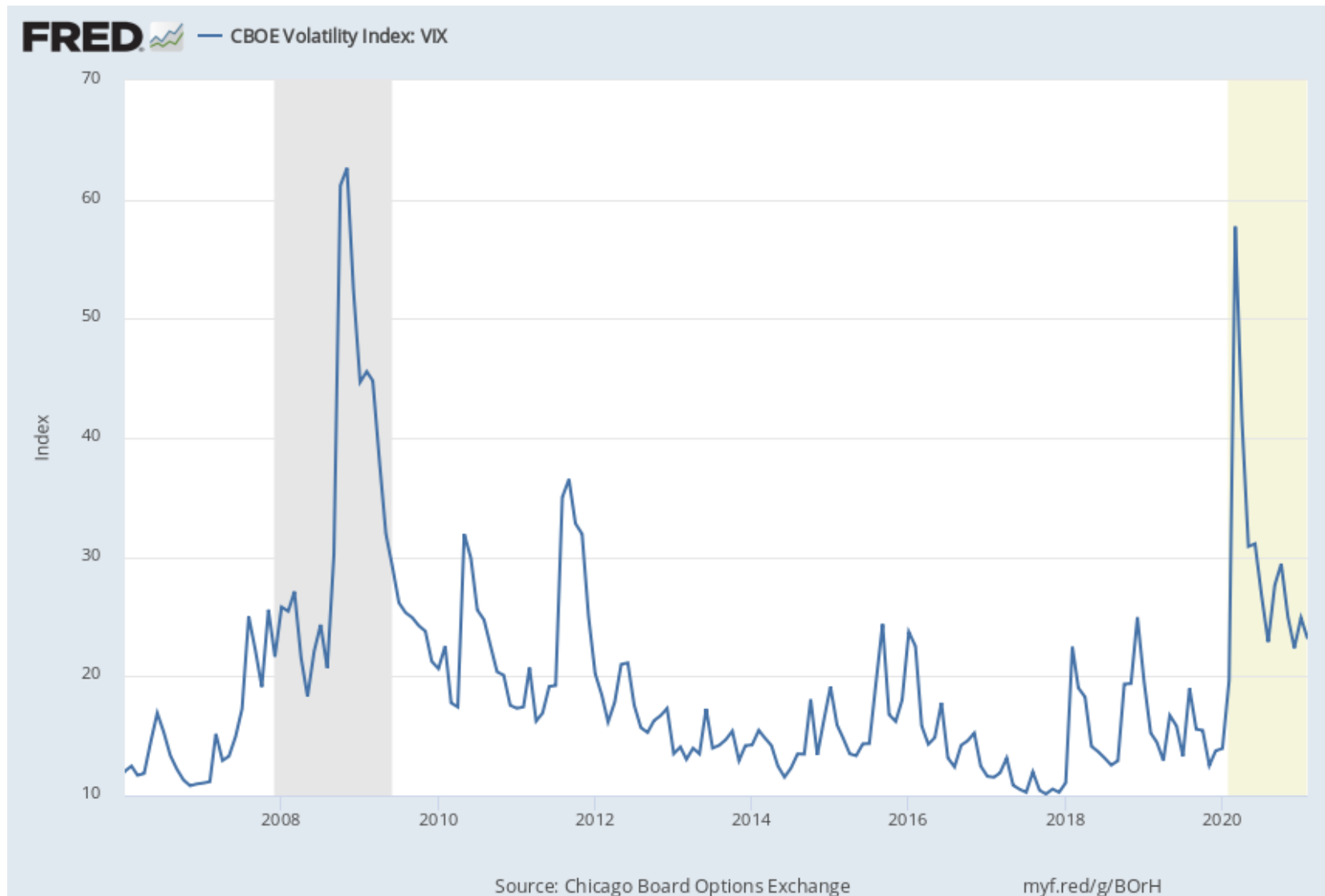


THE EFFECT OF MACROECONOMIC UNCERTAINTY ON FIRM DECISIONS

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ECONOMIC UNCERTAINTY IN THE USA



U.S. recessions often coincide with significant spikes in uncertainty.

WHAT WE DO

- **Randomized Control Trial:** We use an RCT approach with randomized information treatments to different groups of firms to induce *exogenous* variation in their expectations and uncertainty about future economic growth in New Zealand.
- **Follow-up Surveys to Measure Outcomes:** By tracking the same firms over time, we can measure how/whether the exogenous variation in uncertainty (net of first moment expectations) affected their decisions:
 - Prices and wages
 - Investment, employment, sales, etc.

Jointly, this provides clear *causal* evidence on how uncertainty affects firms' decisions.

AN RCT APPROACH

Elicit **prior** expectations and planned decisions



Information treatment



Measure **posterior**
beliefs



Measure ex-post decisions



Control group (no information)



Measure **posterior**
beliefs

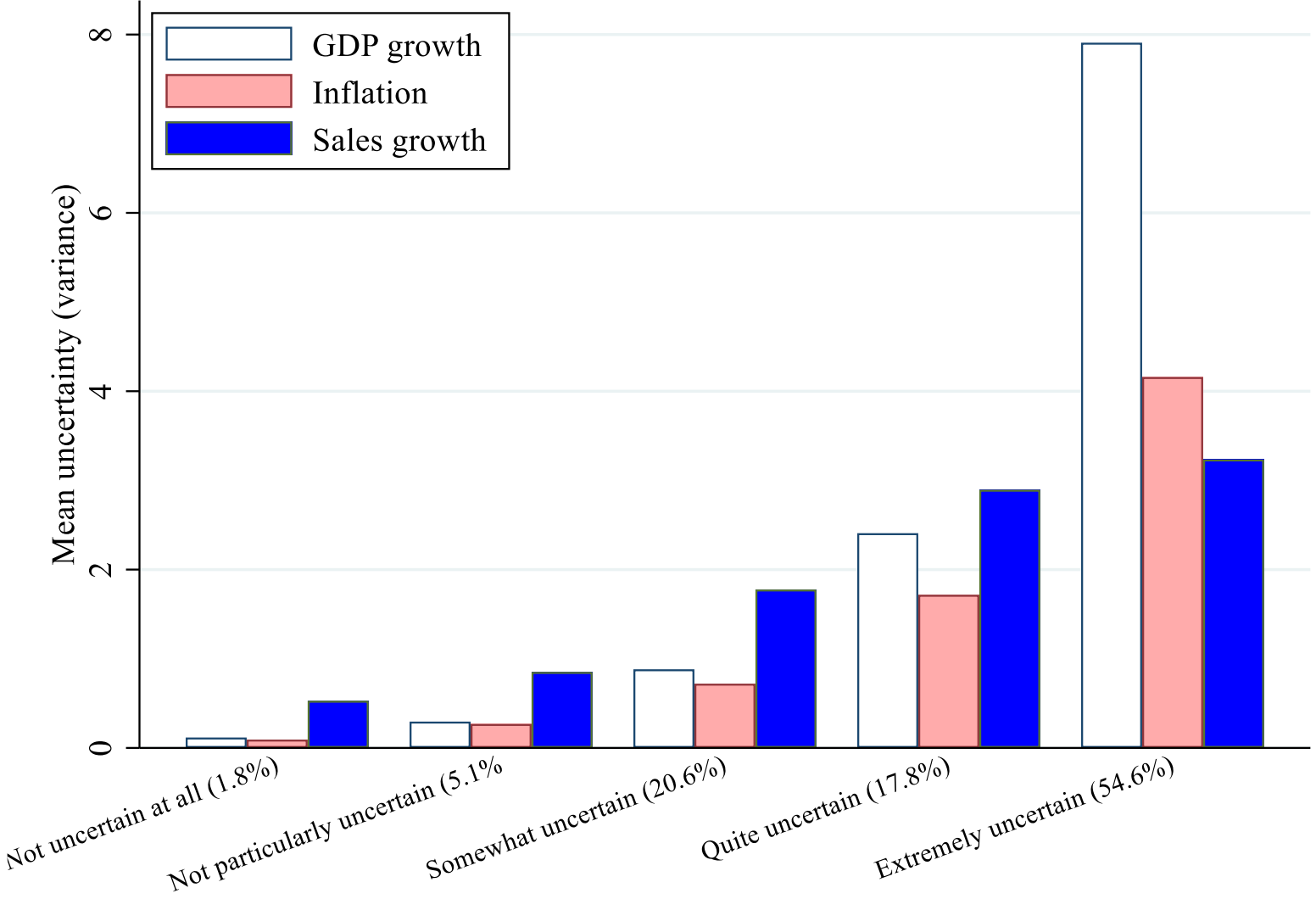


Measure ex-post decisions

THE RCT IN PRACTICE

- Survey of ~4,000 firms in New Zealand in 2021.
- **Measure prior beliefs about uncertainty and mean forecasts:**
 - *“Now we’d like you to think about what you perceive as the most pessimistic and most optimistic economic outlooks for New Zealand over the next 12 months. What do you think the lowest annualized GDP growth rate might be for this time period and what do you think the highest might be?”*
 - *“How would you characterize the current macroeconomic outlook over the next 12 months in New Zealand?”*
 - *Extremely uncertain*
 - *Quite uncertain*
 - *Somewhat uncertain*
 - *Not particularly uncertain*
 - *Not uncertain at all*

QUALITATIVE AND QUANTITATIVE UNCERTAINTY



TREATMENTS

T1: *“We are going to give you information from a group of leading experts about the economy. The average prediction among professional forecasters is that the New Zealand economy will grow 4% in 2021.”*

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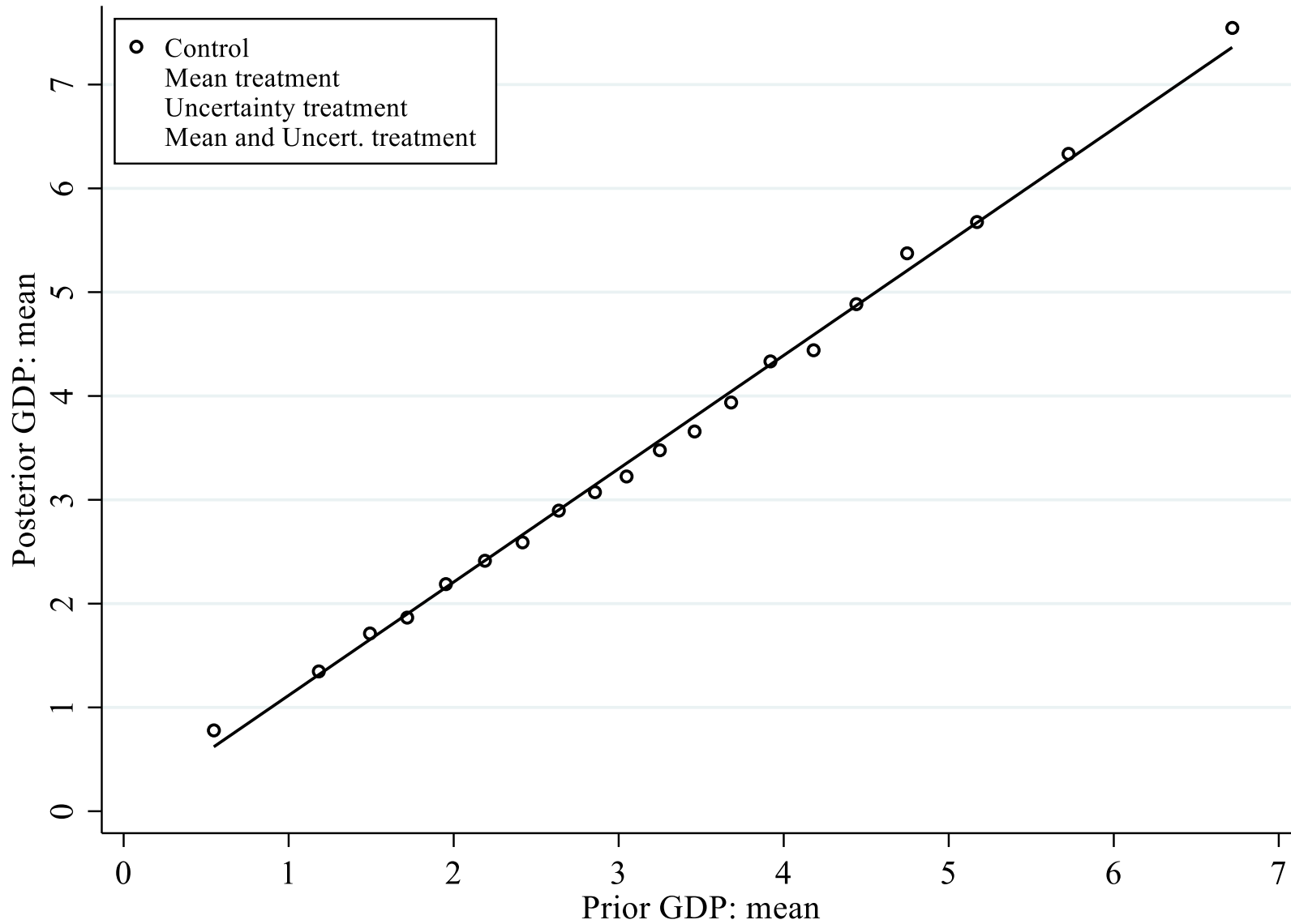
T3: *“We are going to give you information from a group of leading experts about the economy. The average prediction among professional forecasters is that the New Zealand economy will grow 4% in 2021. They are quite uncertain about the economic outlook for the New Zealand economy. The difference between their optimistic forecast and pessimistic forecast is approximately 3.1 percentage points for the 2021 growth rate.”*

POSTERIOR BELIEFS

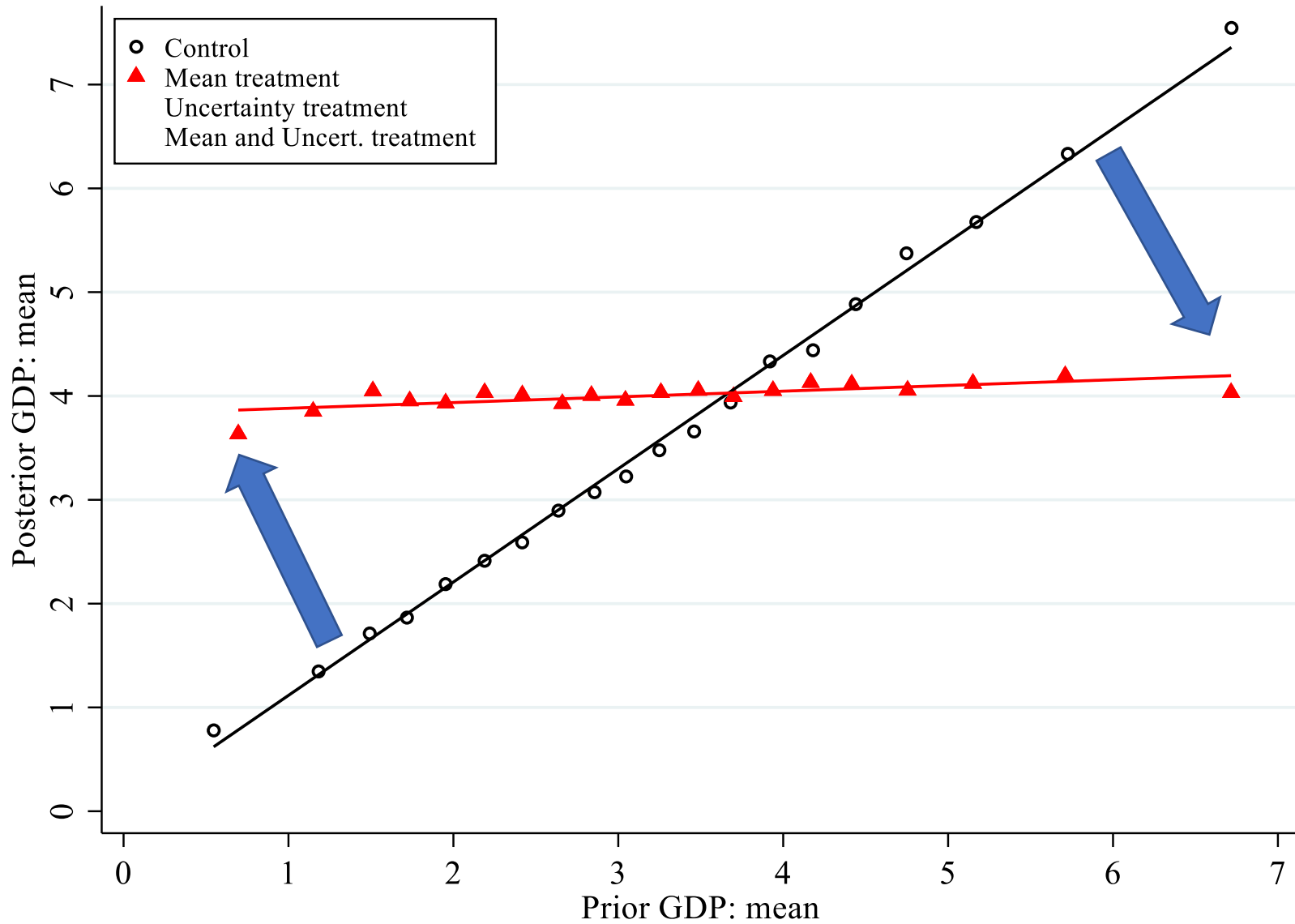
Measure ex-post beliefs about uncertainty and mean forecasts:

“What do you think the growth rate of the New Zealand economy will be over the next twelve months in each of the following scenarios:” [Your most pessimistic outlook, your somewhat pessimistic outlook, your middle-of-the-road outlook, your somewhat optimistic outlook, your most optimistic outlook]

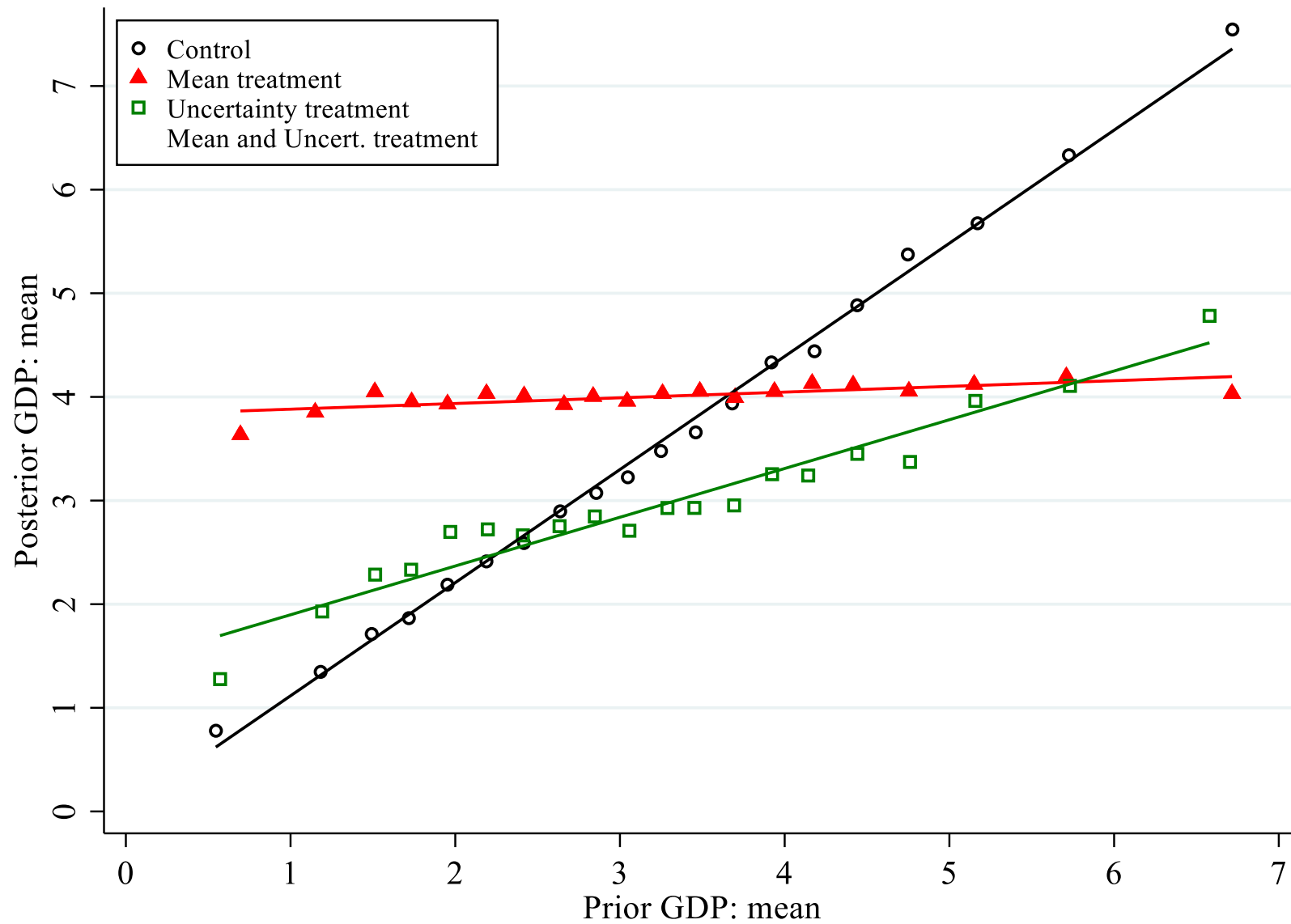
TREATMENT EFFECTS ON FIRMS' MACRO BELIEFS: MEAN



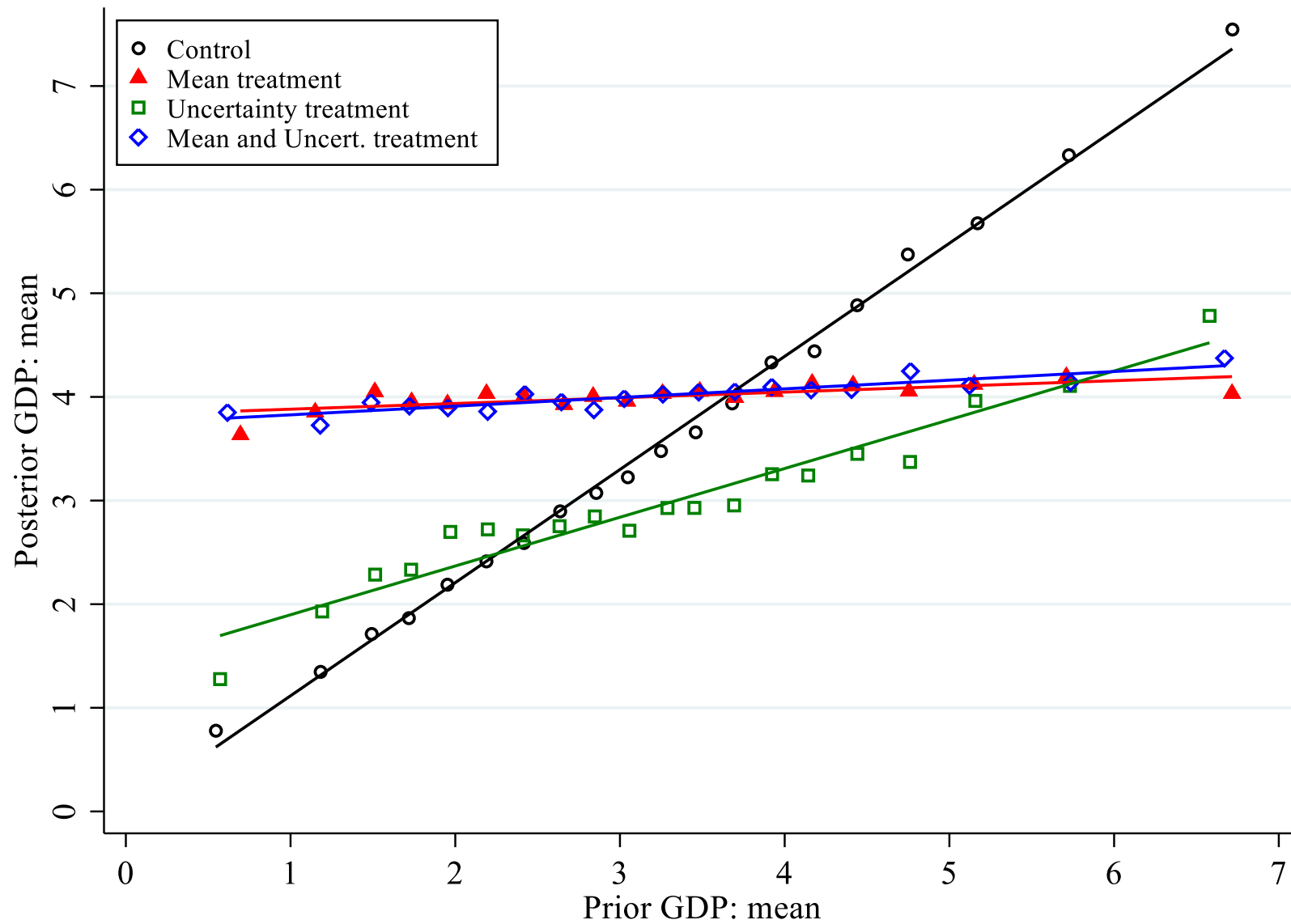
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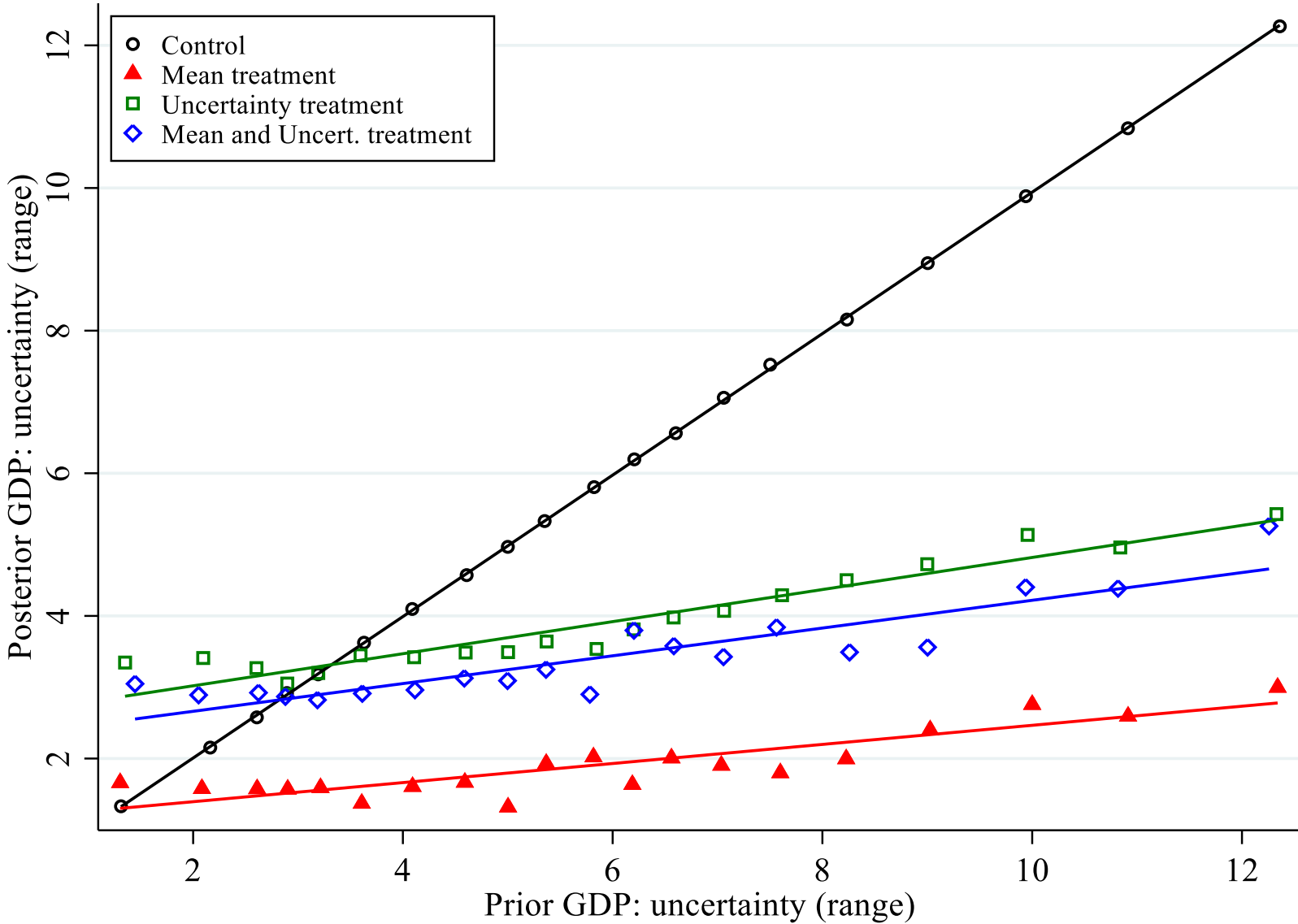
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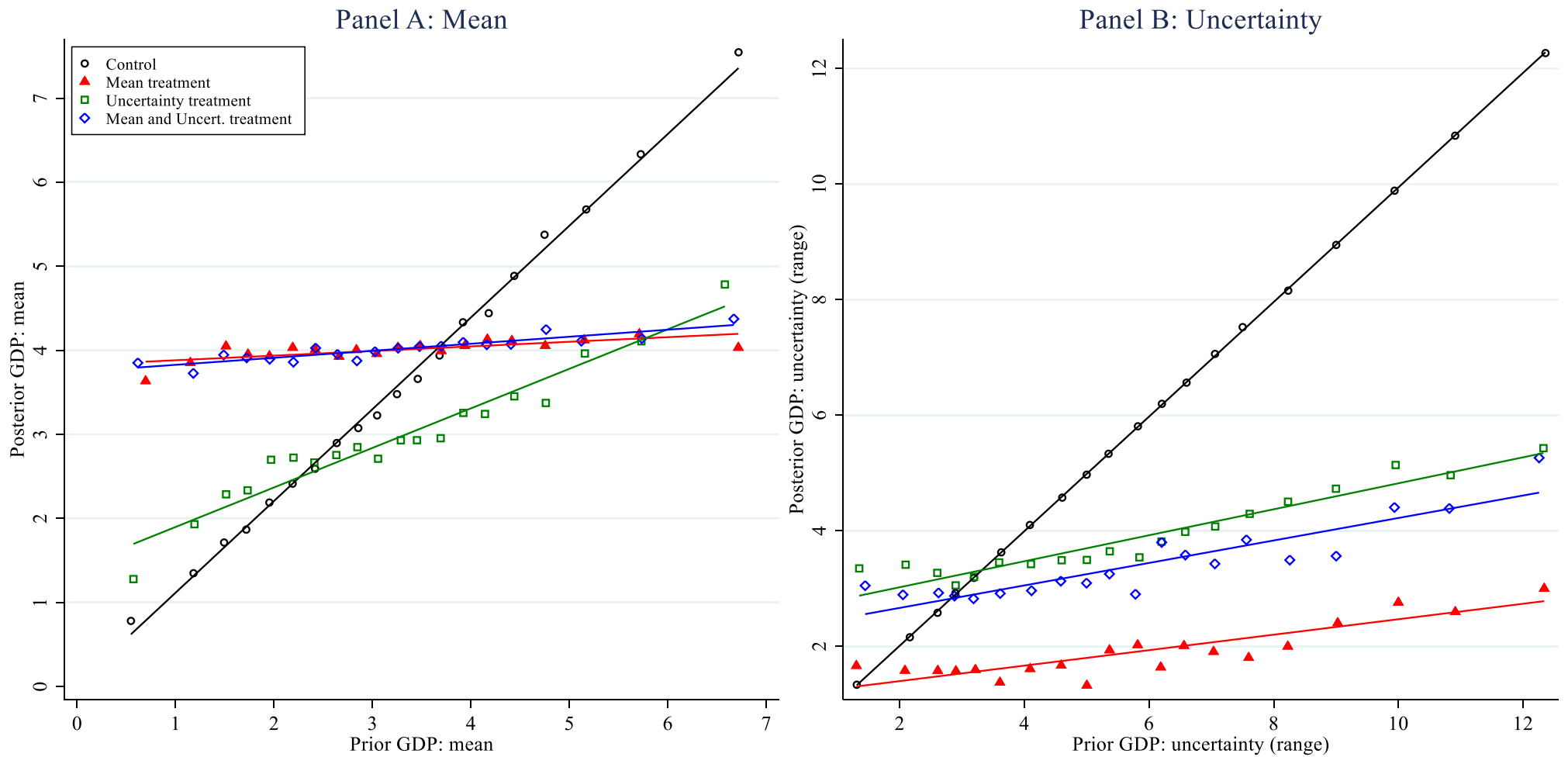
TREATMENT EFFECTS ON FIRMS' MACRO BELIEFS: MEAN



TREATMENT EFFECT ON FIRMS' MACRO BELIEFS: UNCERTAINTY

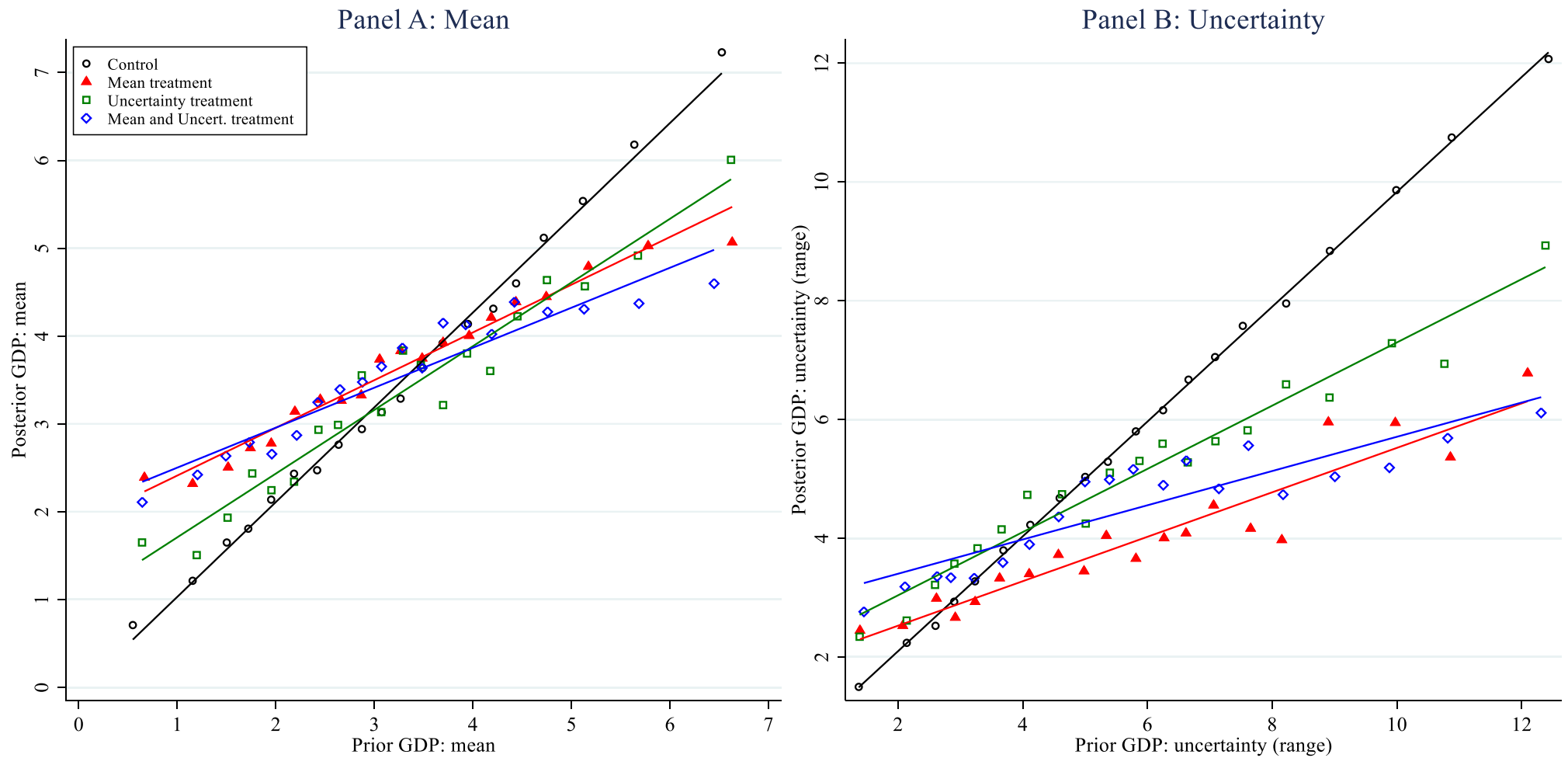


TREATMENT EFFECTS ON FIRMS' MACRO BELIEFS



Different treatments induce different *relative* movements in first and second moments, which will provide us with identification of each effect.

TREATMENT EFFECTS ON FIRMS' MACRO BELIEFS: *PERSISTENCE*



Six months later, both first and second moments (but especially second moments) are still affected by the treatments.

POST-TREATMENT BEHAVIOR

We measure ex-post decisions of firms six months later:

- “Over the last 6 months, by how much (in % changes relative to current levels) did you change:
 - a) The price of your main product: %
 - b) Total employment at your firm: %
 - c) Capital stock at your firm: %
 - d) Average wages at your firm: %

POST-TREATMENT BEHAVIOR

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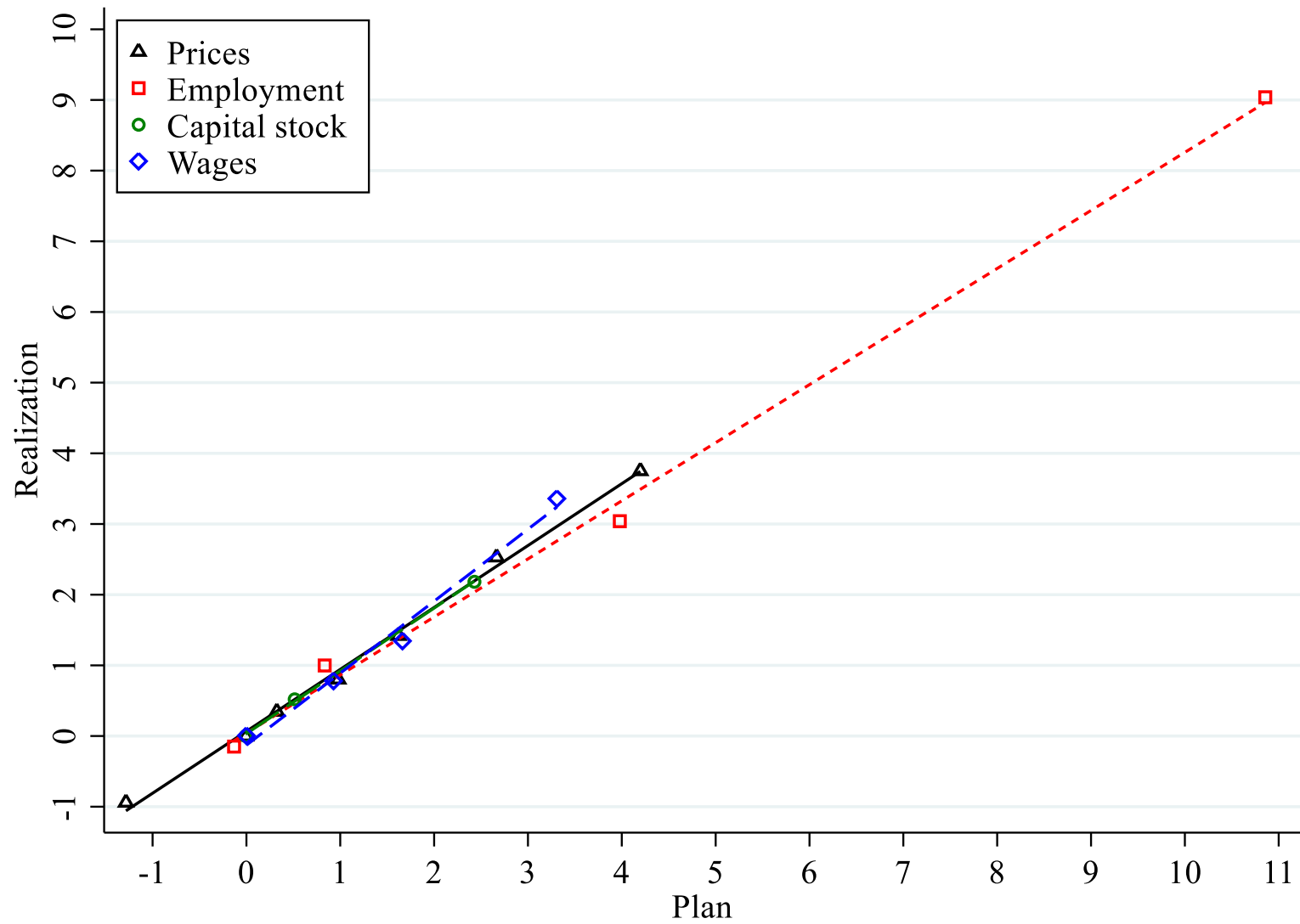
- “Over the last 6 months, by how much (in % changes relative to current levels) did you change:
 - a) The price of your main product: %
 - b) Total employment at your firm: %
 - c) Capital stock at your firm: %
 - d) Average wages at your firm: %
- Did you invest in advertising over the previous 6 months? If so, by how much did you change your monthly advertising budget?
- Did you engage in research and development over the previous 6 months? If so, by how much did you change your monthly research and development budget?

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- Now think of your percentage operating margin... By how many percentage points do you think this margin changed?”

POST-TREATMENT BEHAVIOR FOR CONTROL GROUP



EFFECTS OF 1ST AND 2ND MOMENTS FOR EXPECTED GROWTH RATE OF NZ GDP ON FIRM DECISIONS

	<i>Dependent variable: Change relative to pre-treatment plan</i>						
	Price	Employment	Capital stock	Wages	Advert. budget	R&D budget	Profit margin
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Mean							
Uncertainty							
Observations	2,020	2,020	2,020	2,020	2,020	2,020	2,020
R-squared	0.38	0.25	0.26	0.00	0.14	0.00	0.01
1 st stage F: mean	438.2	438.2	438.2	438.2	438.2	438.2	438.2
1 st stage F: var	437.8	437.8	437.8	437.8	437.8	437.8	437.8

Our information treatments provide powerful instruments for expectations.

EFFECTS OF 1ST AND 2ND MOMENTS FOR EXPECTED GROWTH RATE OF NZ GDP ON FIRM DECISIONS

<i>Dependent variable: Change relative to pre-treatment plan</i>							
	Price	Employment	Capital stock	Wages	Advert. budget	R&D budget	Profit margin
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Mean	-0.06*** (0.02)	-0.08 (0.10)	-0.02 (0.02)	-0.01 (0.01)			
Uncertainty	-0.11*** (0.01)	-0.62*** (0.04)	-0.07*** (0.01)	0.00 (0.00)			
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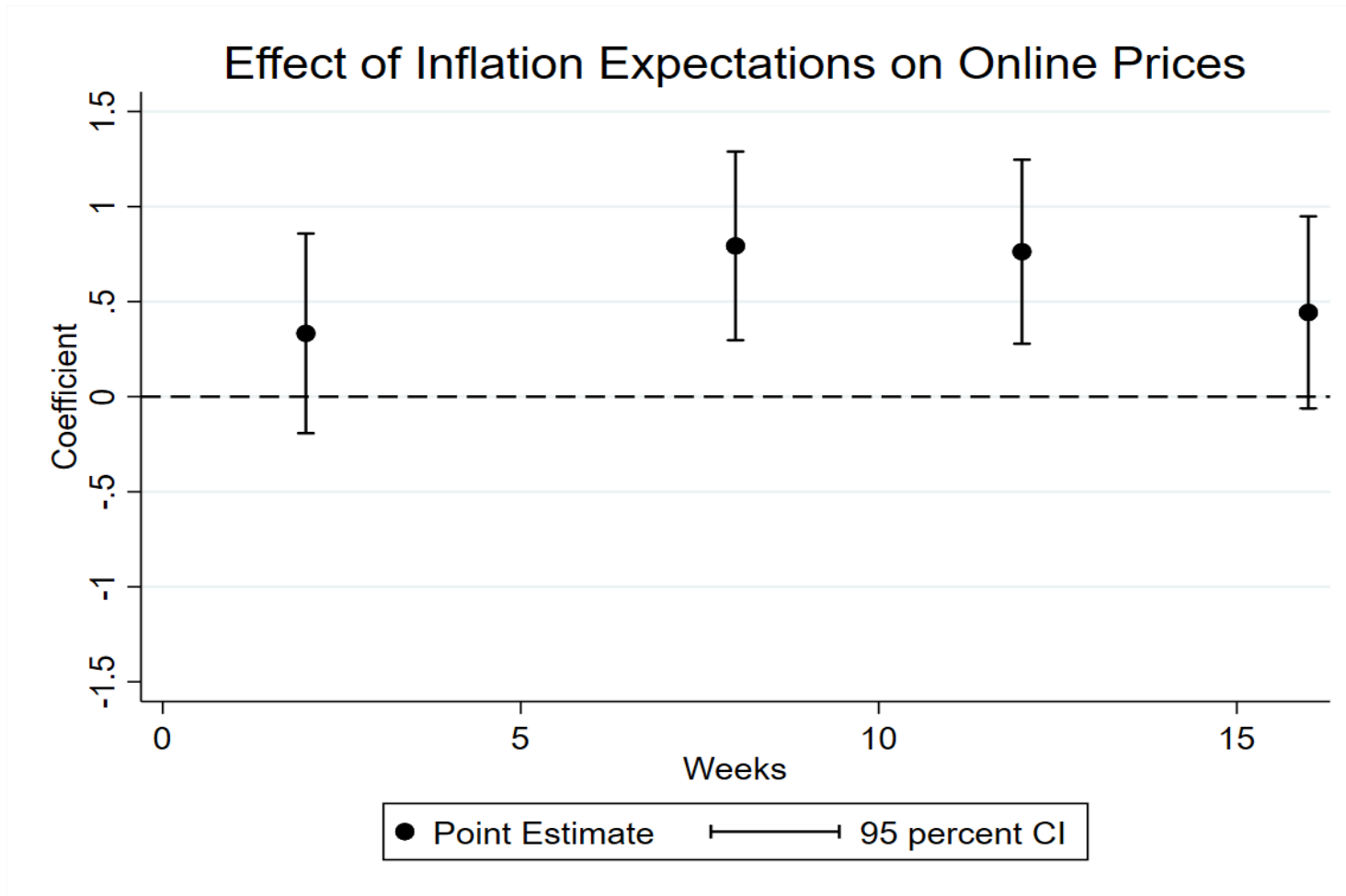
Higher aggregate uncertainty leads to lower prices, employment and investment but not change in wages.

EFFECTS OF 1ST AND 2ND MOMENTS FOR EXPECTED GROWTH RATE OF NZ GDP ON FIRM DECISIONS

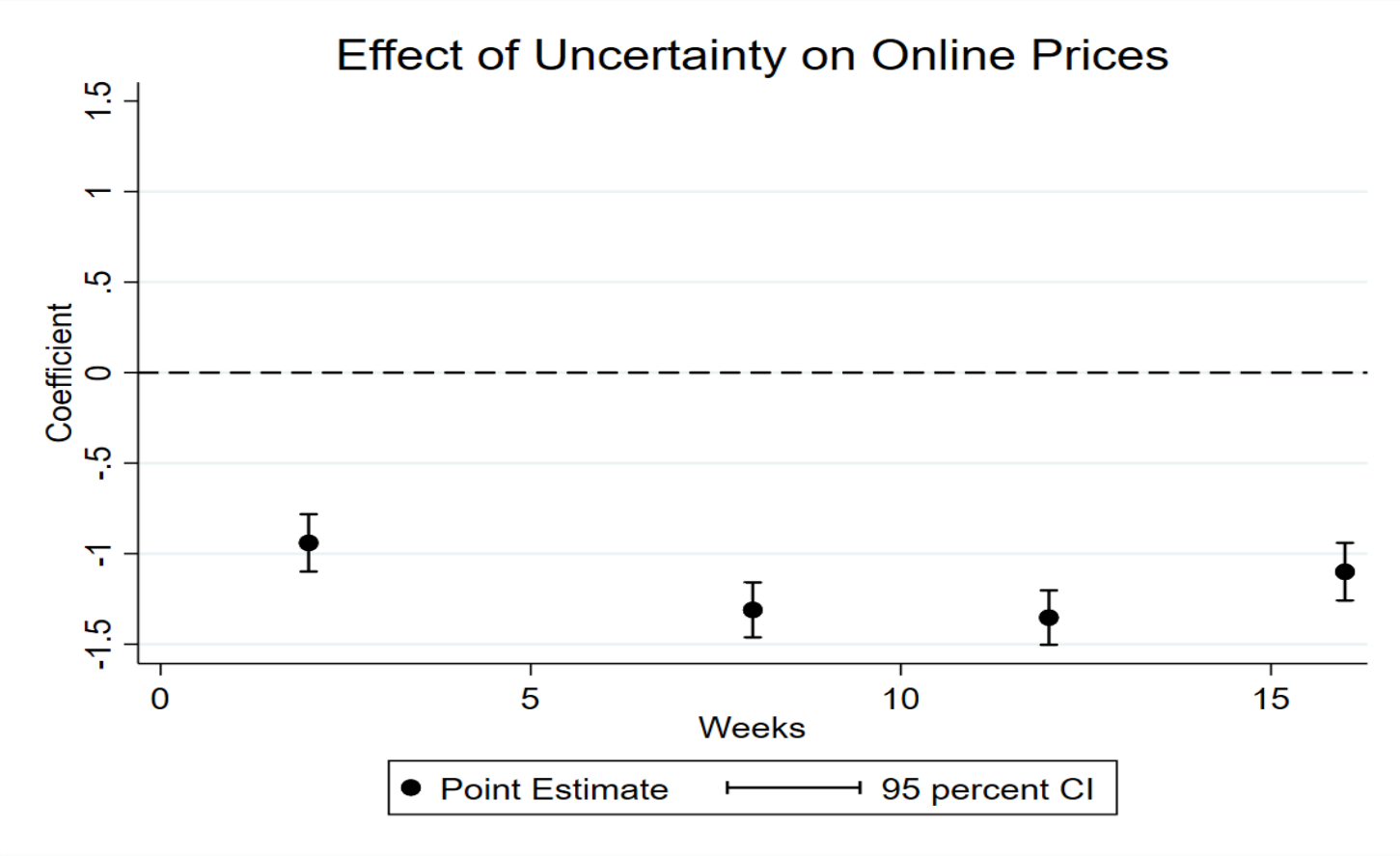
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Higher aggregate uncertainty leads to more advertising, no change in R&D, and a small increase in profit margins.

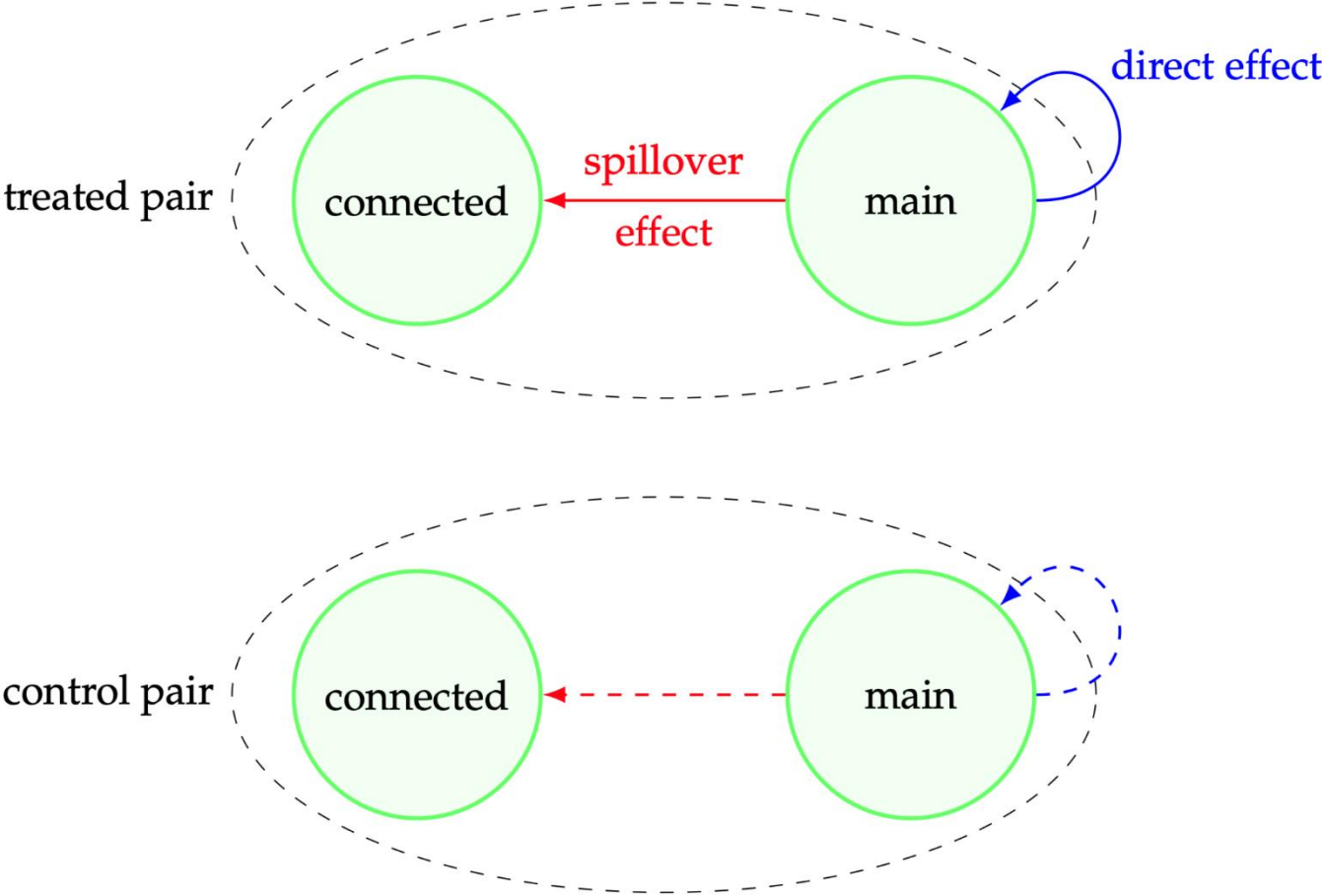
EFFECT OF INFLATION EXPECTATIONS ON ONLINE PRICES



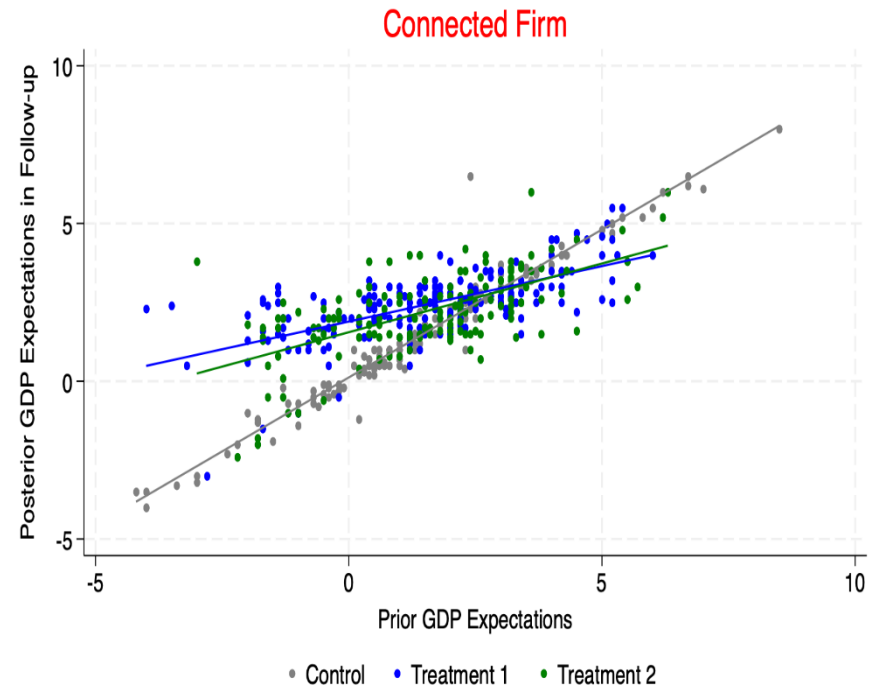
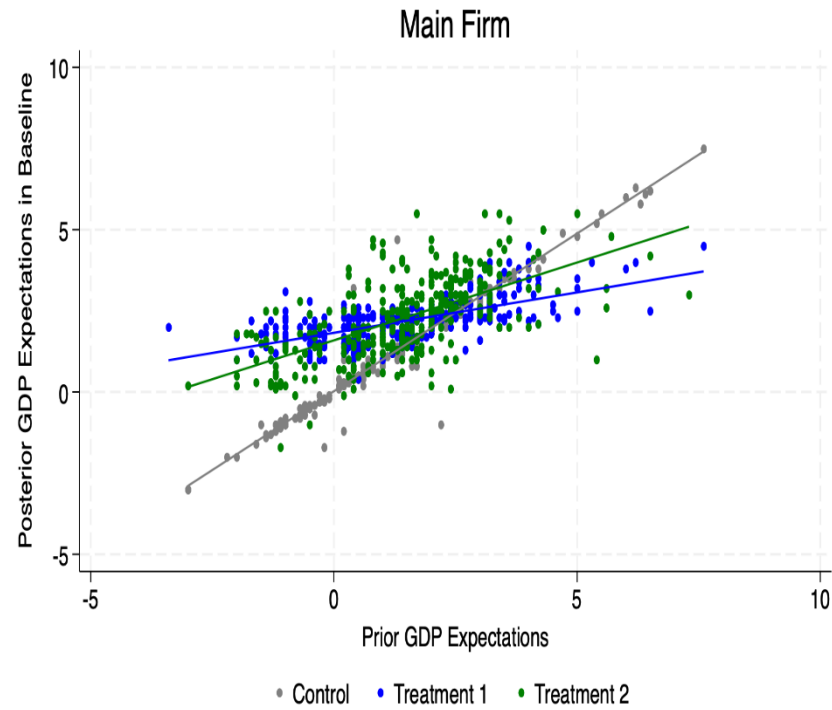
EFFECT OF UNCERTAINTY ON ONLINE PRICES



IMPLICATIONS ON SUPPLY CHAIN RELATIONSHIP



IMPLICATIONS ON SUPPLY CHAIN RELATIONSHIP



SUMMARY

We find that in response to higher uncertainty, firms

- lower prices in general but they lower online prices by bigger margins
- reduce investment and employment
- experience lower sales
- do not change wages
- experience slightly higher profits
- invest more heavily in advertising
- interact with their peers in the supply chain for information