

# **How Did Low Interest Rates Impact the Cash Holdings of Individual Investors and Firms?**

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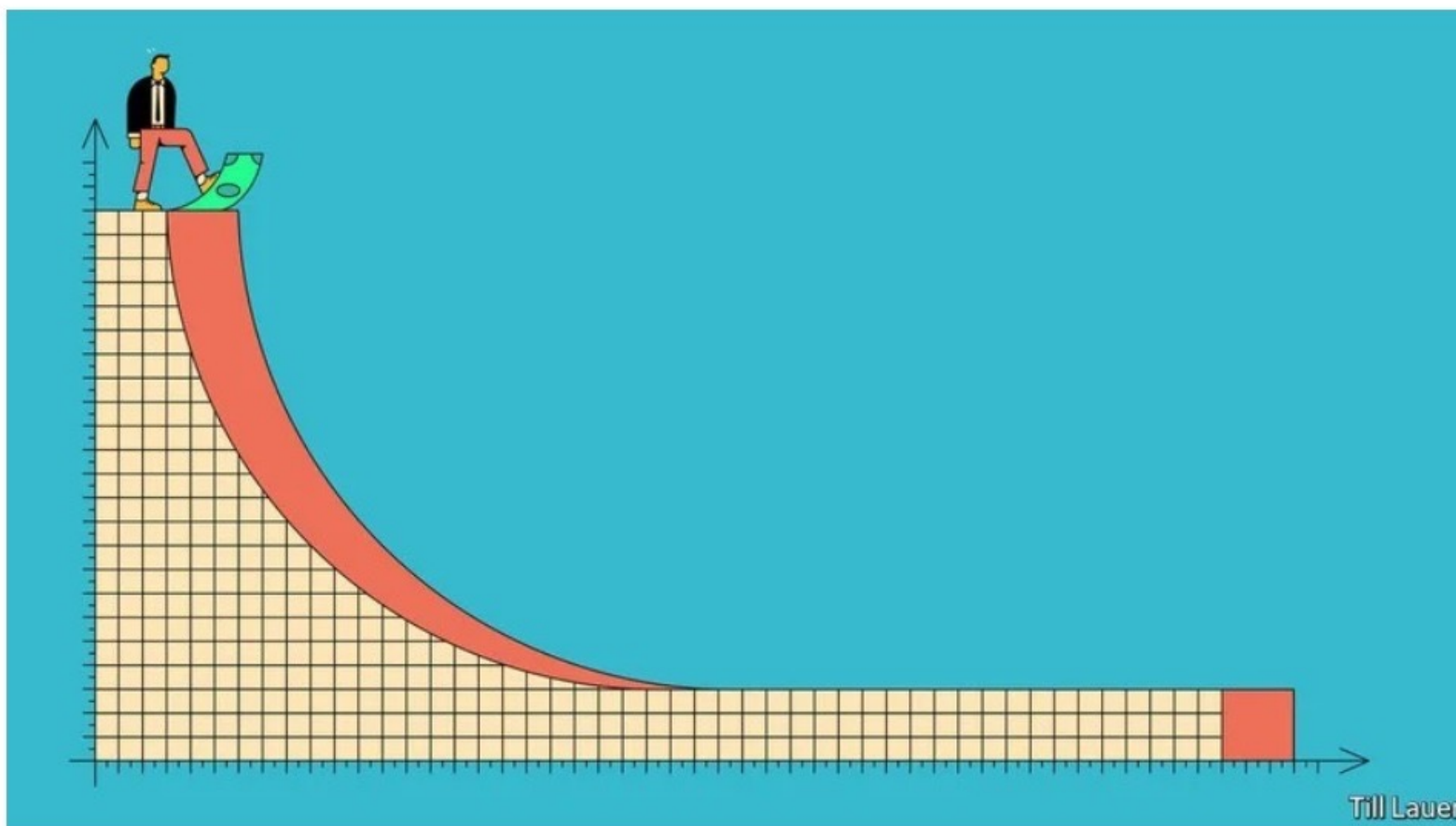
Special report

May 8th 2021 edition >

Low interest rates

# When interest rates turn negative

Banks do less banking with interest rates at zero



# How do low interest rates impact the demand for safe assets?

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## **Investors reduce holdings of safe assets if**

- Risk premia increase (Merton 1971)
- Investors reach for yield (Becker Ivashina 2015, Campbell Sigalov 2020, Cox 1967)

## **Investors may swap bonds for liquid cash and create a liquidity trap**

- Keynes 1936, De Larosière 2019

# Studies are done at either macro or micro levels

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## **Macro-level studies relate interest rates to aggregate cash demand**

- Useful for global policy-making

## **Micro-level studies focus on understanding household behavior**

- Identification of underlying channels
- Useful for targeted policy-making

## **Hard to do micro and macro jointly**

- Lack of comprehensive and granular data on investor holdings

# Our study connects macro and micro data

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## **National accounts of several European countries**

- Consistent ESA 2010 from Eurostat

## **Detailed administrative dataset from Norway**

- Complete asset holdings of every resident (1995-2017)
- Complete asset holdings of every firm (2003-2017)

## **Our dataset is both comprehensive and granular**

- Study both macro- and micro-level effects of interest rates on demand for cash

# Our datasets

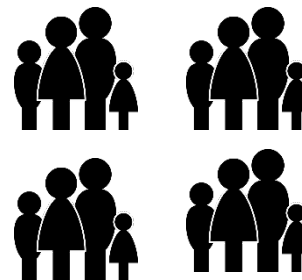
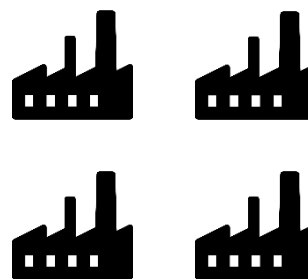
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National Accounts

FRANCE

NORWAY

SWEDEN



Micro Datasets

# We study the cash share

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**Our measure of cash is M2, the sum of:**

- M1 : currency and checkable deposits
- Near money: savings deposits, money market securities and mutual funds, and other time deposits.

**Cash share = cash holdings (M2) / total financial assets**

- Individuals or non-financial firms at the micro level
- Group of individuals and non-financial firms at the macro level

**Definition of cash share is standard**

- Consistent with definitions used in household finance literature
- Consistent across countries

# What we find

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## **1. Aggregate cash share has decreased over past 25 years**

- Norway: 31% to 25% from 1995 to 2020

## **2. Decline driven almost entirely by small number of agents**

- Wealthiest 10% of individuals and firms
- For others, the cash share has remained constant

## **→ Role of cash differs across individuals**

- Top 10% view M2 as investment that responds elastically to interest rates
- Bottom 90% view M2 primarily for cash management purposes



# Roadmap

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- 1. Evolution of interest rates and aggregate cash holdings**
- 2. Breakdown of aggregate cash share**
- 3. Cash share of individual investors**
- 4. Cash share of firms**

# Roadmap

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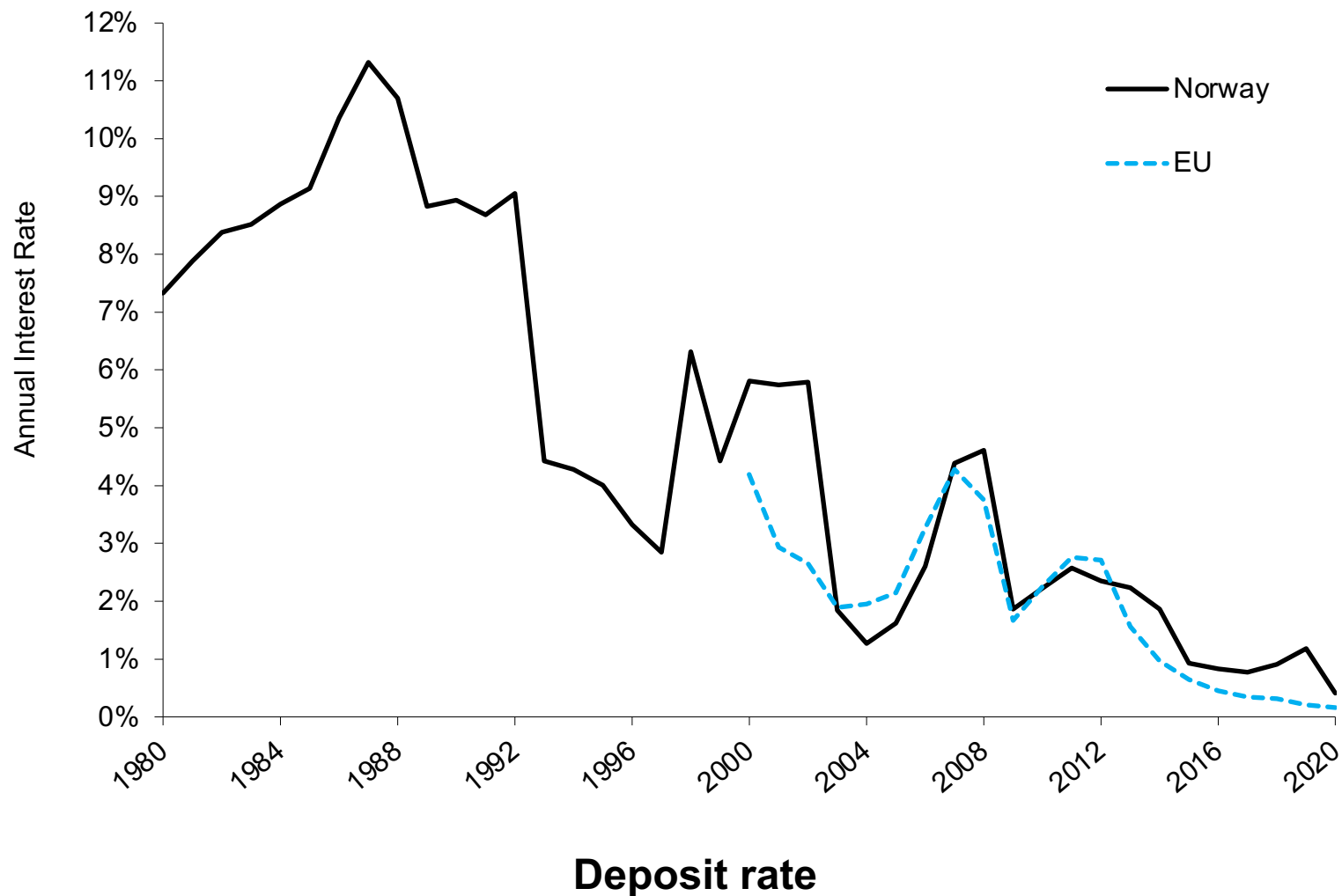
**1. Evolution of interest rates and aggregate cash holdings**

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# Interest rates declined sharply in Norway



# Variables from Eurostat

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## **M2 as a measure of cash holdings**

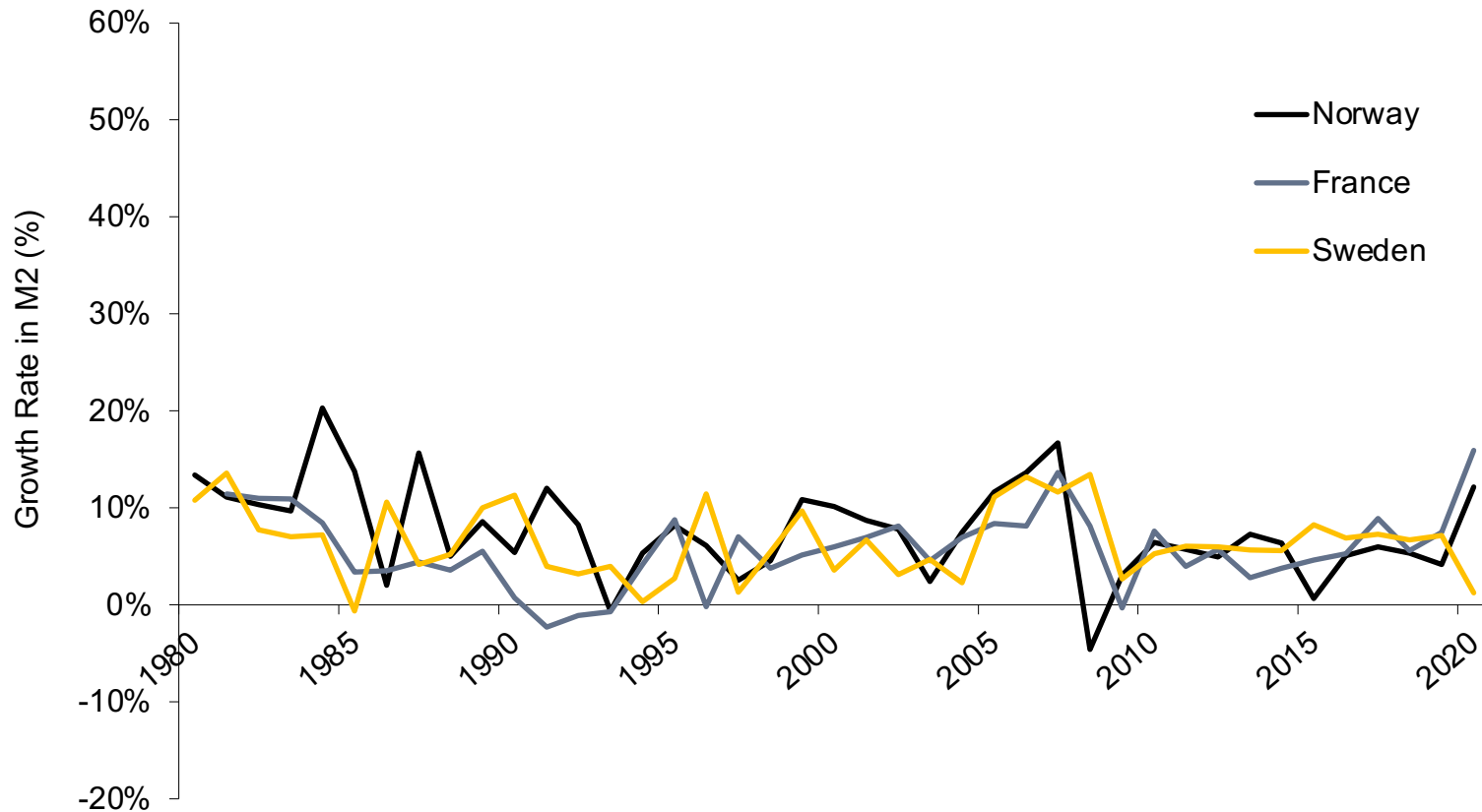
- $M2 = \text{currency notes} + \text{coins} + \text{transferrable deposits} + \text{other deposits}$
- $\text{Aggregate } M2 = \text{Household } M2 + \text{Corporate } M2$

## **Financial assets (FA) = M2 + non-cash financial assets**

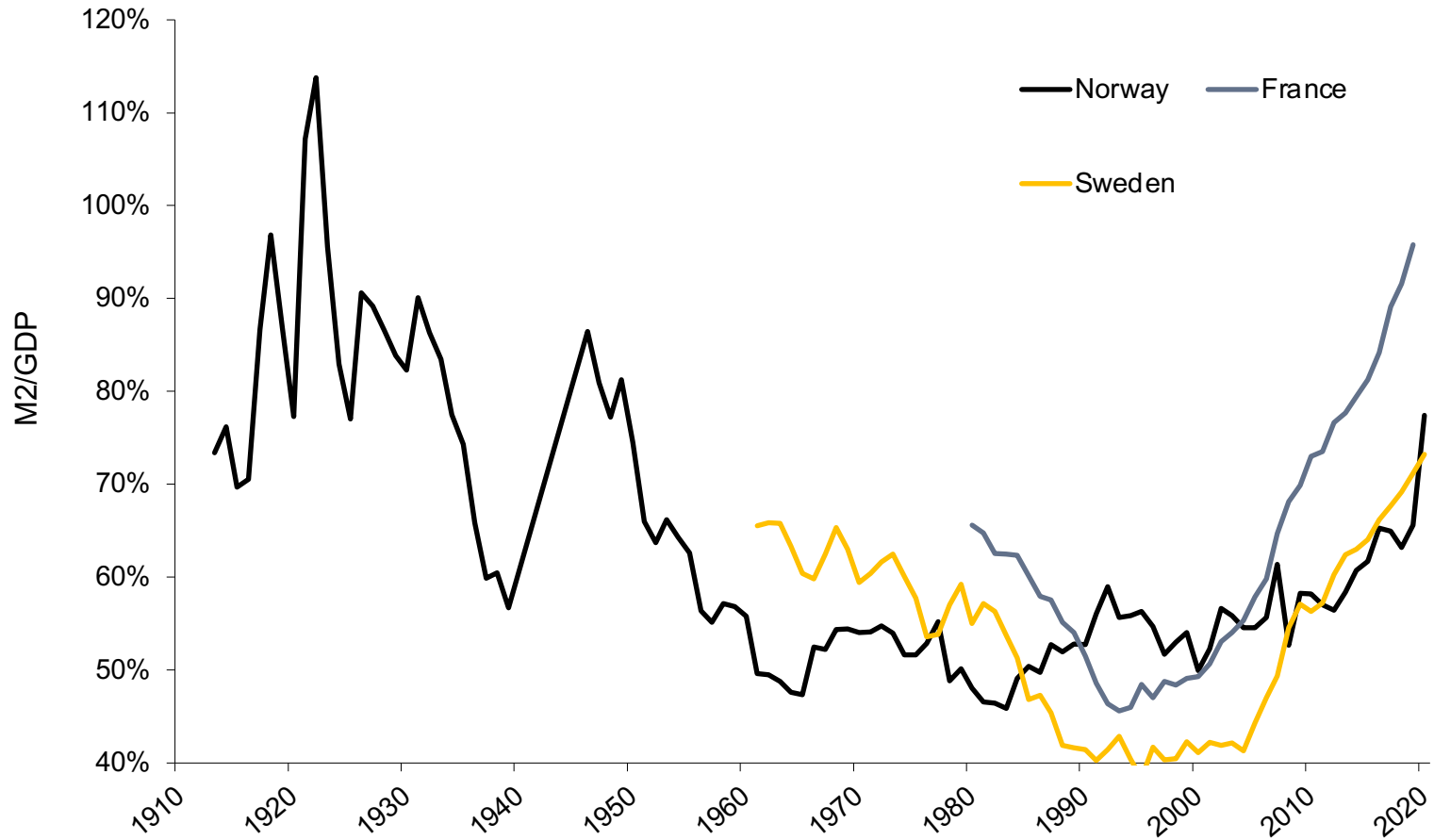
- $\text{Aggregate } FA = \text{Household } FA + \text{Corporate } FA$

**Cash share =  $M2 / FA$**

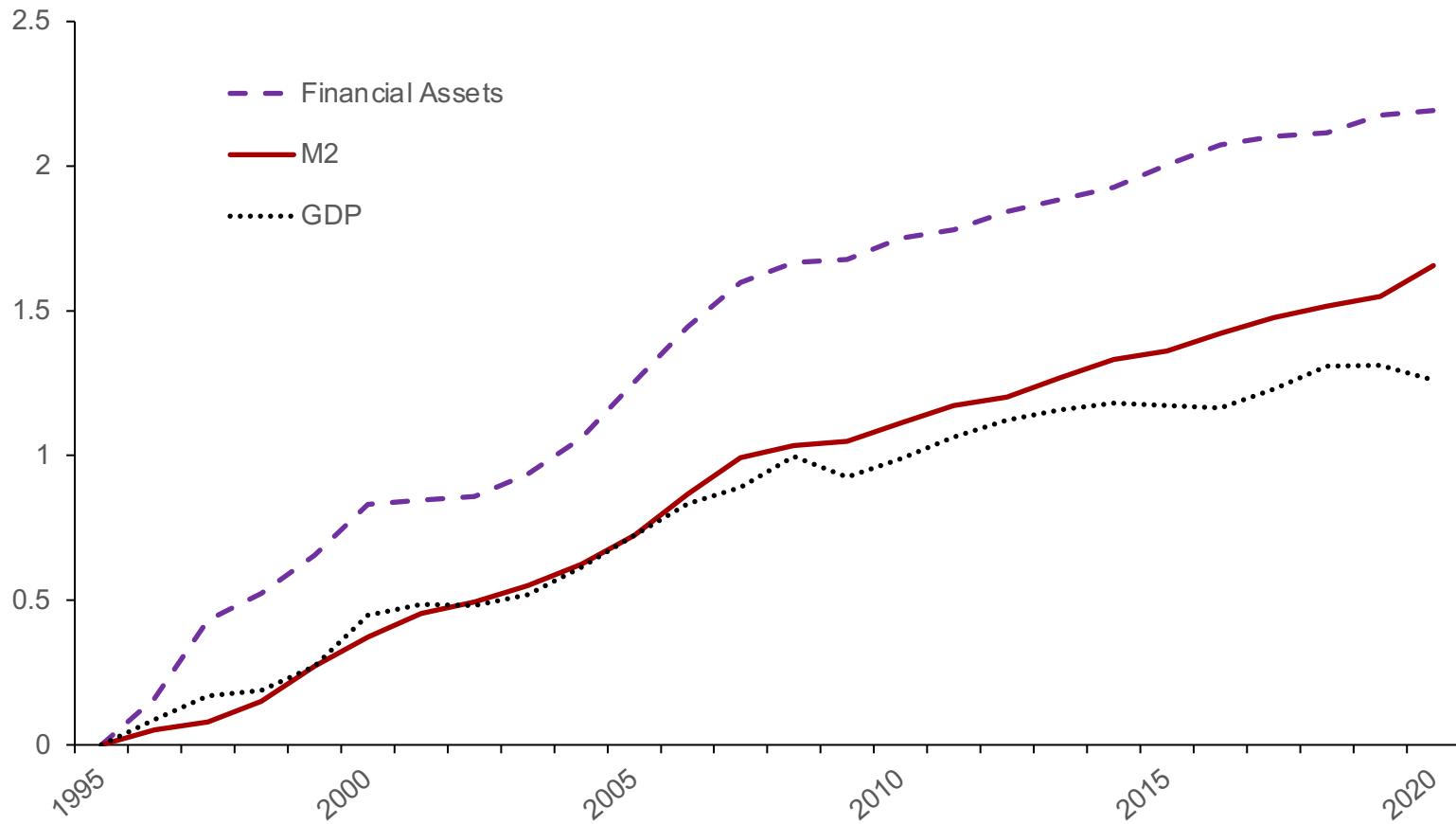
# M2 has increased since 1980s



# M2 has increased faster than GDP

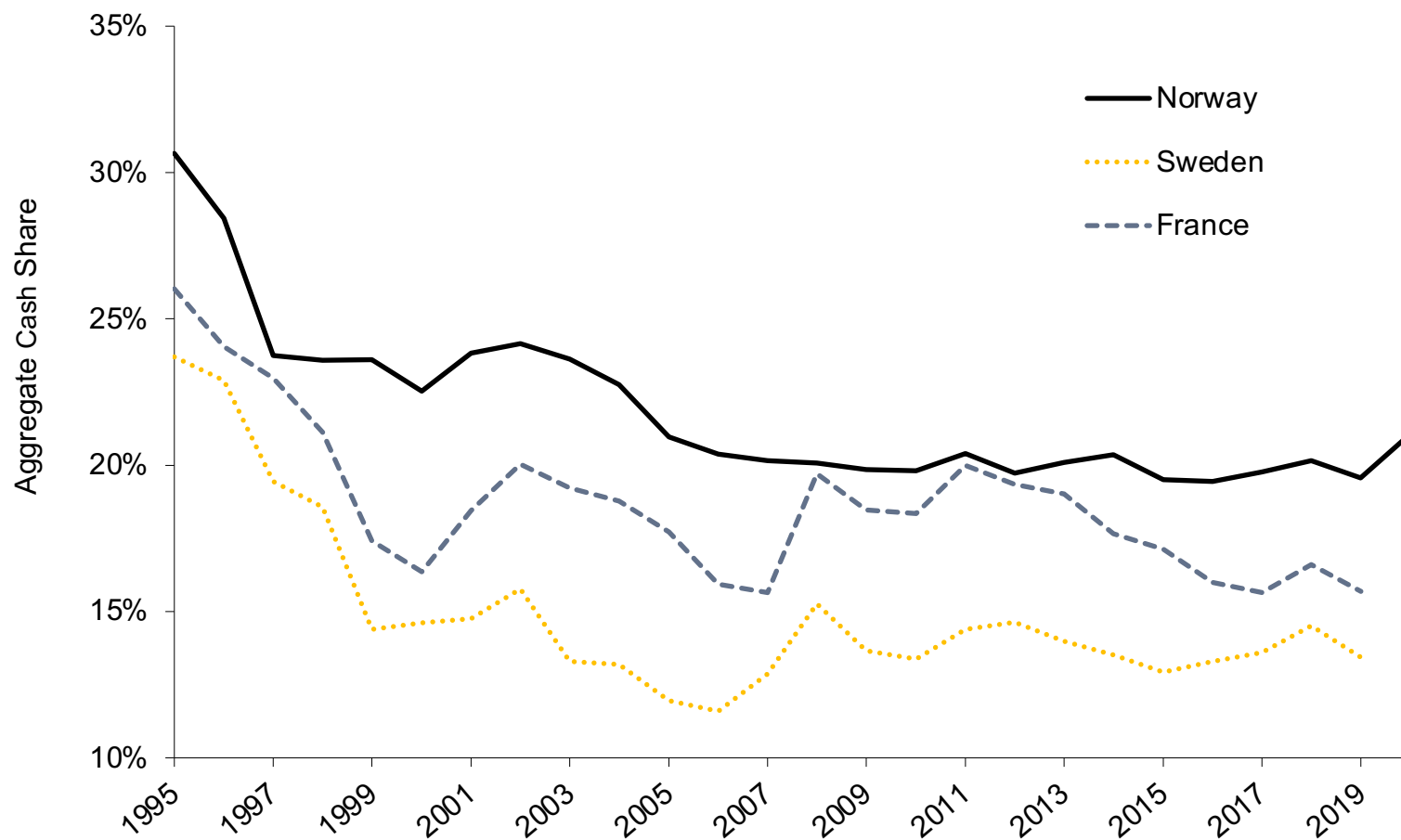


# But M2 has increased slower than financial assets



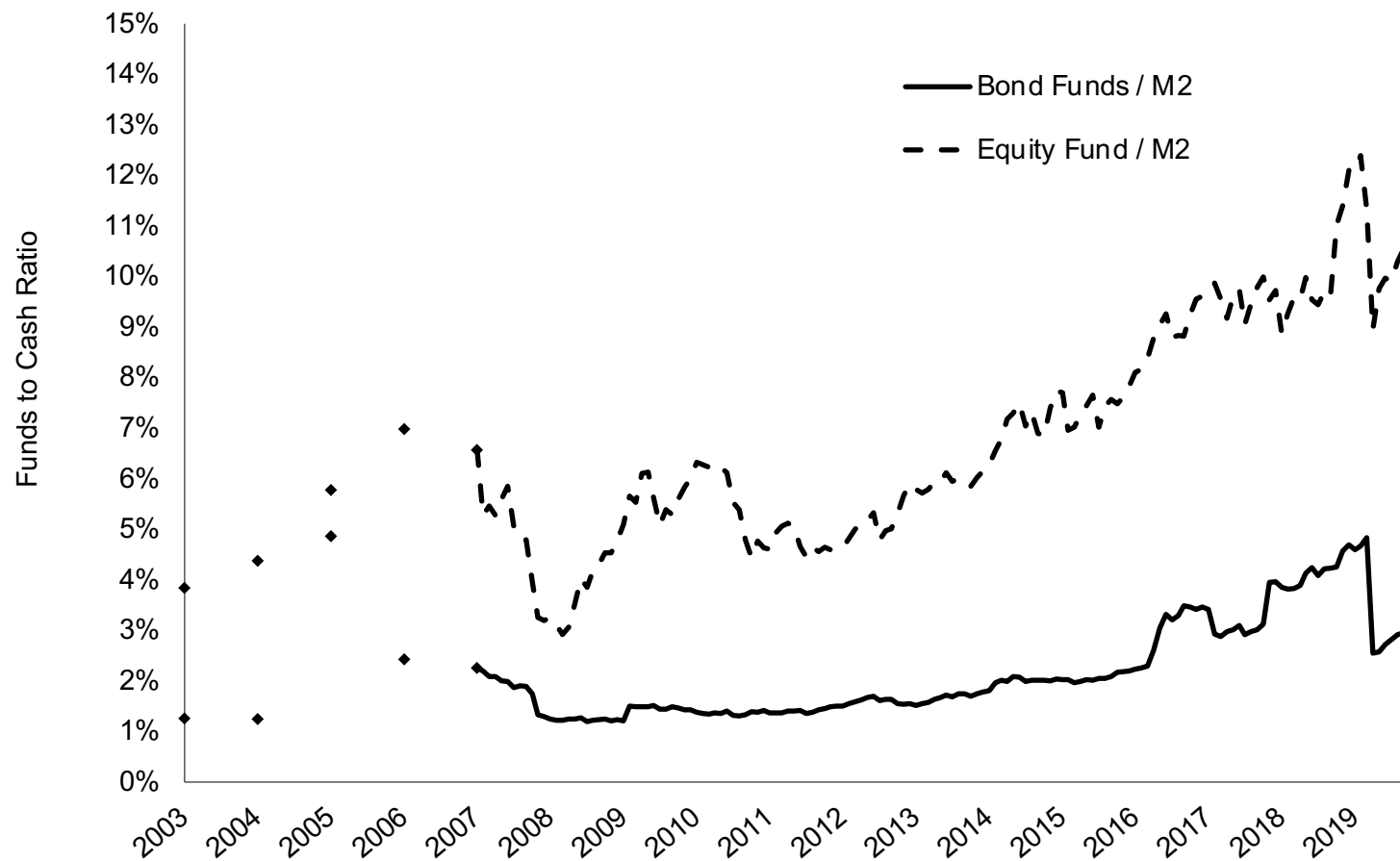
Norway

# So the aggregate cash share has decreased





# Increasing shares of bonds and equity funds



# Roadmap

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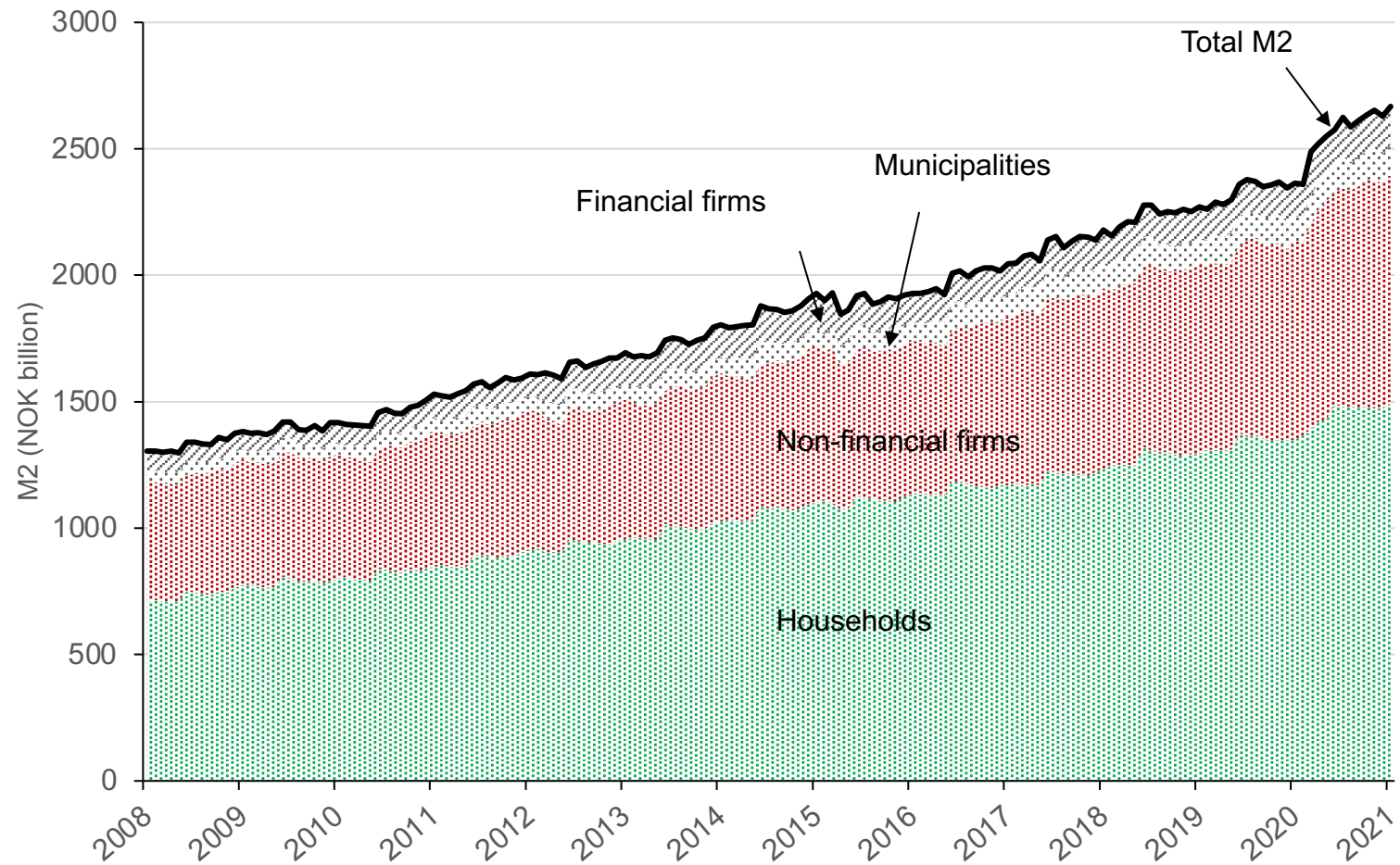
**1. Evolution of interest rates and aggregate cash holdings**

**2. Breakdown of aggregate cash share**

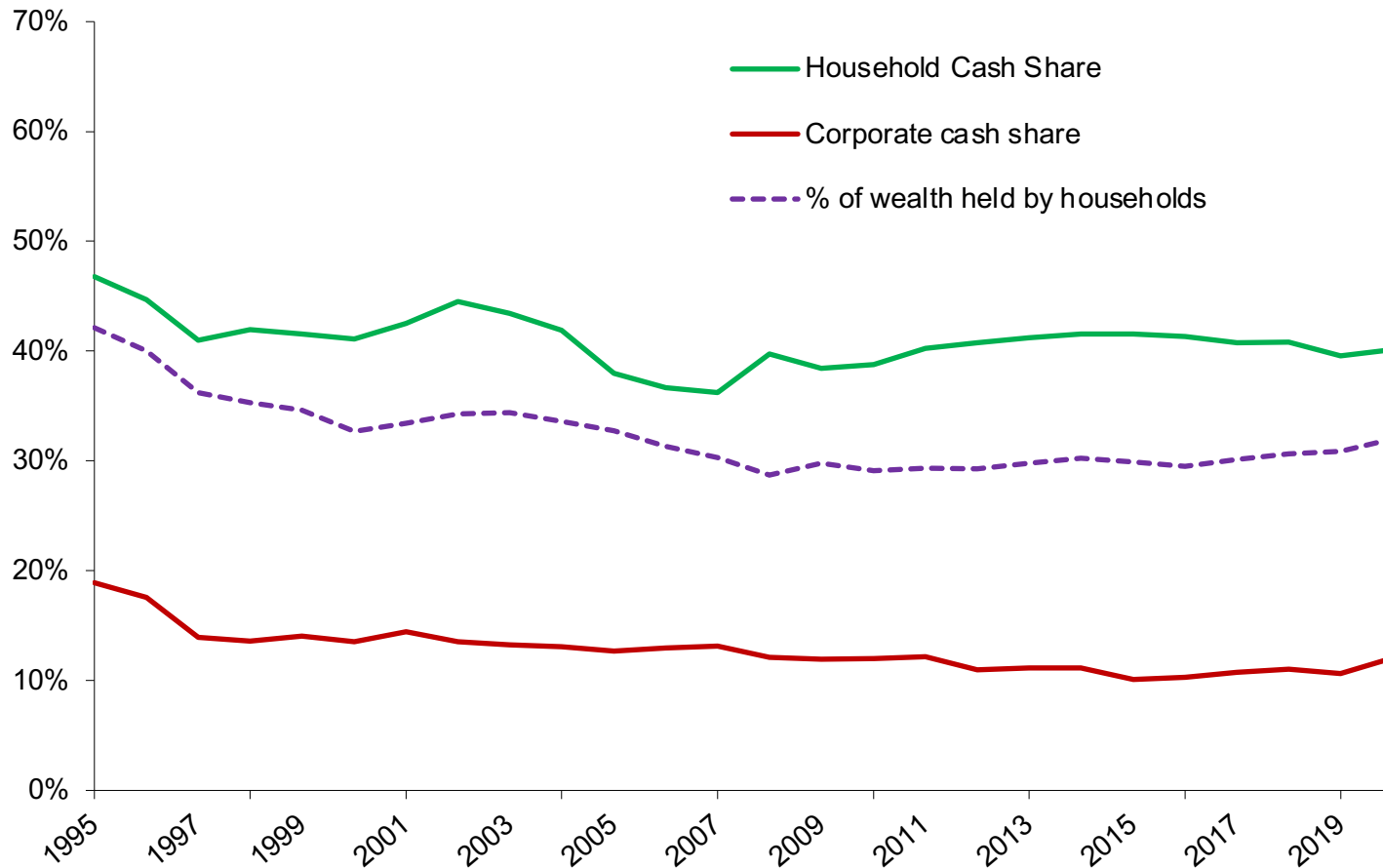
**3. Cash share of individual investors**

**4. Cash share of firms**

# Together, households & firms own 90% of M2



# Decrease in cash share both for firms and individuals



Norway

# Breaking down the change in aggregate cash share

$$\Delta CS_{a,t+1} = s_{h,t} \Delta CS_{h,t+1} + s_{c,t} \Delta CS_{c,t+1} + \underbrace{(CS_{h,t+1} - CS_{c,t+1})}_{> 0} \Delta s_{h,t+1},$$

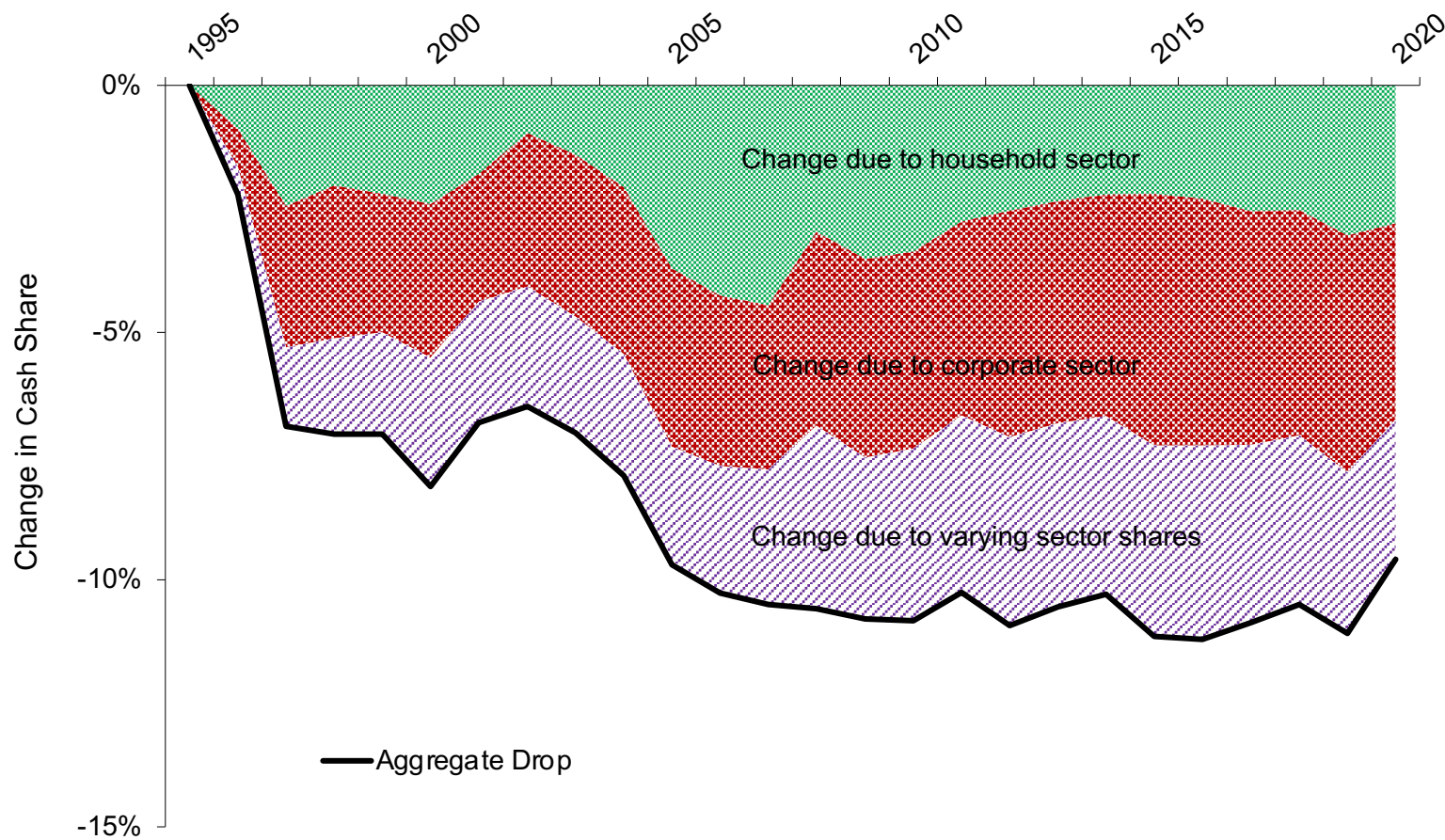
The diagram illustrates the decomposition of the change in aggregate cash share ( $\Delta CS_{a,t+1}$ ) into three components. The equation is annotated with arrows and text:

- $\Delta CS_{a,t+1}$ : Change in aggregate cash share (indicated by an upward arrow).
- $s_{h,t}$ : % of financial wealth held by households (indicated by a downward arrow).
- $\Delta CS_{h,t+1}$ : Change in household cash share (indicated by an upward arrow).
- $s_{c,t}$ : % of financial wealth held by firms (indicated by a downward arrow).
- $\Delta CS_{c,t+1}$ : Change in corporate cash share (indicated by an upward arrow).
- $(CS_{h,t+1} - CS_{c,t+1})$ : A bracketed term with a brace underneath labeled  $> 0$ .
- $\Delta s_{h,t+1}$ : Change in household % (indicated by an upward arrow).

**Aggregate cash share could go down because:**

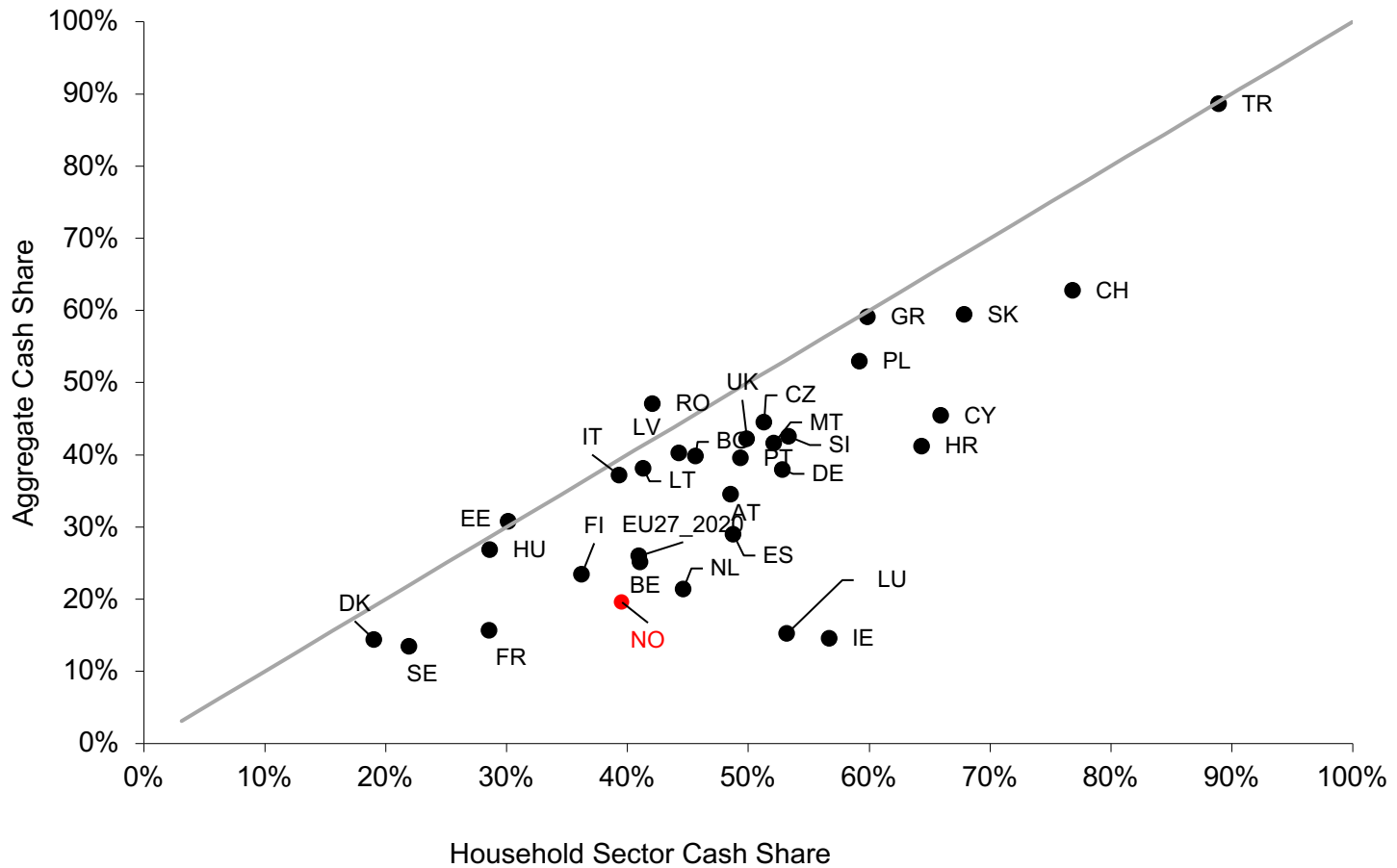
- Household cash share decreases
- Corporate cash share decreases
- Household sector weight goes down

# Breaking down the change in aggregate cash share



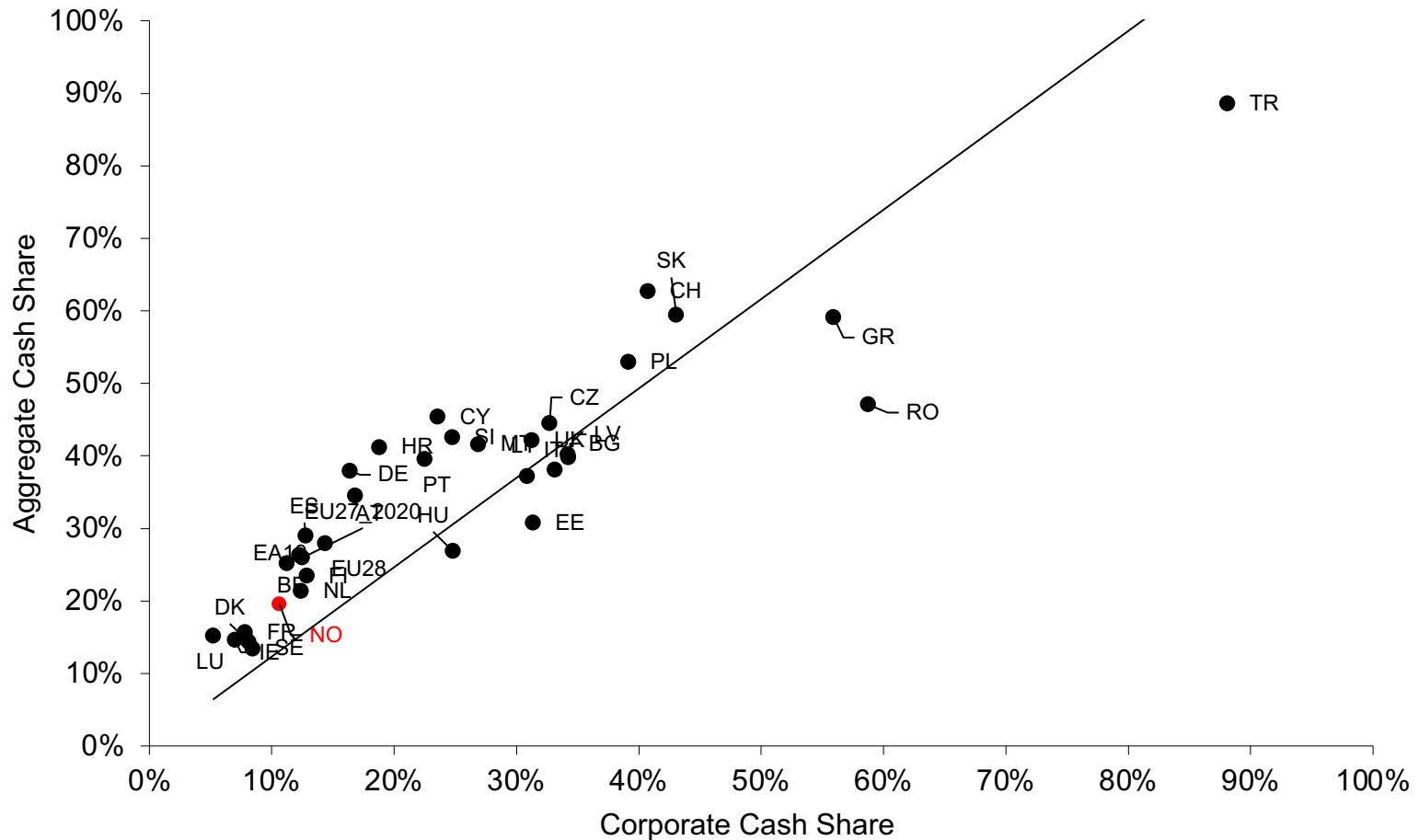
Norway

# Aggregate cash share is driven by households



**Scatter plot across European countries in 2019**

# Aggregate cash share is also driven by firms



**Scatter plot across European countries in 2019**



# Roadmap

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Microdata from Norway

# We use a long administrative panel from Norway

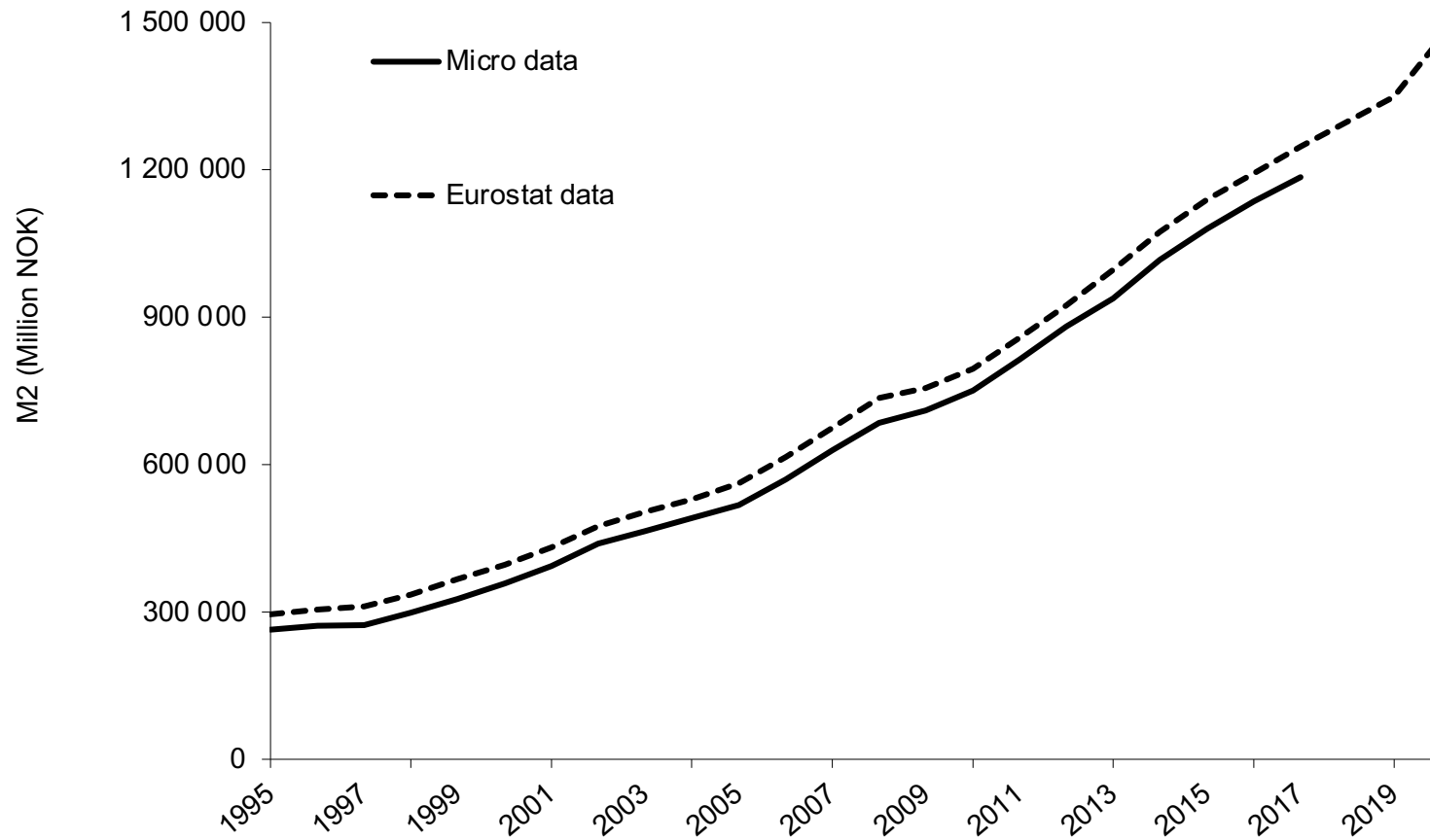
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**Disaggregated income, wealth, and debt of every Norwegian resident (1993-2017)**

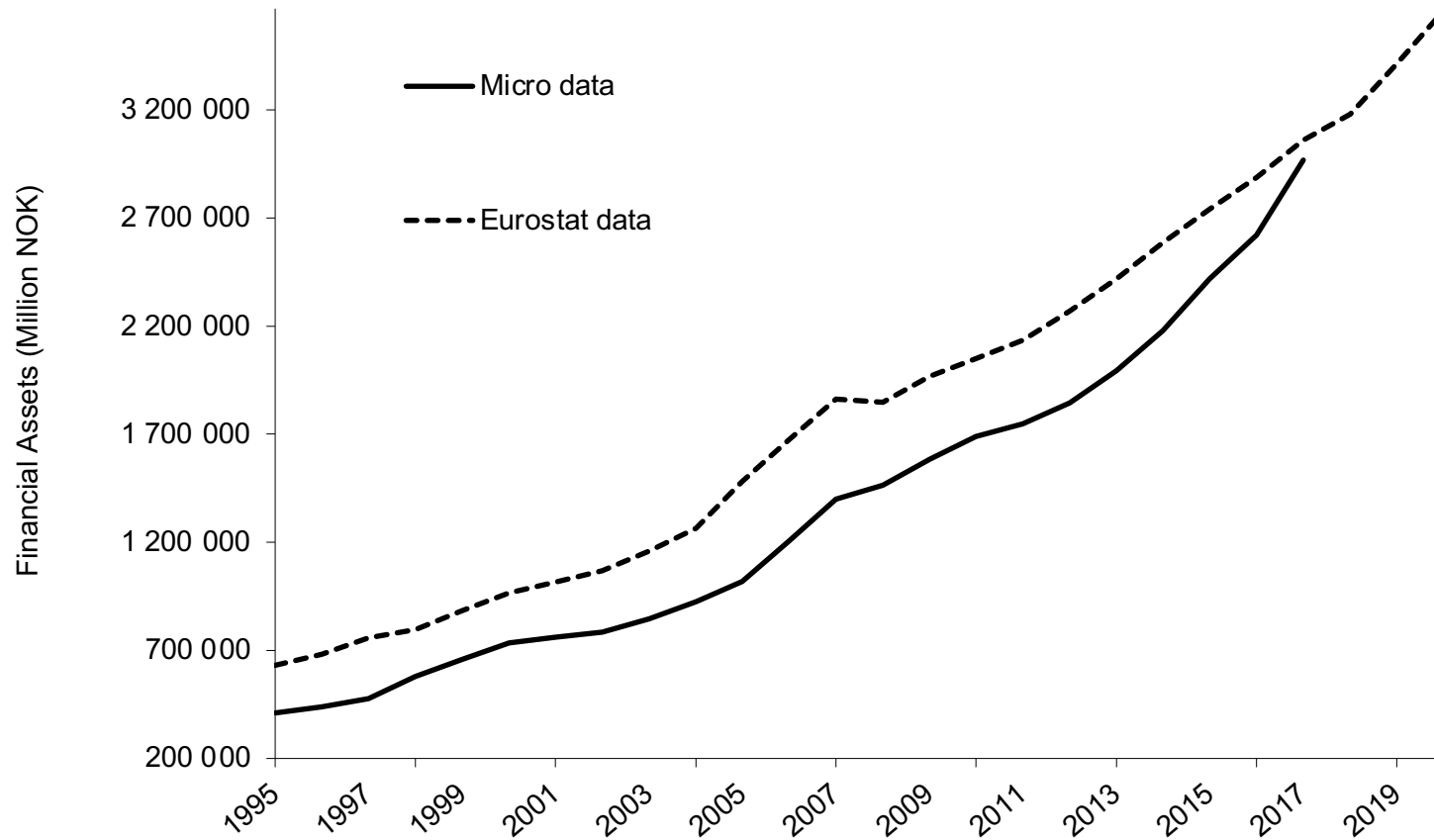
- complete holdings of cash and stocks listed on the Oslo Stock Exchange

**Socioeconomic characteristics from Statistics Norway**

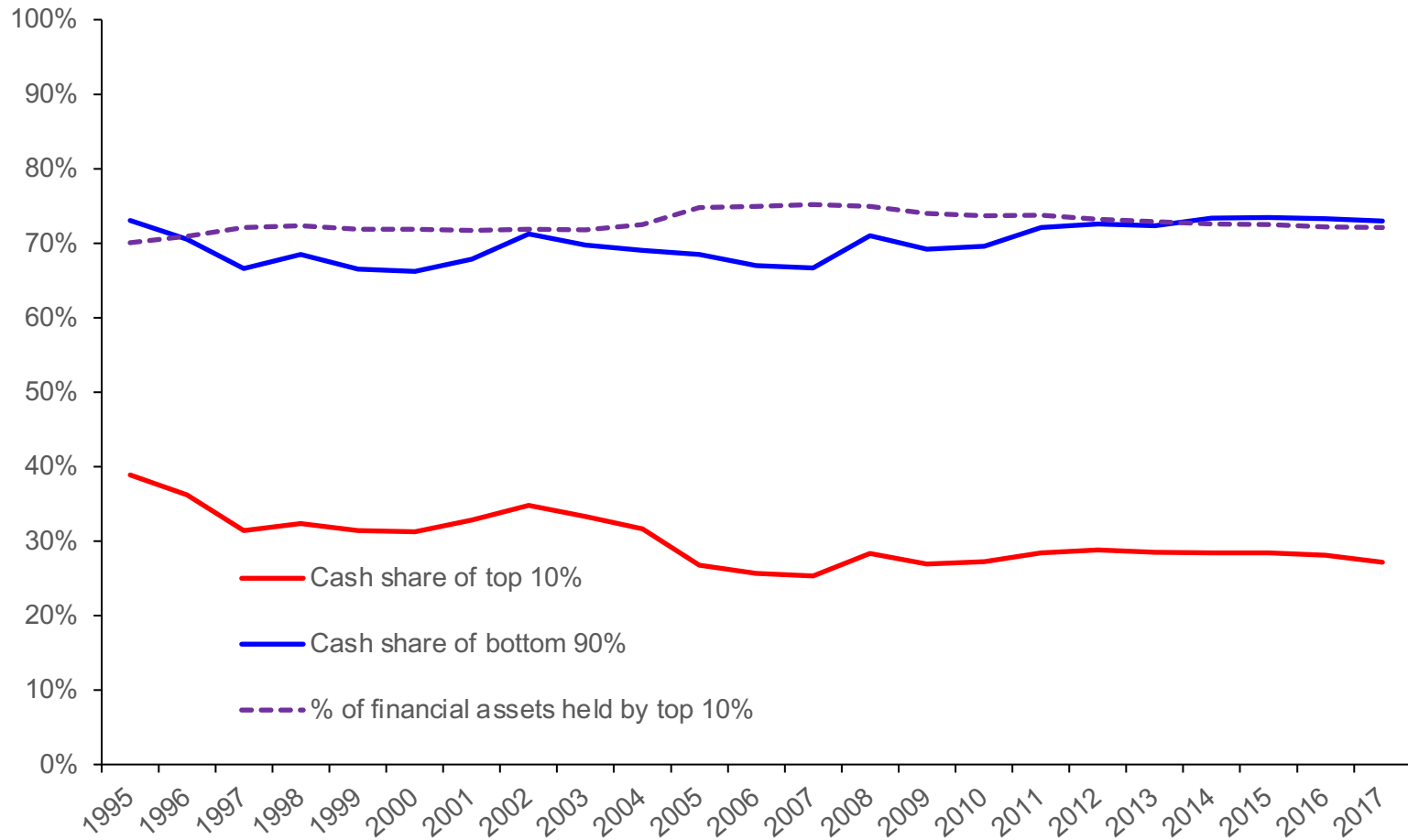
# Reconciling micro and macro data on individuals' M2



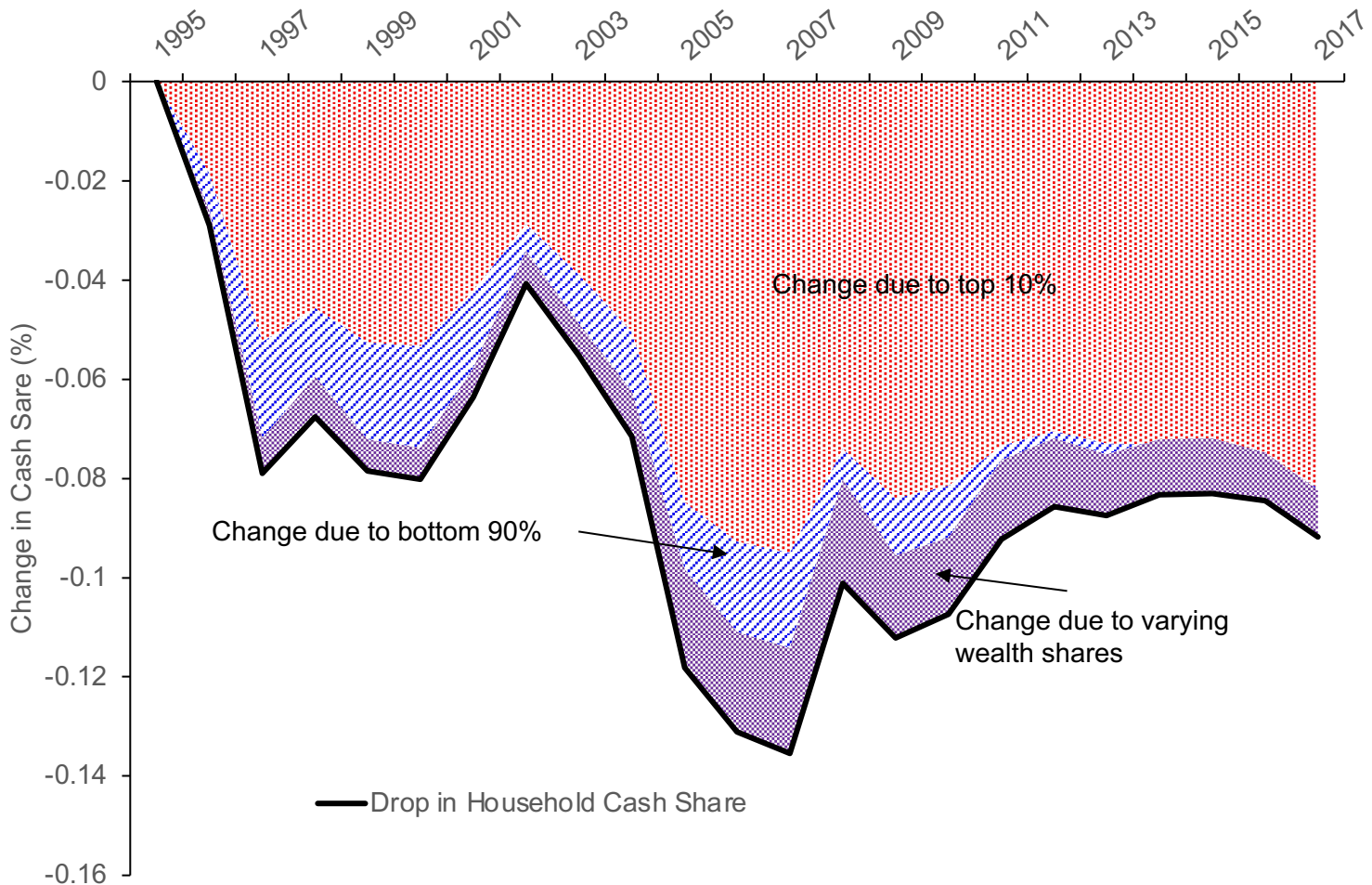
# Reconciling micro and macro data on individuals' FA



# Cash share of wealthiest 10% drops sharply



# Household cash share driven by wealthiest 10%



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# Norwegian panel

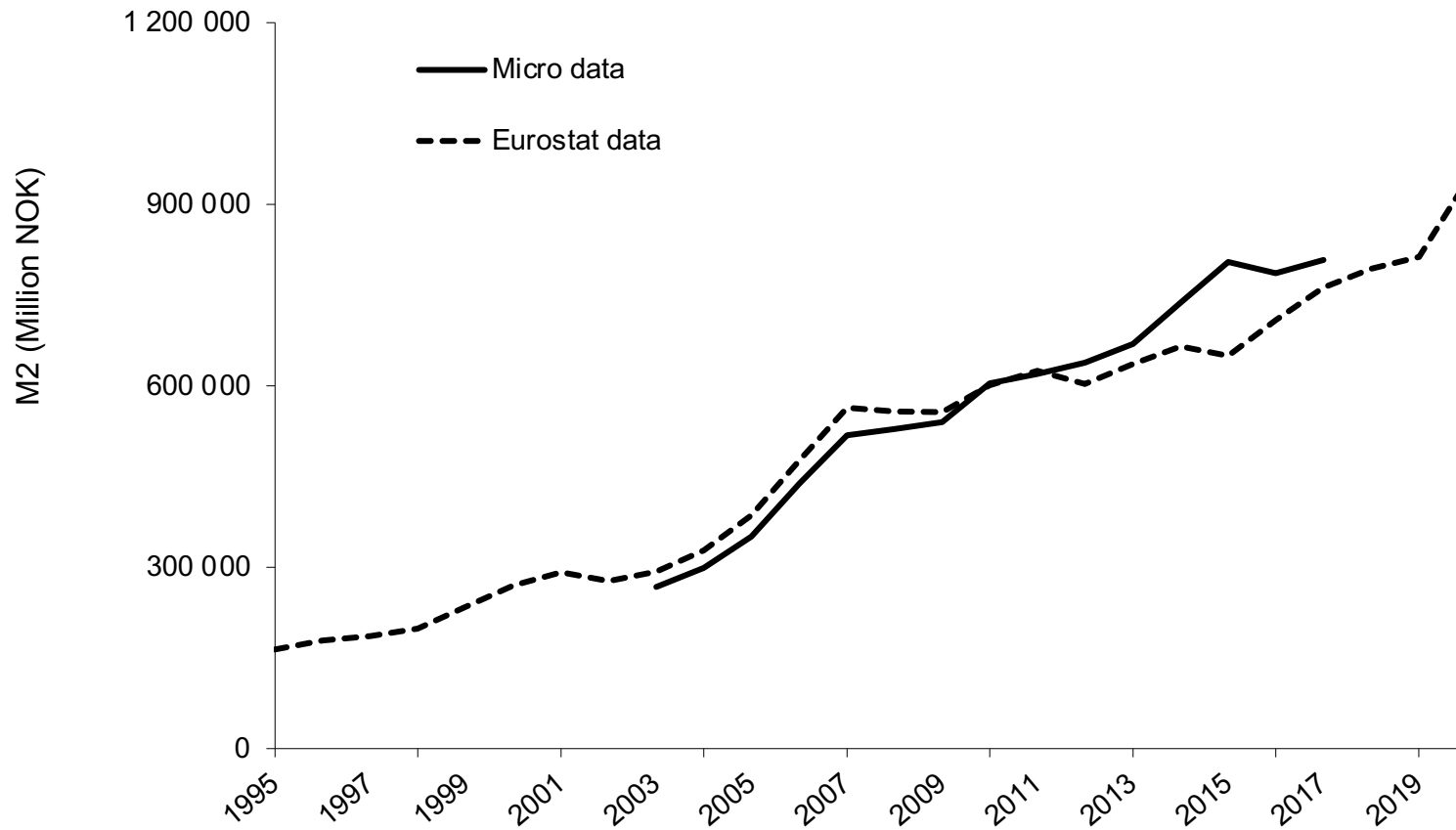
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## **Financial holdings and financial statements of every Norwegian firm (2003-2017)**

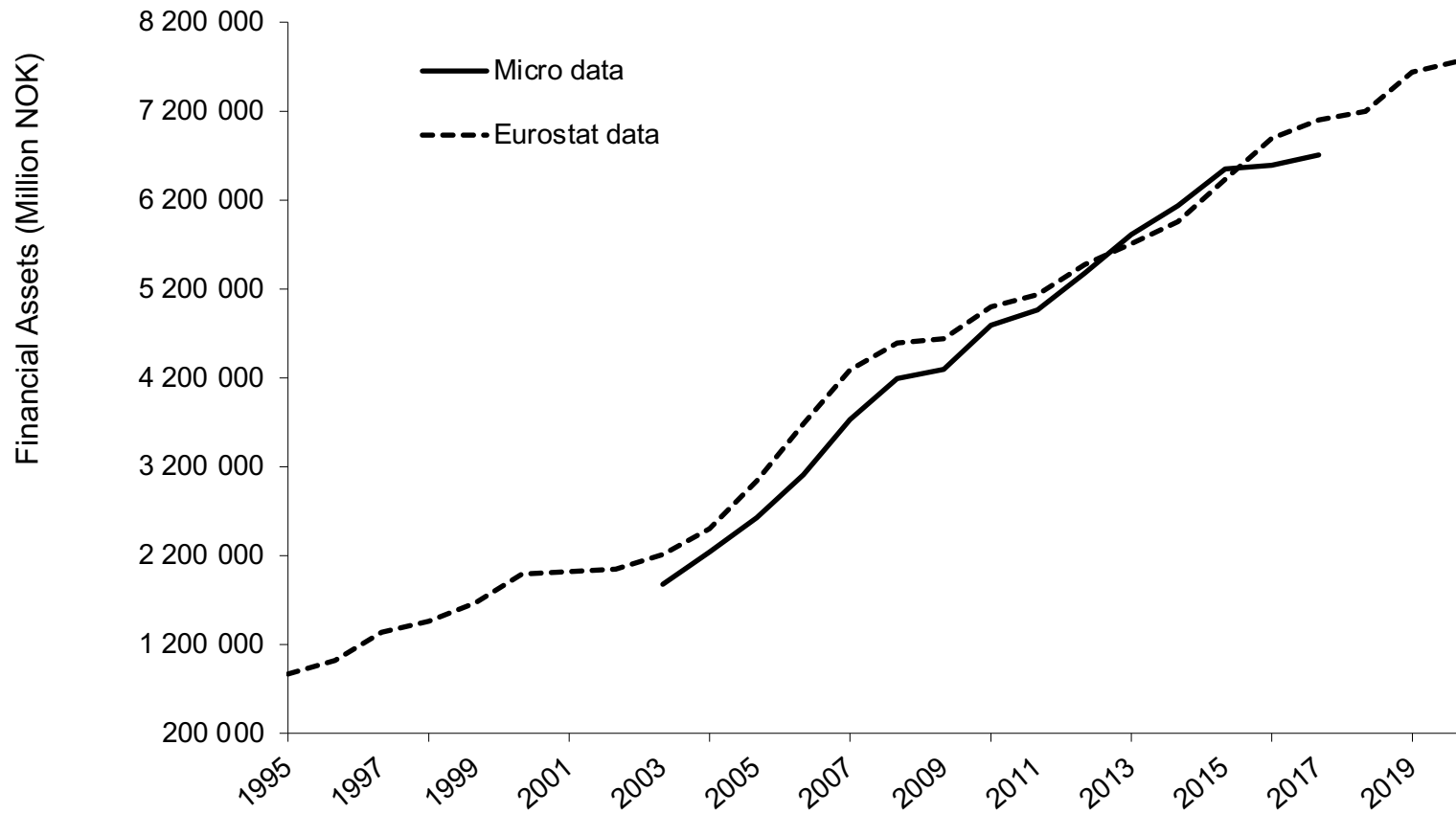
- complete holdings of cash and other securities
- firms' income statements and balance sheets from the Norwegian School of Economics database.



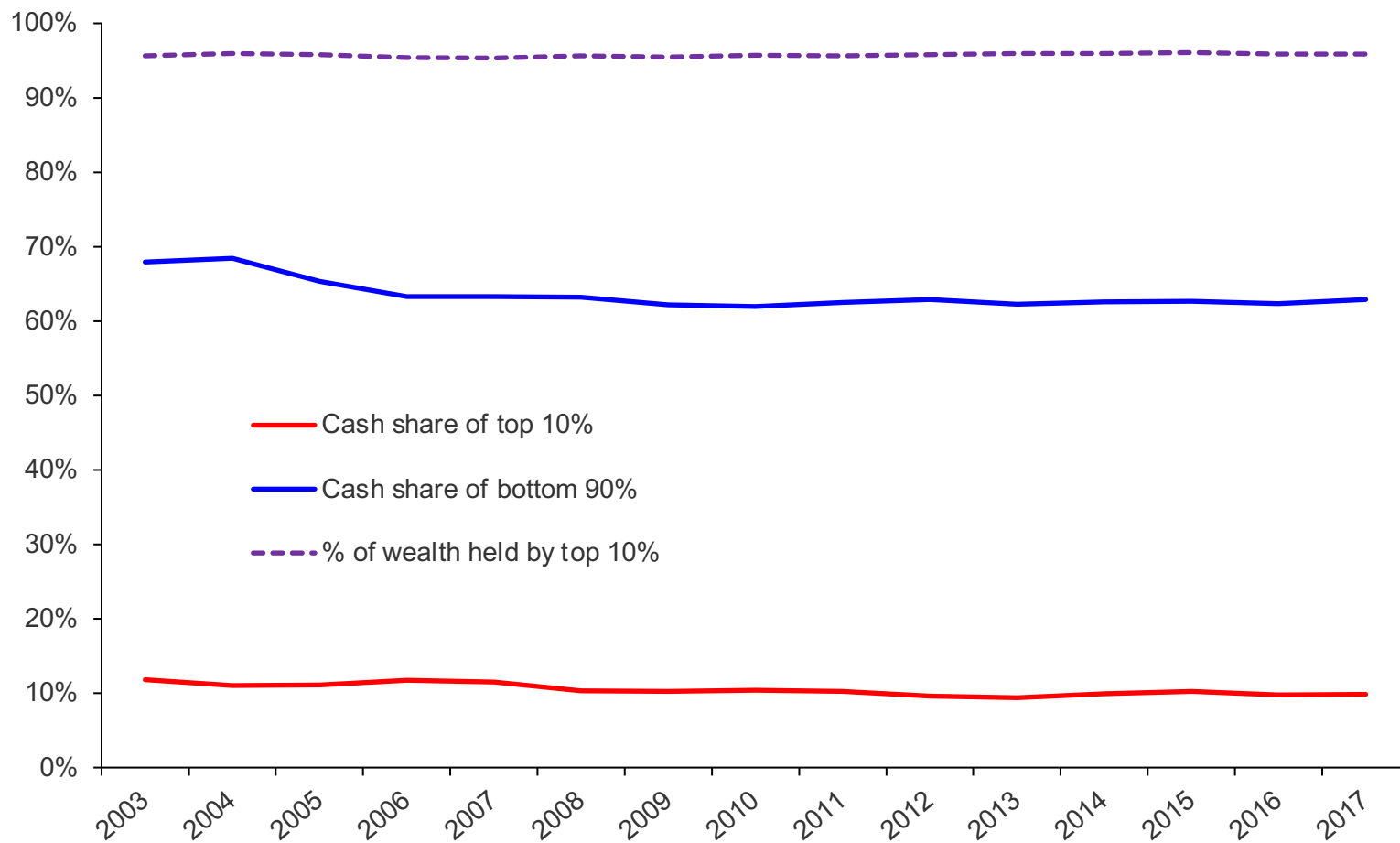
# Reconciling micro and macro data on firms' M2



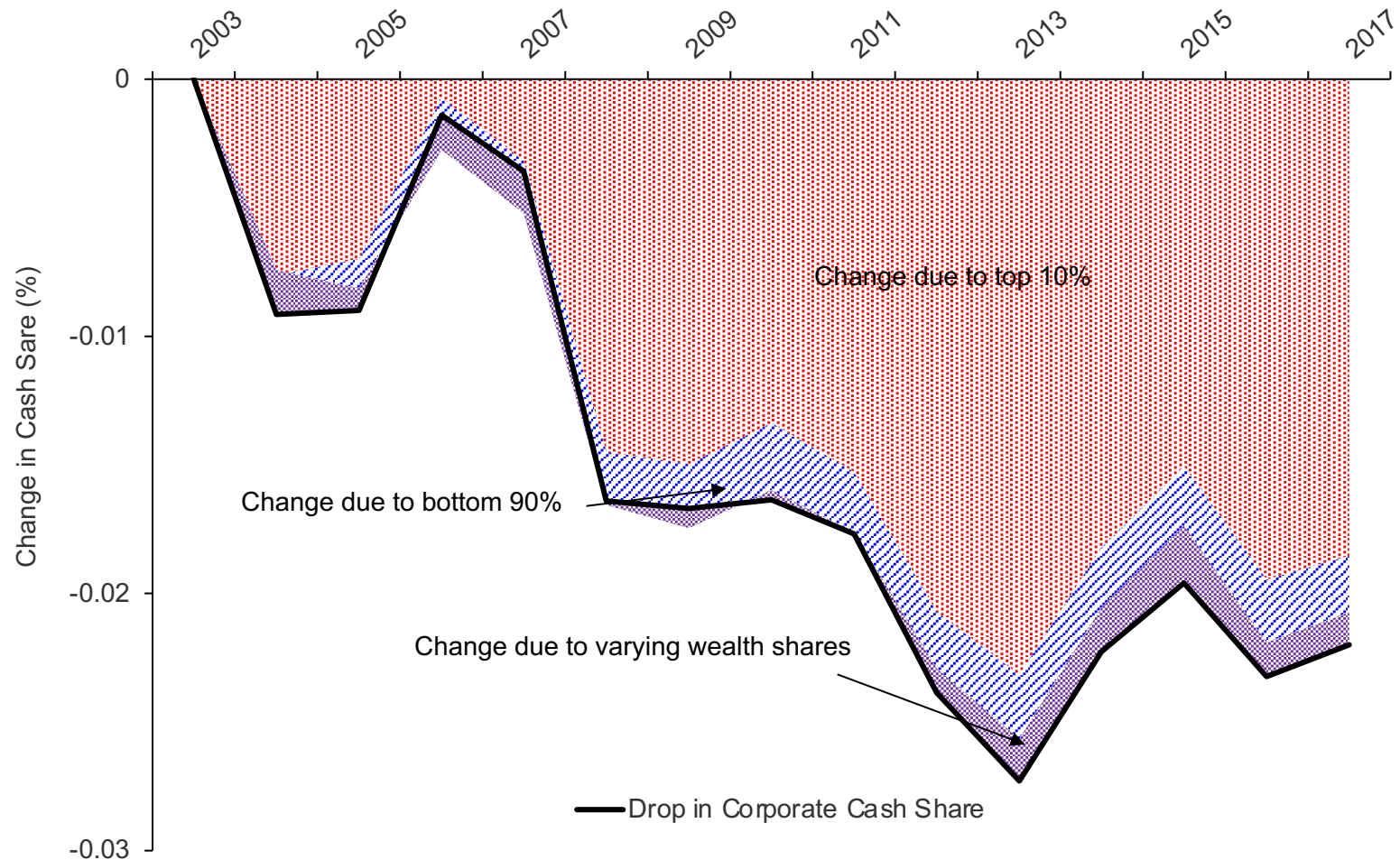
# Reconciling micro and macro data on firms' FA



# Cash share of firms (2003-2017)



# Aggregate cash share of firms driven by top 10%



# Conclusion

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**M2-to-GDP ratio has risen but the M2-to-FA ratio has declined**

**These dynamics point to the different roles of M2**

- Working capital used to manage day-to-day expenses
- Investment

**Cash share constant for bottom 90% but declining for top 10%**

- Most individuals and firms use money for daily financial management
- Wealthiest use cash as an investment

**A small number of economic agents drive aggregate statistics**

# Conclusion

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**These dynam**

- Working
- Investm



**Thank you!**

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