

# Discussion: High-Frequency Identification of Defense News Shocks

---

Authors: Ethan McClure & Anders Yding

Discussant: Jesper Böjeryd

NorMac 2025

# How much does government/defense spending affect aggregate outcomes?

## Context:

- Still unsettled how much output, inflation, etc. responds to changes in government spending
- Different approaches, different drawbacks, different estimates
- Exogenous changes in defense spending often used as variation

## Empirical challenge:

- Policymakers don't randomly allocate spending; issue of endogeneity
- Anticipation effect
- State dependence
- Method of financing: Through taxes, debt issuance, or monetization?

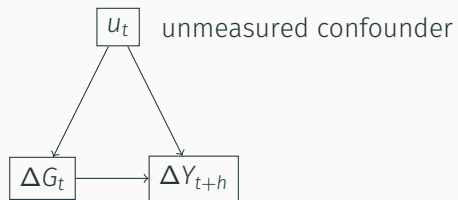
Use excess return of defense contractor stocks in windows around policy announcements as an instrument for instrumental-variables local-projection estimation

- Significant fiscal multipliers over short run:  $> 2$  for 12 first quarters
- Reversal over longer run:  $\approx 1.5$  after 20 quarters
- Quantifies roles of the state of economy and monetary policy in amplifying/weakening effect

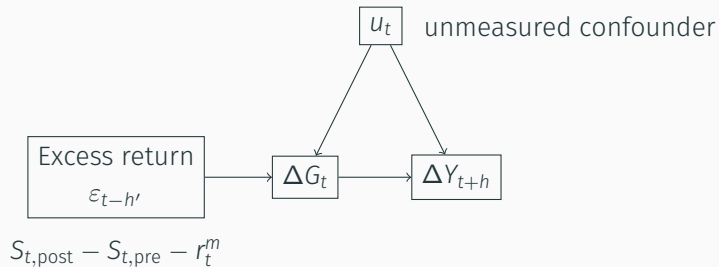
# Identification using an IV approach



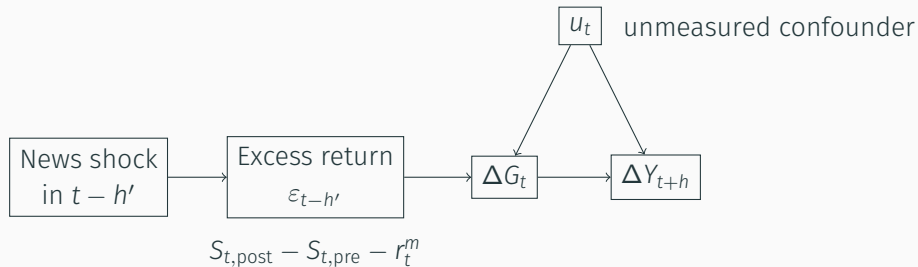
## Identification using an IV approach



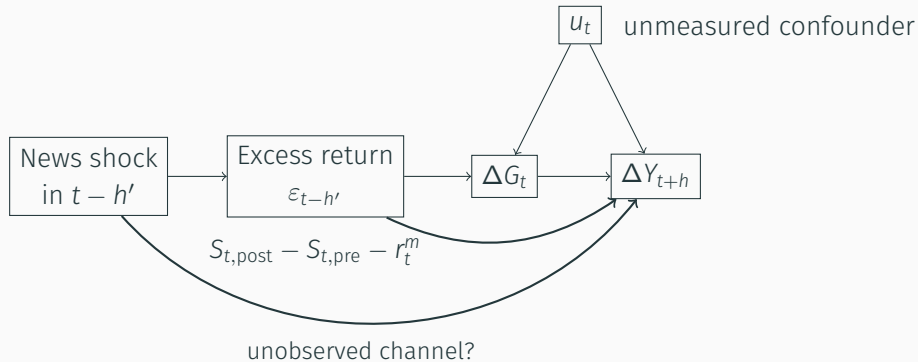
# Identification using an IV approach



# Identification using an IV approach

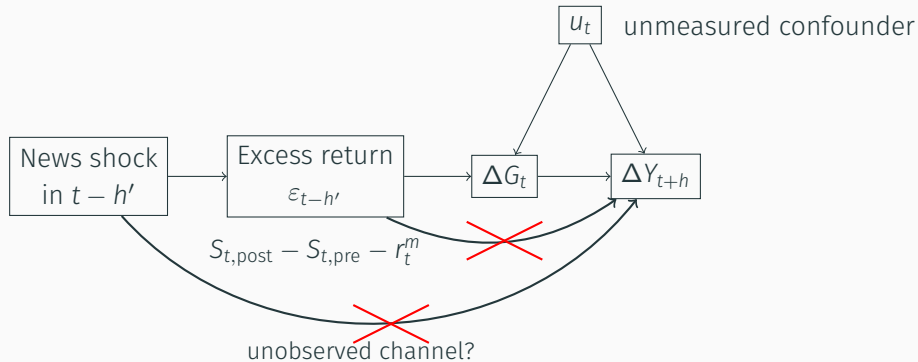


# Identification using an IV approach





# Identification using an IV approach



### Key assumption:

$\varepsilon_{t-h'}$  captures only features of the News shock that affects  $\Delta G_t$ 's influence on output  $Y_{t+h}$

## Requires assumptions about SDFs, costs, and markups – which are testable

Defense contractor's stock price  $S_t$ :

$$S_t = \mathbb{E} \left[ \sum_{\tau \geq 1}^n \Lambda_{t+\tau} \text{div}_{t+\tau} + \Lambda_{t+n} S_{t+n} \mid \mathcal{F}_t \right], \quad \forall n \geq 1 \quad (1)$$

## Requires assumptions about SDFs, costs, and markups – which are testable

Defense contractor's stock price  $S_t$ :

$$S_t = \mathbb{E} \left[ \sum_{\tau \geq 1}^n \Lambda_{t+\tau} \text{div}_{t+\tau} + \Lambda_{t+n} S_{t+n} \mid \mathcal{F}_t \right], \quad \forall n \geq 1 \quad (1)$$

Say that  $\text{div}_{t+\tau} = G_t - c_t = (\mu - 1) c(q_t)$

## Requires assumptions about SDFs, costs, and markups – which are testable

Defense contractor's stock price  $S_t$ :

$$S_t = \mathbb{E} \left[ \sum_{\tau \geq 1}^n \Lambda_{t+\tau} \text{div}_{t+\tau} + \Lambda_{t+n} S_{t+n} \mid \mathcal{F}_t \right], \quad \forall n \geq 1 \quad (1)$$

Say that  $\text{div}_{t+\tau} = G_t - c_t = (\mu - 1) c(q_t)$

Following news shock, only expectations about  $q_{t'}$  changes, which leads to change in  $S_t$ :

## Requires assumptions about SDFs, costs, and markups – which are testable

Defense contractor's stock price  $S_t$ :

$$S_t = \mathbb{E} \left[ \sum_{\tau \geq 1}^n \Lambda_{t+\tau} \text{div}_{t+\tau} + \Lambda_{t+n} S_{t+n} \mid \mathcal{F}_t \right], \quad \forall n \geq 1 \quad (1)$$

Say that  $\text{div}_{t+\tau} = G_t - c_t = (\mu - 1) c(q_t)$

Following news shock, only expectations about  $q_{t'}$  changes, which leads to change in  $S_t$ :

$$Z_t \equiv S_{t,\text{post}} - S_{t,\text{pre}} - r_t^m$$

## Requires assumptions about SDFs, costs, and markups – which are testable

Defense contractor's stock price  $S_t$ :

$$S_t = \mathbb{E} \left[ \sum_{\tau \geq 1}^n \Lambda_{t+\tau} \text{div}_{t+\tau} + \Lambda_{t+n} S_{t+n} \mid \mathcal{F}_t \right], \quad \forall n \geq 1 \quad (1)$$

Say that  $\text{div}_{t+\tau} = G_t - c_t = (\mu - 1) c(q_t)$

Following news shock, only expectations about  $q_{t'}$  changes, which leads to change in  $S_t$ :

$$\begin{aligned} Z_t &\equiv S_{t,\text{post}} - S_{t,\text{pre}} - r_t^m \\ &= \mathbb{E}[\Lambda_{t'}(\mu - 1) c(q_{t'}) \mid \mathcal{F}_{t,\text{post}}] - \mathbb{E}[\Lambda_{t'}(\mu - 1) c(q_{t'}) \mid \mathcal{F}_{t,\text{pre}}] - r_t^m \end{aligned}$$

$$z_t = \mathbb{E}[\Lambda_{t'}(\mu - 1) c(q_{t'}) \mid \mathcal{F}_{t,\text{post}}] - \mathbb{E}[\Lambda_{t'}(\mu - 1) c(q_{t'}) \mid \mathcal{F}_{t,\text{pre}}] - r_t^m$$



$$z_t = \mathbb{E}[\Lambda_{t'}(\mu - 1) c(q_{t'}) \mid \mathcal{F}_{t,\text{post}}] - \mathbb{E}[\Lambda_{t'}(\mu - 1) c(q_{t'}) \mid \mathcal{F}_{t,\text{pre}}] - r_t^m$$

Can defense spending news affect stochastic discount factors  $\Lambda_{t'}$ ?

$$z_t = \mathbb{E}[\Lambda_{t'}(\mu - 1) c(q_{t'}) \mid \mathcal{F}_{t,\text{post}}] - \mathbb{E}[\Lambda_{t'}(\mu - 1) c(q_{t'}) \mid \mathcal{F}_{t,\text{pre}}] - r_t^m$$

Can defense spending news affect stochastic discount factors  $\Lambda_{t'}$ ?

- E.g., debt financing can raise risk premia

$$z_t = \mathbb{E}[\Lambda_{t'}(\mu - 1) c(q_{t'}) \mid \mathcal{F}_{t,\text{post}}] - \mathbb{E}[\Lambda_{t'}(\mu - 1) c(q_{t'}) \mid \mathcal{F}_{t,\text{pre}}] - r_t^m$$

Can defense spending news affect stochastic discount factors  $\Lambda_{t'}$ ?

- E.g., debt financing can raise risk premia

Can be studied in financial data  $\Rightarrow$  affects  $Y_{t+h}$

$$z_t = \mathbb{E}[\Lambda_{t'}(\mu - 1) c(q_{t'}) \mid \mathcal{F}_{t,\text{post}}] - \mathbb{E}[\Lambda_{t'}(\mu - 1) c(q_{t'}) \mid \mathcal{F}_{t,\text{pre}}] - r_t^m$$

Can defense spending news affect stochastic discount factors  $\Lambda_{t'}$ ?

- E.g., debt financing can raise risk premia

Can be studied in financial data  $\Rightarrow$  affects  $Y_{t+h}$

Can defense spending news affect markups  $\mu$ ?

$$z_t = \mathbb{E}[\Lambda_{t'}(\mu - 1) c(q_{t'}) \mid \mathcal{F}_{t,\text{post}}] - \mathbb{E}[\Lambda_{t'}(\mu - 1) c(q_{t'}) \mid \mathcal{F}_{t,\text{pre}}] - r_t^m$$

Can defense spending news affect stochastic discount factors  $\Lambda_{t'}$ ?

- E.g., debt financing can raise risk premia

Can be studied in financial data  $\Rightarrow$  affects  $Y_{t+h}$

Can defense spending news affect markups  $\mu$ ?

- Maybe not? How are prices negotiated between Department of Defense and contactors?

$$z_t = \mathbb{E}[\Lambda_{t'}(\mu - 1) c(q_{t'}) \mid \mathcal{F}_{t,\text{post}}] - \mathbb{E}[\Lambda_{t'}(\mu - 1) c(q_{t'}) \mid \mathcal{F}_{t,\text{pre}}] - r_t^m$$

Can defense spending news affect stochastic discount factors  $\Lambda_{t'}$ ?

- E.g., debt financing can raise risk premia

Can be studied in financial data  $\Rightarrow$  affects  $Y_{t+h}$

Can defense spending news affect markups  $\mu$ ?

- Maybe not? How are prices negotiated between Department of Defense and contactors?
- Might be possible to study using data (publicly traded companies)

$$z_t = \mathbb{E}[\Lambda_{t'}(\mu - 1) c(q_{t'}) \mid \mathcal{F}_{t,\text{post}}] - \mathbb{E}[\Lambda_{t'}(\mu - 1) c(q_{t'}) \mid \mathcal{F}_{t,\text{pre}}] - r_t^m$$

Can defense spending news affect stochastic discount factors  $\Lambda_{t'}$ ?

- E.g., debt financing can raise risk premia

Can be studied in financial data  $\Rightarrow$  affects  $Y_{t+h}$

Can defense spending news affect markups  $\mu$ ?

- Maybe not? How are prices negotiated between Department of Defense and contactors?
- Might be possible to study using data (publicly traded companies)

Can defense spending news affect the cost of production  $c(q_{t'})$ ?

$$z_t = \mathbb{E}[\Lambda_{t'}(\mu - 1) c(q_{t'}) \mid \mathcal{F}_{t,\text{post}}] - \mathbb{E}[\Lambda_{t'}(\mu - 1) c(q_{t'}) \mid \mathcal{F}_{t,\text{pre}}] - r_t^m$$

Can defense spending news affect stochastic discount factors  $\Lambda_{t'}$ ?

- E.g., debt financing can raise risk premia

Can be studied in financial data  $\Rightarrow$  affects  $Y_{t+h}$

Can defense spending news affect markups  $\mu$ ?

- Maybe not? How are prices negotiated between Department of Defense and contractors?
- Might be possible to study using data (publicly traded companies)

Can defense spending news affect the cost of production  $c(q_{t'})$ ?

- Is it costly for contractors to change their capacity?



$$z_t = \mathbb{E}[\Lambda_{t'}(\mu - 1) c(q_{t'}) \mid \mathcal{F}_{t,\text{post}}] - \mathbb{E}[\Lambda_{t'}(\mu - 1) c(q_{t'}) \mid \mathcal{F}_{t,\text{pre}}] - r_t^m$$

Can defense spending news affect stochastic discount factors  $\Lambda_{t'}$ ?

- E.g., debt financing can raise risk premia

Can be studied in financial data  $\Rightarrow$  affects  $Y_{t+h}$

Can defense spending news affect markups  $\mu$ ?

- Maybe not? How are prices negotiated between Department of Defense and contractors?
- Might be possible to study using data (publicly traded companies)

Can defense spending news affect the cost of production  $c(q_{t'})$ ?

- Is it costly for contractors to change their capacity?
- Should also be available in public reports

# What is the role of bias?

So,

# What is the role of bias?

So, I believe all this can be addressed

# What is the role of bias?

So, I believe all this can be addressed

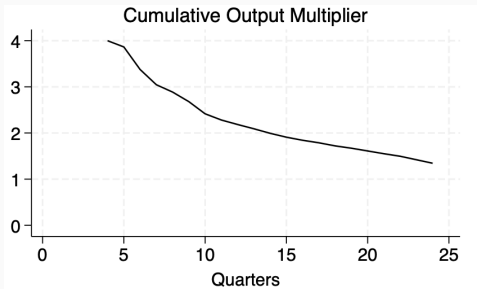
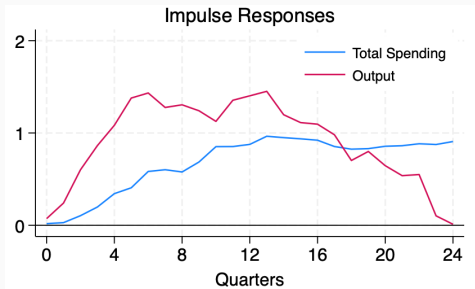
**But!**

# What is the role of bias?

**So,** I believe all this can be addressed

**But!** Even if not, then think about how estimates will be biased. Up? Down?  
is the measured multiplier a lower or upper limit?

# The fast response of output



The drivers of the early big rise in output is important

- Is it consumption or investment?
- *Whose* consumption or investment?
  - Regional data
  - Financial data (defense contractor investment and hiring)

## Other comments i

- Defense production is about 20% of spending – where is the rest going? Can you pick up on that?
- Addressing the external validity questions could be something that goes beyond previous work and validates the method
- Is it possible to say anything about agents expectations of future inflation or taxes to cover spending? That affects decision making too
- Does taking out  $r_t^m$  remove some expected GE effects, and does that affect multiplier?
- You say other methods lack power (e.g., post Korean War). Can you say what about your/their method is key to get around this?



- Discussion on the accuracy of longer-run effects? What multiplier do we end up with believing in the most?
- I agree that the spending seems to be tax-financed in short run, but it seems like it is debt-financed in the long-run
- Do your defense spending multiplier generalize to overall government spending multipliers? Why? Why not?

**BIG** important question

Requires careful, technical implementation

Which is well executed and presented

Fiscal multiplier is dynamic, but steadily above 1