + \alpha_{11} wealth_{1,t-1} + \alpha_{12} C_{2,t-1} + \alpha_{13} C_{1,past} + \alpha_{14} \Delta L_1$$

$$YD_{1,t}^f = YD_{1,t-1} + \gamma(YD_{1,t-1}^f - YD_{1,t-1})$$

# The Model

Household II:

$$YD_2 = profit + i_d D_1 + rent - i_M M$$

$$C_2 = \alpha_{20} YD_2^f + \alpha_{21} wealth_{2,t-1} + \alpha_{22} \Delta M_{2,t-1} + \alpha_{23} CG_2^f$$

$$YD_{2,t}^f = YD_{2,t-1} + \gamma (YD_{2,t-1}^f - YD_{2,t-1})$$

# The Consumption

The Consumption Function

$$C = C_1 + C_2$$

$$C = \alpha_{10} YD_1^f + \alpha_{11} formue_{1,t-1} + \alpha_{12} C_{2,t-1} + \alpha_{13} C_{1,tidligere} + \alpha_{14} \Delta L + \alpha_{20} YD_2^f + \alpha_{21} formue_{2,t-1} + \alpha_{22} \Delta M_{2,t-1} + \alpha_{23} KG_2^f$$

# The Consumption

*i) The effect of borrowing*

$$\frac{\partial C}{\partial L} = \alpha_{14} > 0$$

But… at the same time

$$\frac{\partial YD_1}{\partial L} = -i < 0$$

Since $YD_1^f$ depends on $YD_1$

*"Debt is therefore a double-edged sword: borrowing is initially expansionary but it leaves behind a debt burden that is contractionary."*(Palley 2009, p. 3)

# The Consumption Function

*ii) The effect of capital gains*

$$\frac{\partial C_{2,t}}{\partial KG_t} = \frac{\partial C_t}{\partial KG_t} = 0$$

In period t+1

$$\frac{\partial C_{2,t+1}}{\partial KG_t} > 0 \Leftrightarrow \frac{\partial C_{t+1}}{\partial KG_t} > 0$$

# The Consumption Function

*ii) The effect of capital gains*

Three channels:

1. Δ wealth(household 2) → Δ C
2. Δ wealth(household 2) → Δ D → Δid D → Δ YD → Δ YDf → Δ C
3. $CG_t^f = CG_{t-1} + \gamma(CG_{t-1}^f - CG_{t-1}) \rightarrow \Delta$ C

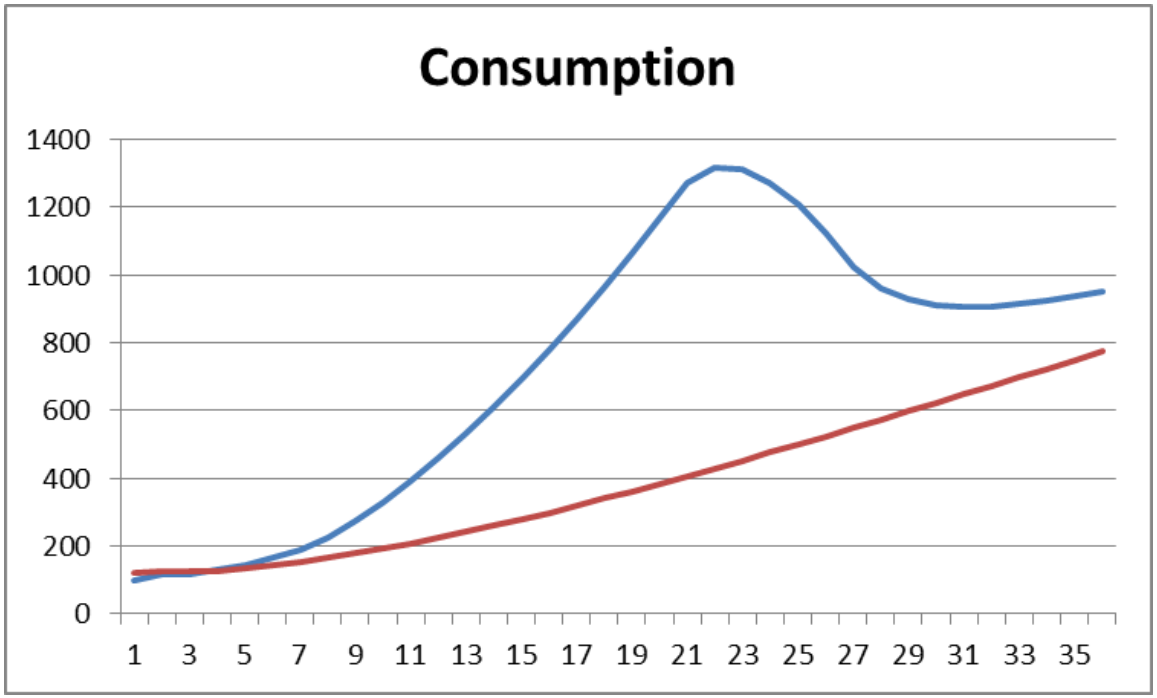
# The Consumption Function

*ii) The effect of capital gains*
*Household 1)*

$$\frac{\partial C_{1,t+1}}{\partial C_{2,t}} > 0 \Leftrightarrow \frac{\partial C_{1,t+1}}{\partial KG_{t-1}} > 0$$

What if the capital gains continue for a longer periods of time?

# Real consumption



# Findings

- Integrating consumption imitation improves our understanding of the household behavior
- Integrating debt accumulation improves our understanding of the household behavior