

IAAE2017@Sapporo

# Extracting fiscal policy expectations from a cross section of daily stock returns

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# Aim of this project

To construct a

**DAILY indicator  
of fiscal policy (public investment)**

# Purpose

To tackle the

**“Fiscal Foresight” Problem**

# How?

Combine two existing approaches

**(1) News based analysis**

**(2) Stock market based approach**

...and **go beyond!**

# 1. Introduction

# Public Investment

- Has long been a subject of heated discussions in Japan.
- And... suddenly, also in the US! (since last November...)

Difficulty in estimating the impact  
= **“Fiscal Foresight”** Problem

Most fiscal policy measures  
are **pre-announced**.

Forward-looking agents  
would start changing  
behaviors as soon as the  
news arrives!

# Review: how can we make expectations about future fiscal policies observable?

## (1) News-based approach

- Identify dates the news first arrived.
- Set up dummies for those dates.
- **Ramey & Shapiro (Carnegie 1997), Ramey (QJE 2011)**: news about future US military spending.
- For Japan: **Fukuda & Yamada (JJIE 2011)**: News on [Emergency Fiscal Stimulus Packages](#).



- Drawbacks
  - Dummies cannot convey the sense of **magnitude**: are we talking about millions of Euros or billions?
  - More importantly, we do not know **how big a surprise** the news was!

## (2) Stock market based approach

- Idea: People's expectations should be reflected in stock prices.
- Look at firms that are deeply dependent on policy!
- **Fisher & Peters (EJ 2010)**
  - excess return (=individual return – market return) on four large military contractors in the US.

- Drawbacks
  - **Contaminated** signal: Stock returns could reflect many things, not just policies...
  
- **Morita (Ph.D. thesis, 2014)**
  - Excess stock returns of the **Construction Industry** for Japan.
  - **“Purified”** measure based on SVAR.

# We combine the two!

- Study **excess returns** of individual companies in the Japanese construction industry **on the news dates.**

- Advantages:
  - Produces a **single time series** of news indicator.
  - It reflects the **magnitudes of the surprises** generated by the news.
  - As we focus on the days on which FP news arrived, it is likely to be **less contaminated** by other types of shocks.

In this paper, we go **beyond**  
simply taking industry averages.

Why?

Because construction companies may  
be subject to common shocks other  
than policy announcement.

# Taking advantage of **within-industry heterogeneity**

- Those companies are similar in many aspects.
  - They own a lot of land.
  - They tend to be bank dependent.
- But differ greatly in their reliance on public demand!

# Methodological contribution

- Utilize factor analysis, esp. **target rotation**...
  - as a way to extract public investment expectations from a cross section of company returns.



# Structure of presentation

1. Introduction
2. Stock returns data
3. Combine with info about news
4. Factor analysis and Target rotation
5. VAR analysis
6. Conclusions

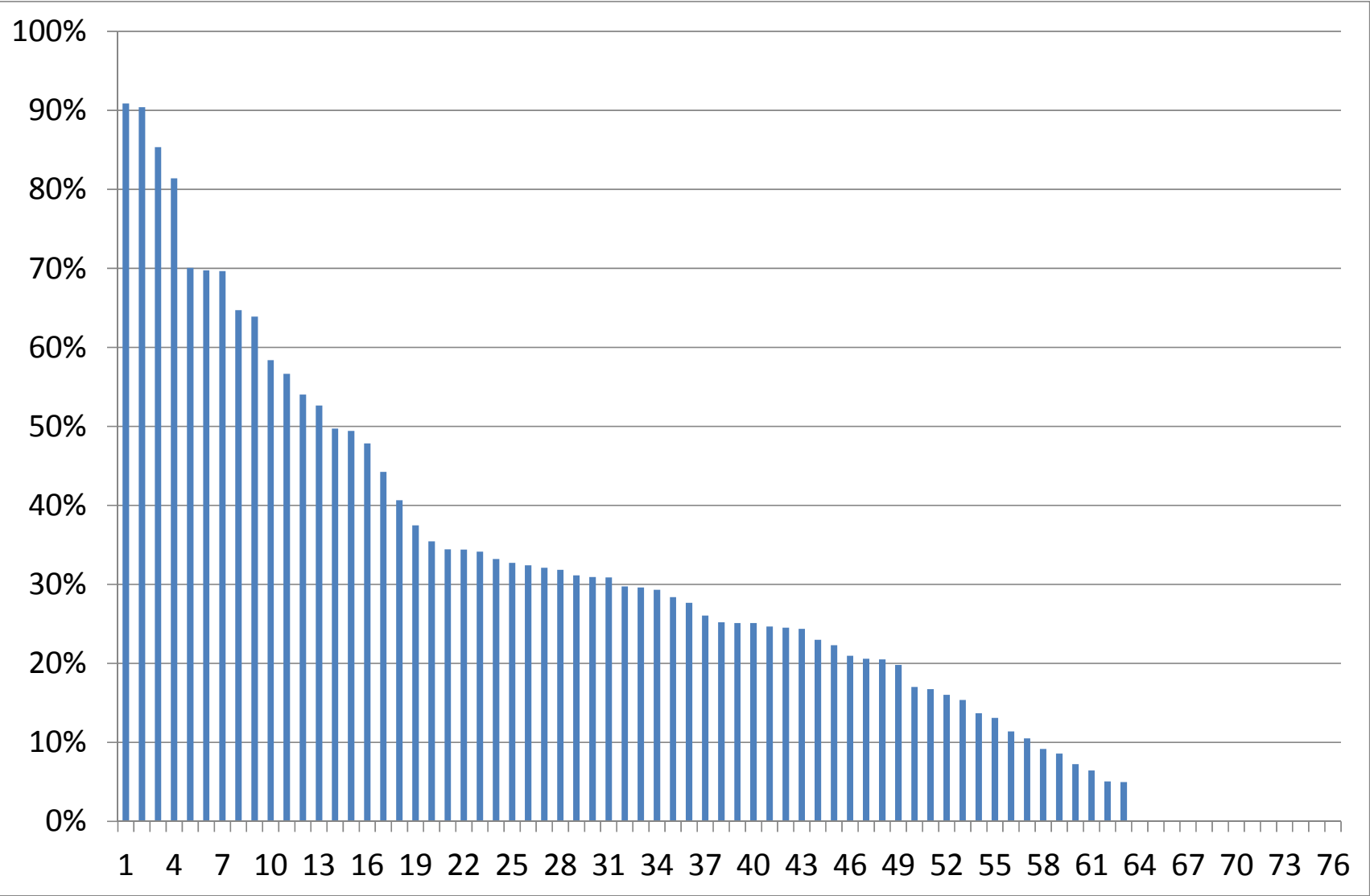
## 2. Stock returns data

# Stock returns data

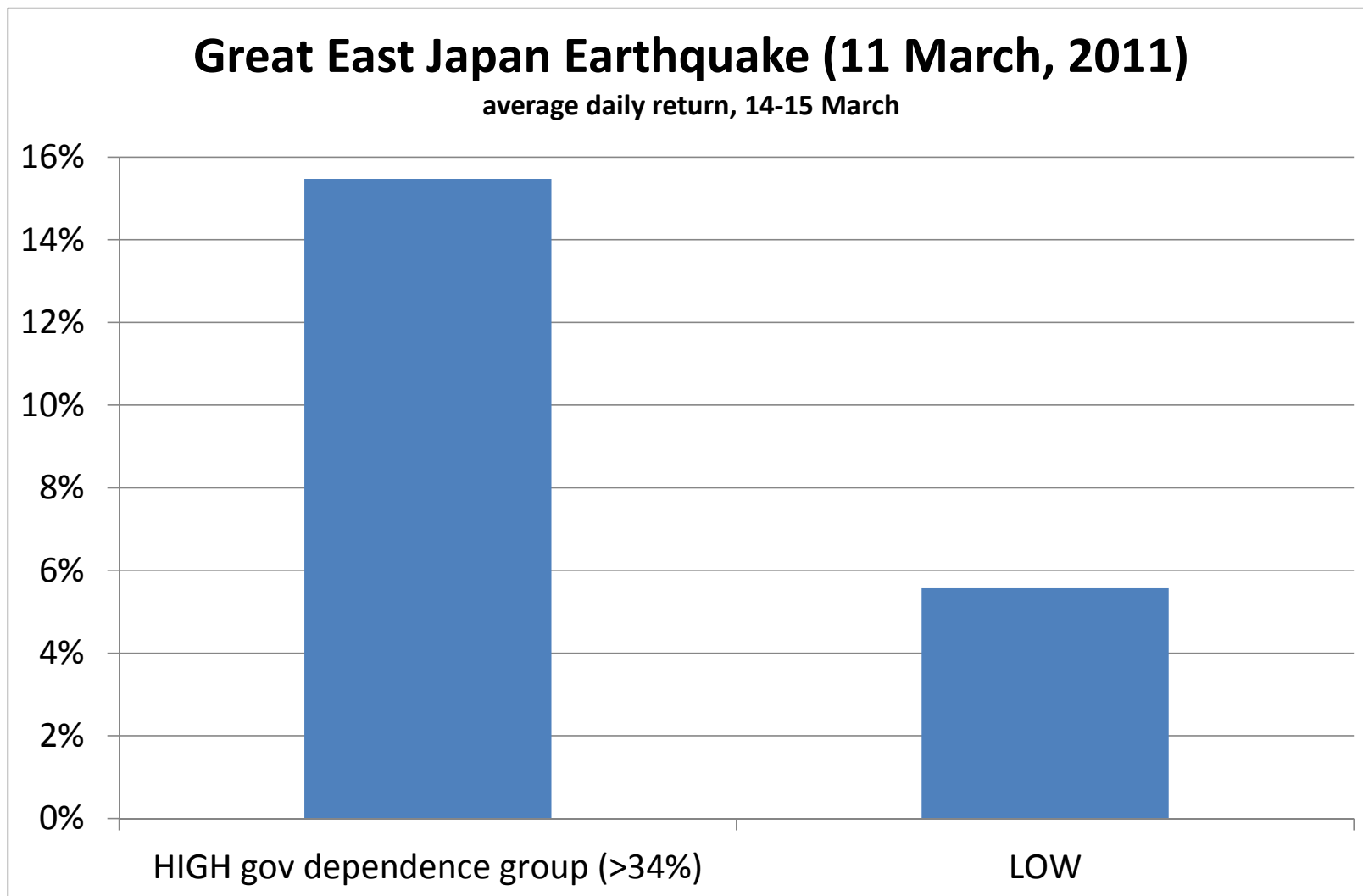
- Japanese construction industry's 76 firms, listed on Tokyo Stock Exchange (1<sup>st</sup> or 2<sup>nd</sup>), throughout 1990-2014.
- Returns = log difference of the close price, daily.
- Regress them on the Market (TOPIX) return to obtain excess returns.

# Dependence on Public Investment

= Share of Public work in Total (as of 2000)



# How does the data look like? Example from a big “news” event...



# 3. Factor Analysis on the stock returns data

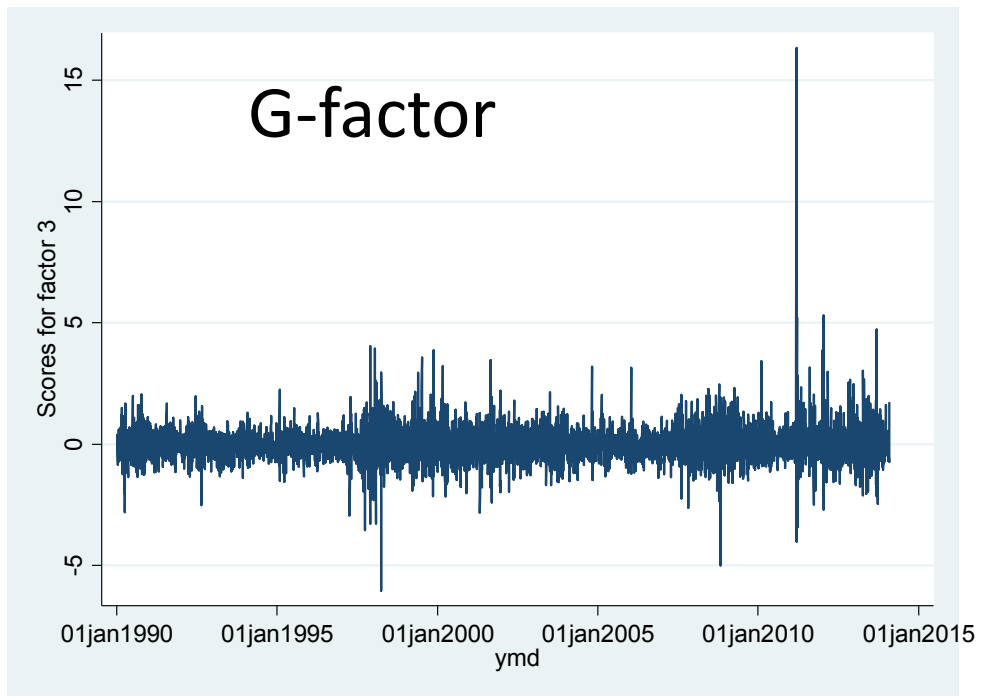
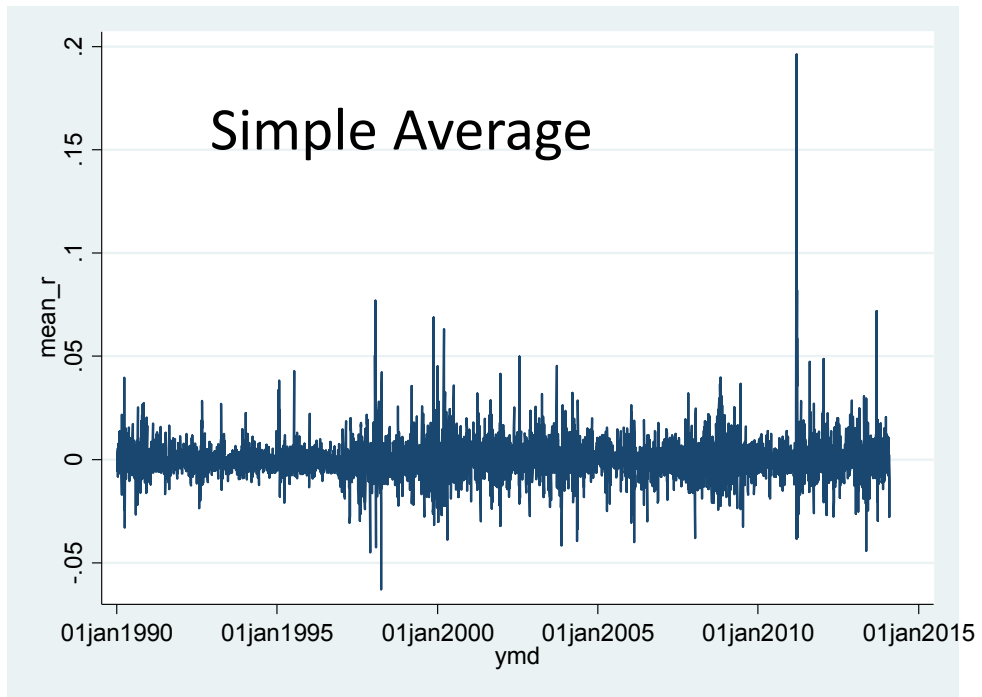
# Factor analysis

- Extract 5 factors: not much economic meaning.
- Then: **Rotate** them!
- **Target rotation**: Select a rotation which gives the closest factor loadings to... (see next page)

# Target for rotation

	(1) Industry -wide Factor	(2) Home Builders Factor	(3) G-Factor (Gov. Dependence)	(4) Electric Facilities Builders Factor	(5) Plant Builders Factor
Mid-sized Contractors	1	0	0/1	0	0
Big Four Contractors	1	1	0	0	0
Home Builders (all big)	1	1	0	0	0
Electric Facilities Builders	1	0	0/1	1	0
Plant Builders	1	0	0/1	0	1



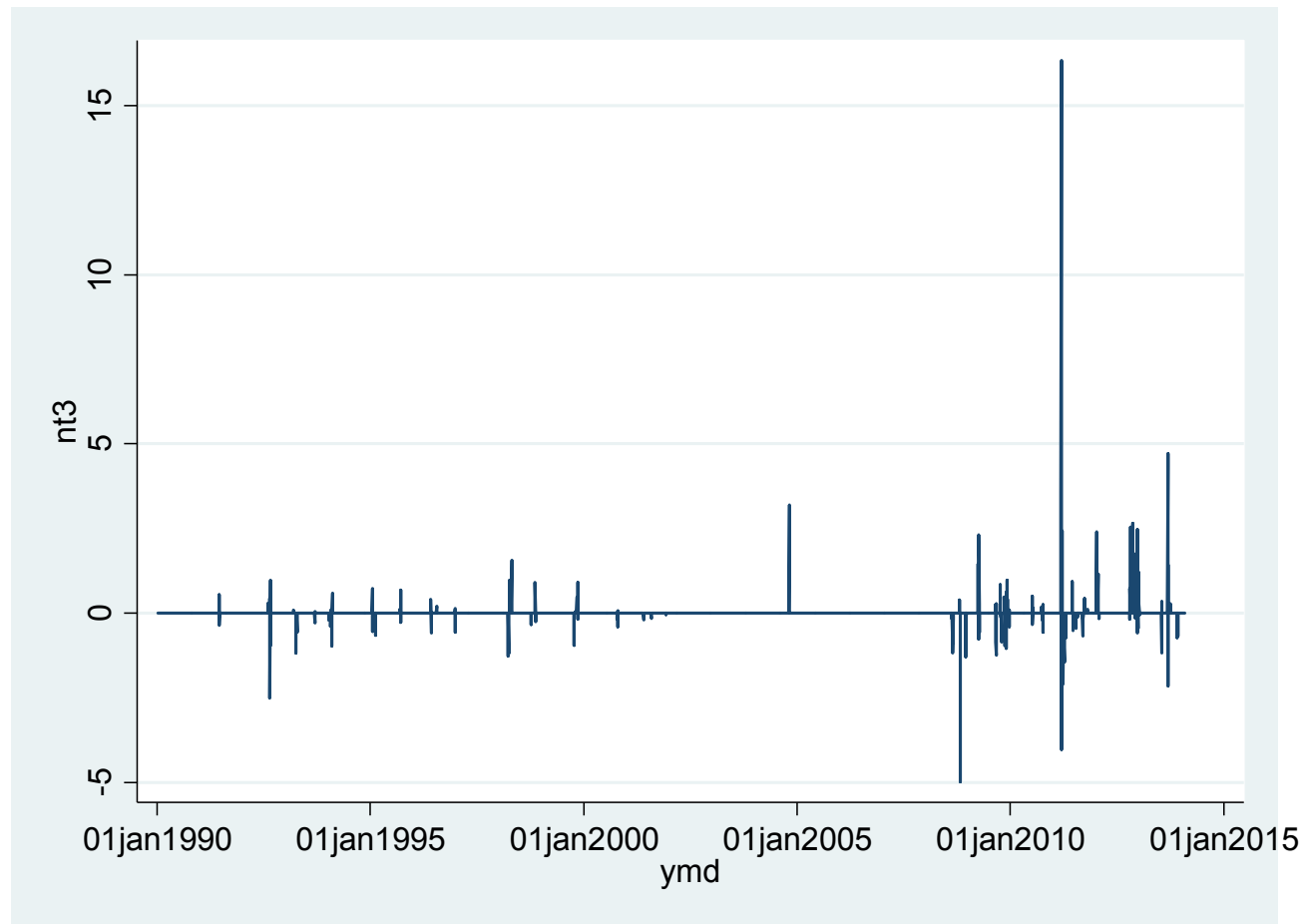


4. Combine with  
the news dates dummy

# News dates dummy

- Takes 1 on the days when important news about future public investment arrived.
- Selection of the dates: I will skip this part in today's talk.

# (G-factor) x (News date dummy)

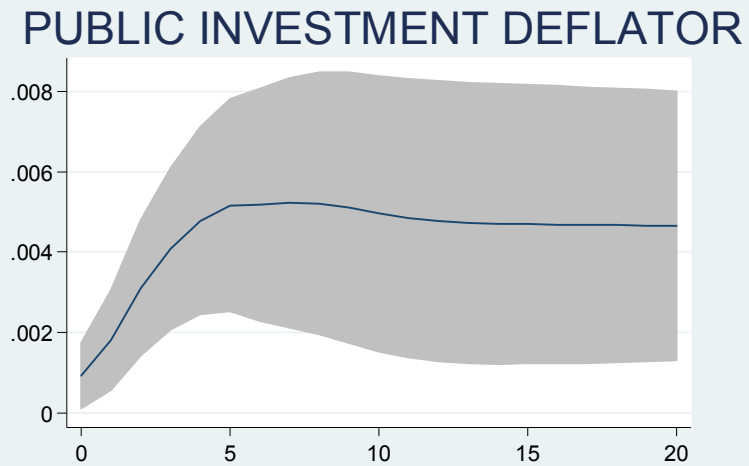
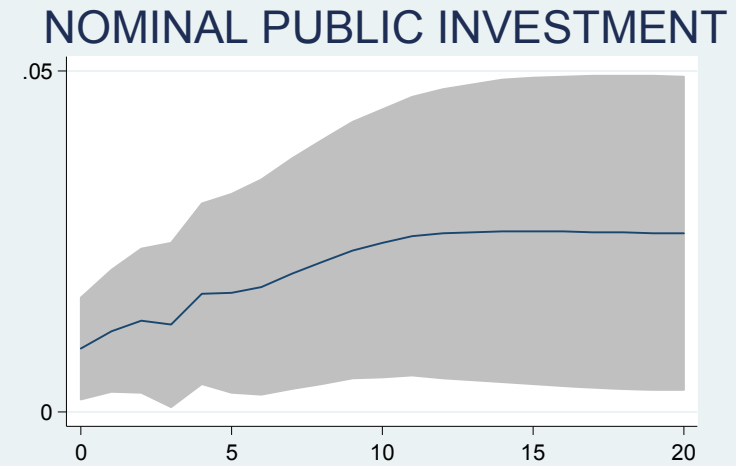
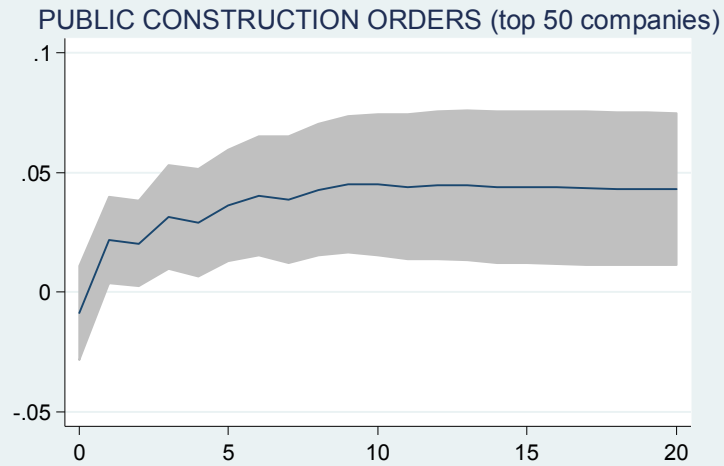


## 5. VAR analysis

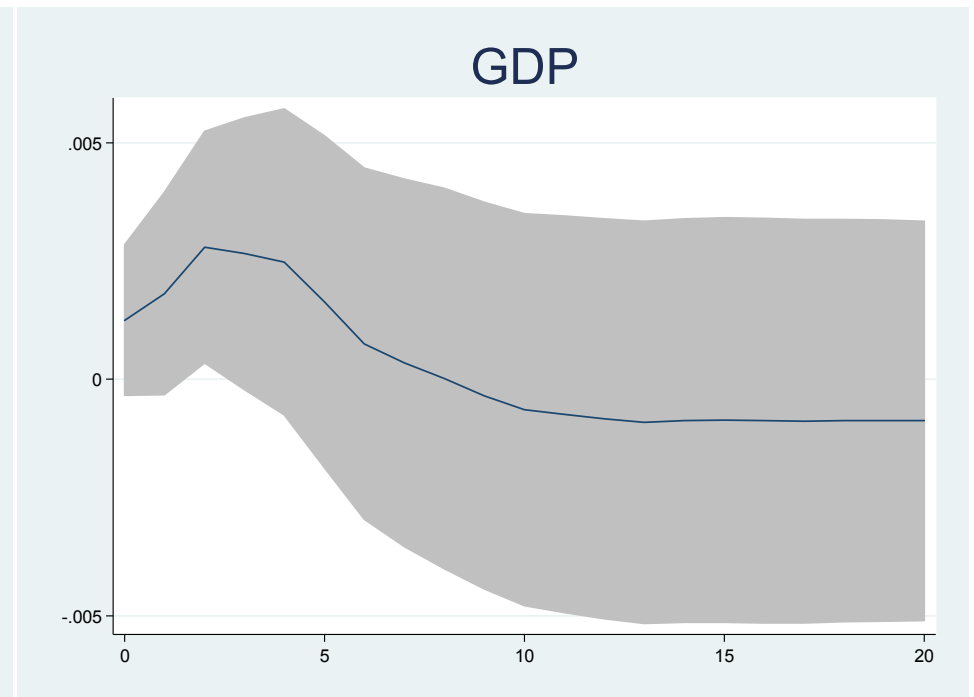
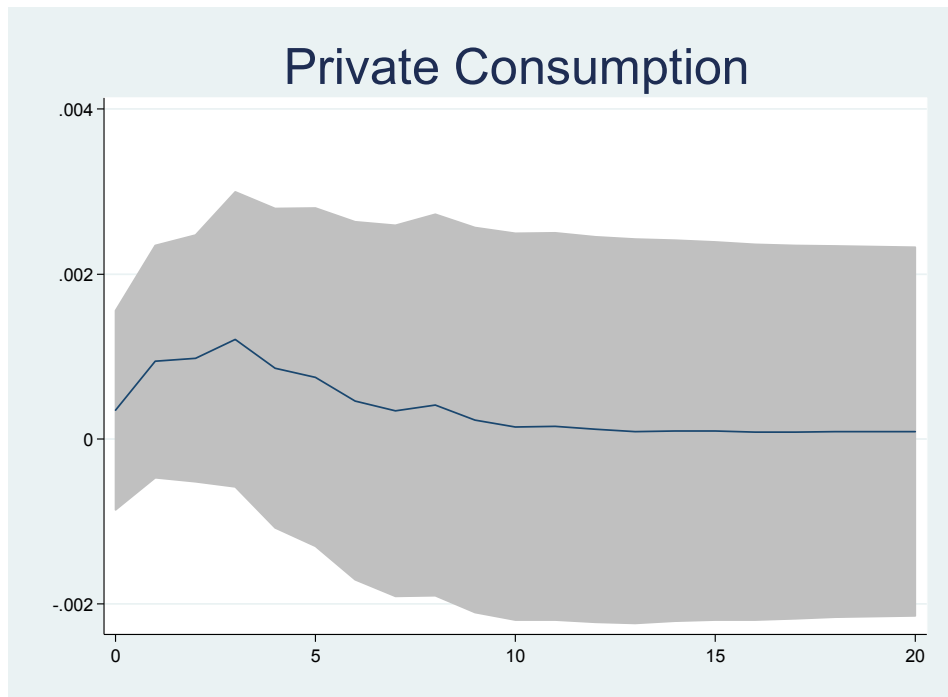
# VAR with Quarterly data, 5 variables

- **(G-Factor) x (News Dummy)**
- Construction orders from the public sector (top 50 companies)
- Nominal Public Investment (SNA)
- Public Investment Deflator (SNA)
- Macro Variable (GDP etc.)
- Details
  - All in log differences except for the news variables.
  - # of lags = 4
  - Cholesky with the above ordering.
  - Dummies for the 3 major earthquakes & Consumption tax hike.

# Responses to (G-Factor)x(News) (1)



# Response to (G-Factor) x (News) (2)





## 6. Summary and work ahead

- What we have done:
  - Proposed a new way to identify anticipated shock to public investment.
  - Combine stock market info and news.
  - Take advantage of within-industry heterogeneity across construction companies
- Our indicator...
  - Successfully predicts future public investment.
  - Positive but insignificant effect on private consumption.
  - Positive, significant but short-lived effect on GDP.

- Drawbacks of our approach
  - To identify the G-factor through rotation, we need to specify the **entire structure** of the target matrix.
  - Our indicator takes non-zero values only on our identified news dates.
    - But people's expectations may be changing **gradually** over time, even on non-news dates.

- Work ahead:
  - Can't we utilize info from **everyday** changes in stock prices, not just on the pre-specified news dates?
  - ... in a way which allows us to identify only a factor that we are really interested in?
  - We are working on it!