What Can 240,000 New Credit Transactions Tell Us About the Impact of NGEU Funds?

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This Paper: What It Is About

- Focus: Evaluating how procurement awards -especially those funded by the Next Generation EU (NGEU) program- affect firm new lending operations
- Public-Private Big Data: Combines public procurement records, detailed credit transaction data from BBVA, and firm characteristics.
- Questions to answer:
  - Do procurement contracts boost firms' new credit?
  - Do NGEU-funded contracts have a larger or smaller impact on firm new credit than traditional procurement awards?
  - Is there heterogeneity across firm size, sectors, and credit maturity?
  - Does firms' network position influence the impact of a procurement shock?
  - How does procurement-induced credit expansion translate into investment?
- Implications: High Frequency-Granular & Data provides Insights for Policy Design

This paper: Key Results

- Public procurement awards Impact (2019-24): Winning a public contract leads to a cumulative 1-year increase of 0.75% in new credit. Equivalent to a +1.5% elasticity of change in Credit Stock, much lower than the historical Spanish elasticity of +5.5% reported by Di Giovanni et al (2022). No anticipation effects
- NGEU public procurement awards impact (2021-24): NGEU awards lead to a +3.0% increase in new credit (vs +0.75% Total). Equivalent to a +5.0% elasticity of change in Credit Stock (aligned with +5.5% historical estimate).
- Heterogeneity: We find different impact on New Lending by:
  - Firm Size: Smaller firms (+1.25%) see a larger boost than bigger ones (+0.5%)
  - Sector: Manufacturing and construction most benefited
  - Network Position: "+"difference (68% level) late Downstream vs early Upstream
  - Credit Maturity: Higher impact Short-Term (+1.0%) than Long-Term (+0.3%)
- Investment multiplier: NGEU funds translates into 0.33 euros of investment at the sectoral level 1-year after the award (0.015 euros for total procurement)

Bringing and aligning with distinct literature strands

- Government spending and credit supply effects (Galí et al., 2007; Ramey, 2011)
- Financial frictions in fiscal multipliers (Aghion et al., 2014; Ferraresi et al., 2015)
- Public Procurement and Firm Dynamics: Procurement contracts as collateral for credit expansion (Di Giovanni et al., 2024; Gabriel, 2024)
- Heterogeneity on firm investment & employment (Ferraz et al., 2021) Procurement & firm growth (Lee, 2021; Hebous Zimmermann, 2021)
- Policy Shocks Transmission across the Product Network Antras et al, (2012) & Buda et al.,2025) for Monetary Policy
- High-Frequency Economic Indicators: Real-time & High Granular Economic analysis (Chetty et al., 2020, Carvalho et al., 2021, Buda et al.,2022)

Plan of Talk

1. **The Data: BigData Base of Public Procurement & New Lending**
2. Methodology
   - Public procurement bids and new credit operations
   - Public procurement bids and new credit operations: NGEU vs no-NGEU
3. Results
   - The Effects of Public Procurement Bids on New Lending Operations
     - Heterogeneity: Firm Activity Sector and Size
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   - Public Procurement Effects on Investment: heterogeneous multipliers
4. Robustness Checks
5. Conclusions

The Data: A Public-Private Big Data Base of Public Procurement and New Lending Operations

We build a comprehensive and high-quality dataset, integrating multiple public and private data sources. It combines daily data on new corporate lending operations with firm-level public procurement awards.

Our data construction follows three key steps:

Public Procurement Data – New Lending Operations – Firm Characteristics

Period of study: August 2019 - July 2024 (Monthly)

The Data: A Public-Private "Big Data" Base of Public Procurement & Credit

Public Procurement Data

- Data from official public procurement portal (Ministry of Finance of Spain)
- It distinguishes between procurement projects funded by the NGEU program and non-NGEU public contracts at firm level
- Variables: sector of activity (NACE code 2-digits), number of awards (NGEU and non-NGEU), amount, publication date, execution period, authority/public entity in charge of managing and publishing the tenders

The Data: A Public-Private "Big Data" Base of Public Procurement & Credit

New Lending Operations

- Data on new corporate lending operations from BBVA (14% market share in corporate lending in Spain) at NACE Code
- Variables: credit amount, the weighted interest rate by credit amount, the number of credits.
- We disentangle between long-term credit, short-term credit and ICO credits (loans provided by the Instituto de Crédito Oficial)

The Data: A Public-Private "Big Data" Base of Public Procurement & Credit

Firm Characteristics

- Data on firm attributes from SABI (a comprehensive financial and business database)
- Variables: company reported revenue, number of employees, firm turnover, net capital, financial rating and birth year

Final dataset: We link firms across multiple sources using their tax identification codes. We capture each firm's credit performance, NGEU funding status (versus traditional public contracts), and socioeconomic characteristics.

Frequency: Monthly frequency at firm level

The Data: A Public-Private "Big Data" Base of Public Procurement & Credit

Dataset	Source	Observations	Firms	Frequency	Period	Additional Information
Public Procurement Tenders	**Spanish Government**	381,000	100,000	Daily	Aug 2019 - Jul 2024	Data distinguishes between NGEU-funded and non-NGEU public contracts, including details such as sector (NACE 2-digit), number of awards, amounts, publication dates, etc.
New Lending Operations	**BBVA**	5,090,000	318,000	Daily	Aug 2019 - Jul 2024	Includes firm-level corporate credit transactions: credit amount, weighted interest rate by credit amount, number of credits, long-term credit, short-term credit, and ICO credits.
Firm Characteristics	**SABI**	-	2.9 million	-	-	It includes company revenue (reported), number of employees, turnover, net capital, financial rating, and birth year (approximate age).
Final Aggregated Dataset		1,045,980	17,434	Monthly	Aug 2019 - Jul 2024	Balanced dataset. Final match combines credit performance, procurement awards, and socioeconomic features.
New Lending Operations		239,154	17,434	-	Aug 2019 - Jul 2024	-
Procurement awards		119,322	17,434	-	Aug 2019 - Jul 2024	-
NGEU		21,350	2,062	-	Aug 2021 - Jul 2024	-
Non-NGEU		1,024,630	17,282	-	Aug 2019 - Jul 2024	-

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Methodology: Public Procurement Bids and New Credit Operations

- Panel Local Projections: cumulative dynamic elasticity of new credit after public procurement awards. Monthly IRFs are constructed from the sequence of $\hat{\beta}^h$ from:

$$\mathbf{Y}_{i,t+h,t-1} = \alpha_i^h + \delta_{s,t}^h + \beta^h \cdot PROC_{i,t} + \lambda^h \cdot \mathbf{X}_{i,t} + \theta^h \cdot \mathbf{Y}_{i,t+h} + \epsilon_{i,t+h} \quad \forall_{h \in \{-5,\ldots,12\}} \tag{1}$$

- $\mathbf{Y}_{i,t+h,t-1}$: log of cumulative new firm credit
- $PROC_{i,t}$: dummy variable that takes value 1 when firm i has been awarded at least one public procurement bid during month t (0 otherwise).
- $\mathbf{X}_{i,t}$: firm and bid characteristics.
- $\mathbf{Y}_{i,t+h}$: first lag of credit term.
- α_i^h & $\delta_{s,t}^h$: firm and sector$x$time fixed effects.
- $h \in \{-5, \ldots, 12\}$: explore potential anticipatory effects.

Methodology: NGEU vs no-NGEU Bids and New Credit Operations

- Is there a differential effect on new credit dynamic elasticity between both types of bids?
- Monthly IRFs are constructed from the sequence of $\hat{\beta}^h$ (NGEU effect) & $\hat{\gamma}^h$ (no-NGEU effect) from:

$$\begin{aligned}\mathbf{Y}_{i,t+h,t-1} = \alpha_i^h + \delta_{s,t}^h + \beta^h \cdot PROC_{i,t}^{NGEU} + \gamma^h \cdot PROC_{i,t}^{NO-NGEU} \\ +\lambda^h \cdot \mathbf{X}_{i,t} + \theta^h \cdot \mathbf{Y}_{i,t+h} + \epsilon_{i,t+h} \qquad \forall_{h \in \{-5,\ldots,12\}}\end{aligned} \tag{2}$$

- $PROC_{i,t}^{NGEU}$ & $PROC_{i,t}^{NO-NGEU}$: dummy variables that take value 1 when firm i has been awarded at least one NGEU-funded (no-NGEU) bid at month t, respectively (0 otherwise).
- $\mathbf{X}_{i,t}$: separate bid characteristics. Rest of controls and regression features are identical to those from equation (1).

Methodology: Public Procurement Bids and Investment

- Panel Local Projections: we estimate the dynamic public procurement investment multiplier at the sectoral level (2 digit CNAE codes). Monthly IRFs are constructed from the sequence of $\hat{\beta}^h$ from:

$$\mathbf{Inv}_{s,t+h} = \alpha_s^h + \delta_t^h + \beta^h \cdot PROC_{s,t} + \lambda^h \cdot \mathbf{X}_{s,t} + \epsilon_{s,t} \quad \forall_{h \in \{-5,\ldots,12\}} \tag{3}$$

- $\mathbf{Inv}_{s,t+h}$: sectoral value of aggregate firm investment
- $PROC_{s,t}$: the sum of the value of all public tenders awarded to firms operating in sector s at month t.
- $\mathbf{X}_{s,t}$: sector-specific mean values of firm and bid characteristics.
- α_s^h & δ_t^h: sector and time fixed effects.
- $h \in \{-5, \ldots, 12\}$: explore potential anticipatory effects.

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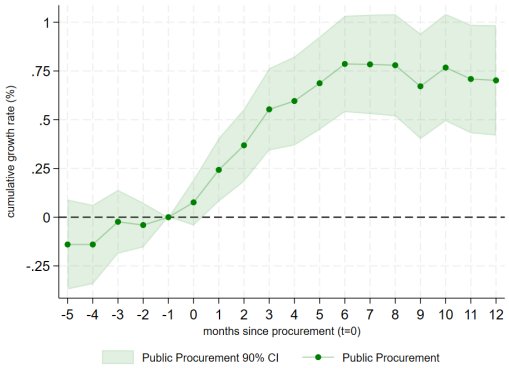
Positive & Persistent Impact on New Credit after Procurement Awards

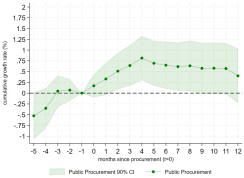
Response of New Credit Operations to Public Procurement Bids (2019-24)



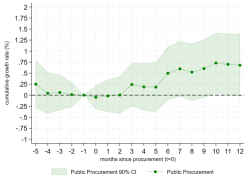
Notes: The plot displays the estimated coefficient β (green points) from regressions of equation (1) for each horizon h relative to 1 month before public procurement awards, as well as its 90% confidence bands (green shaded area). The estimation includes firm and sector $\times$ time fixed effects, and all standard errors are clustered at firm level.

Manufacturing and Industry Firms Experience Greater Credit Impulse

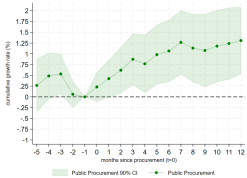
Response of New Credit to Public Procurement Bids by Activity Sector (2019-24)



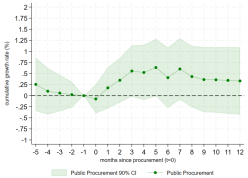
(a) Wholesale trade and retail



(b) Construction



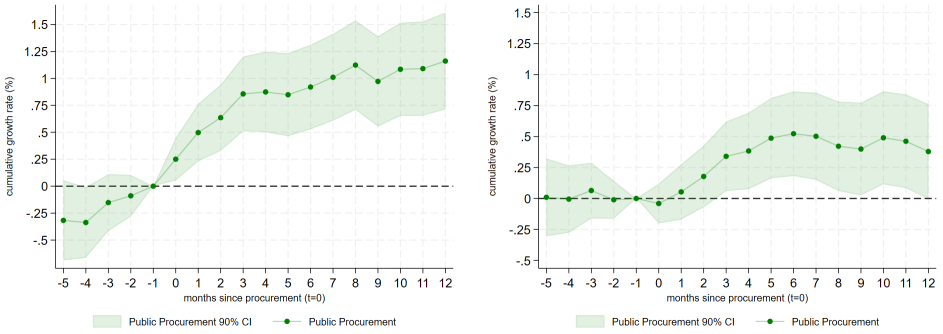
(c) Manufacturing industry



(d) Adm. and professional activities

Firm Size Matters: Higher Impact on Small Firms' New Credit

Response of New Credit to Public Procurement Bids by Firm Size (2019-24)

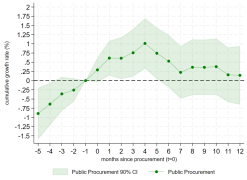


(a) Small firms **(b) Large firms**

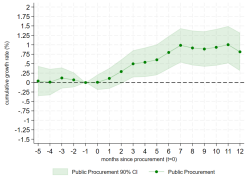
Notes: The following sub categorization of firms relies on firm turnover measured in euros. In particular, the median of sample turnover is the division threshold (2 million euros). Panel (a) shows the results for a sub-sample of firms categorized as small (turnover lower or equal than the median), and (b) for a sub-sample of large firms (turnover greater than sample median).

The Firm Position on the Production Value Chain

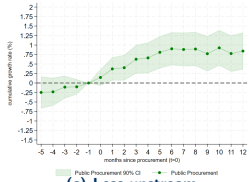
Response of New Credit to Public Procurement Bids (2019-24) by Upstreamness (Antràs, 2012)



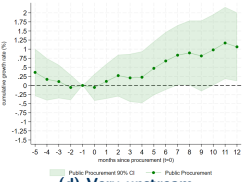
(a) Very downstream



(b) Less downstream



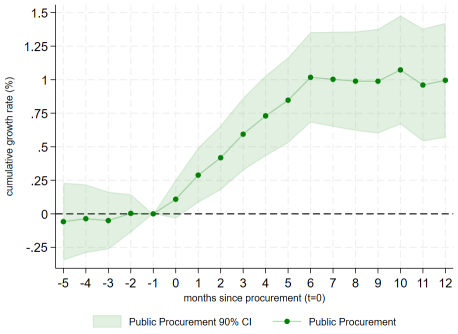
(c) Less upstream



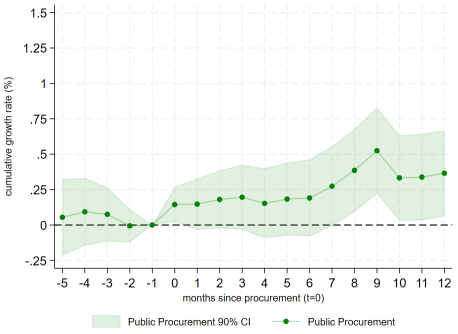
(d) Very upstream

Public Procurement Carries Over Short-Term Credit to a Larger Extent

Response of New Credit to Public Procurement Bids by Credit Maturity (2019-24)



(a) Short-term credit

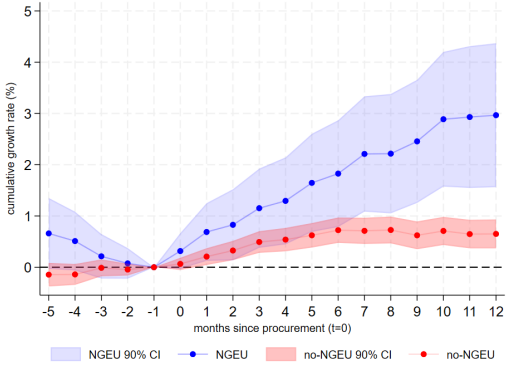


(b) Long-term credit

Notes: Panel (a) shows the results for the case of the dependent variable being firm short-term new credit (maturity below or equal to 1 year), and panel (b) for the case of long-term new credit (maturity above 1 year).

NGEU Contracts Elicit Stronger Credit Impulse than Traditional Procurement

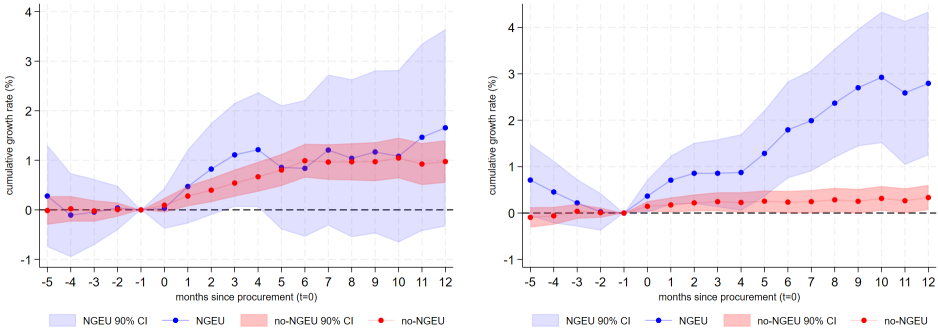
Response of New Credit Operations to Public Procurement Bids: NGEU (2021-24) vs no-NGEU (2019-24)



Notes: The plot displays the estimated coefficients β (blue points) and γ (red points) from regressions of equation (2) for each horizon h relative to 1 month before NGEU and no-NGEU public procurement awards, respectively, as well as their 90% confidence bands (blue and red shaded areas for NGEU and no-NGEU, respectively).

And Carry Over Long-Term Credit to a Larger Extent

Response of New Credit Operations to Public Procurement Bids by Credit Maturity: NGEU (2021-24) vs no-NGEU (2019-24)

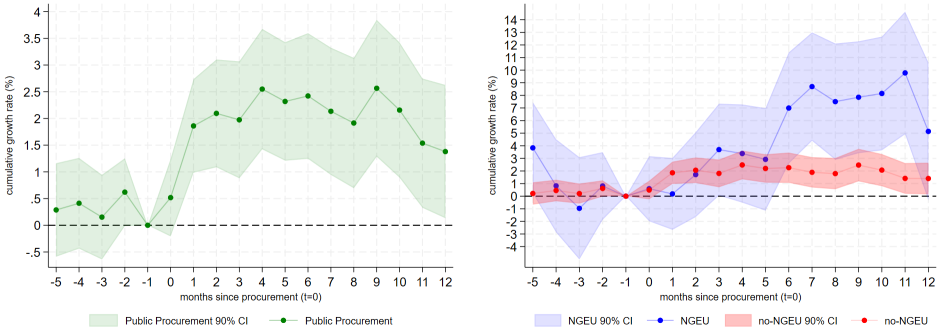


(a) Short-term credit **(b) Long-term credit**

Notes: Panel (a) shows the results for the case of the dependent variable being firm short-term new credit (maturity below or equal to 1 year), and panel (b) for the case of long-term new credit (maturity above 1 year).

Translation to Credit Stock: NGEU Impact More Akin to Existing Evidence

Response of Credit Stock to Public Procurement Bids: All Procurement & NGEU vs no-NGEU (2019-24)

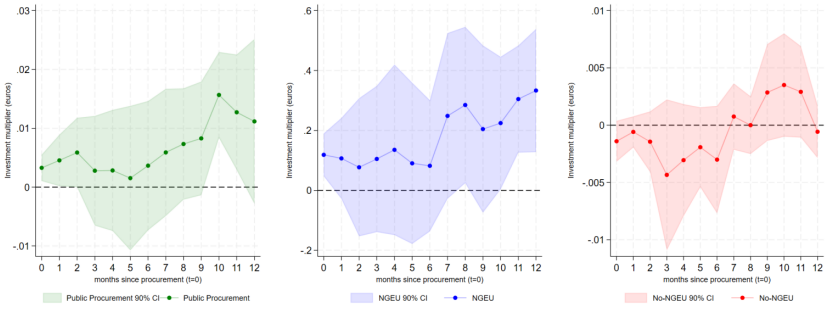


(a) All procurement **(b) NGEU vs no-NGEU**

Notes: Credit stock is calculated by assuming linear credit repayments considering credit term. Thus, it represents an amortization-adjusted new credit operations. Estimated coefficients β and γ are interpreted as the cumulative growth rate of new credit operations stock h months before or after NGEU and no-NGEU procurement awards, respectively.

Public Procurement Effects on Investment: heterogeneous multipliers

Response of Investment to Public Procurement Bids: All Procurement & NGEU vs no-NGEU (2019-24)



(a) **All** (b) **NGEU** (c) **no-NGEU**

Notes: the plot displays the estimated coefficients β from regressions of equation (3) for each horizon h relative to 1 month before public procurement awards, as well as their 90% confidence bands (shaded areas). Panel (a), (b) and (c) represent the dynamic investment multiplier (measured in euros) after all public procurement (both NGEU and no-NGEU), NGEU and no-NGEU procurement, respectively. The impact on investment is evaluated at the sectoral level, thus aggregating tender value and investment accordingly.

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Robustness Checks

- Adjust for COVID-related credit lines executed by the Credit Official Institute of Spain (ICO): No significant change
  - Subtracting from new credit operations credits associated with these lines
- Alternative dynamic structure: No significant change
  - Test results under different lag parametrizations: 3 & 6 lags
- Time sample selection: No significant change
  - Restrict the sample to July 2020 onward (since EU Council RRF Implementation Approval)
- Expert procurement firms: Different but not Significant
  - Are the effect primarily driven by firms referred to as "experts"—those that have received both no-NGEU and NGEU tenders?
- Investment multiplier relative to sector size: Same conclusions
  - Procurement and Investment are normalized by average sectoral firm turnover to control for firm size

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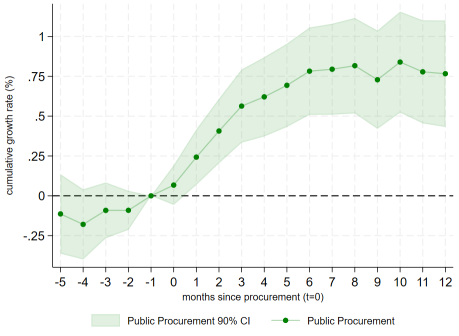
Conclusions

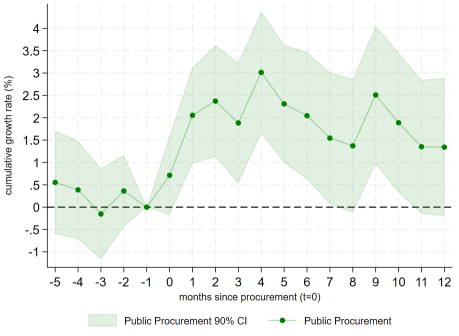
- Public procurement awards have a positive impact on firm-level new lending
  - The impact of 2019-24 has been lower than historical
  - NGEU-funded contracts elicit a stronger credit response than traditional procurement and aligned with historical (equivalent)
  - Size, sector, firm's position in the value chain and credit maturity matter
- Value of High Frequency-High Granular Financial Transactions Data: Financial Transactions Data useful for economic analysis and Policy Design
- Further research:
  - Evaluate the impact of public procurement Grants (NGEU & no-NGEU)
  - Diff-in-diff: Procurement Winners vs Procurement Losers
  - Investigate other Transmission channels of public procurement (specially NGEU-funded) affecting to Economic Activity (i.e. employment creation)

Appendix: Robustness Checks - Adjust for COVID-related Credit Lines

Response of New Credit Operations to Public Procurement Bids (2019-24) excluding COVID-related credits: New Credit and New Credit Stock



(a) New credit

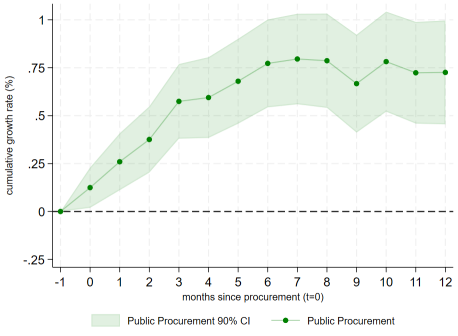


(b) New credit stock

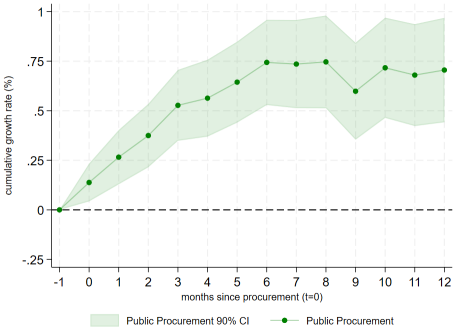
Notes: Panel (a) shows the results for the case of the dependent variable being firm new credit after subtracting COVID-related credits, and panel (b) is similar to (a) but after transforming to credit stock by considering linear repayments.

Appendix: Robustness Checks - Alternative Dynamic Structure (1)

Response of New Credit Operations to Public Procurement Bids: Different Lag Parametrizations (2019-24)



(a) 3 lags

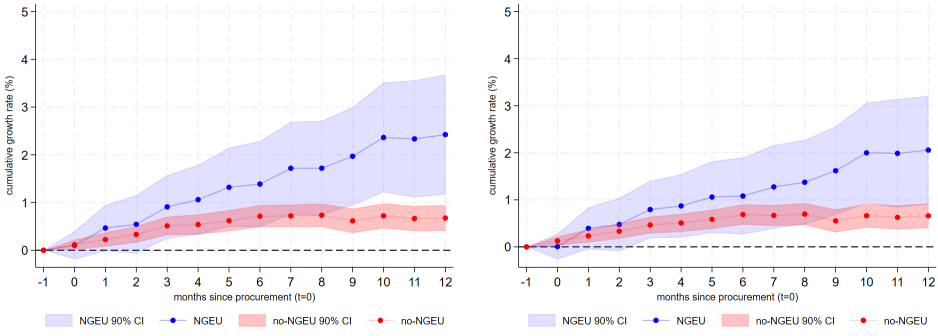


(b) 6 lags

Notes: Panel (a) shows the results for the case of controlling for 3 lags of the public procurement dummy and dependent variable, and panel (b) is similar to (a) but controlling for 6 lags.

Appendix: Robustness Checks - Alternative Dynamic Structure (2)

Response of New Credit Operations to Public Procurement Bids NGEU vs no-NGEU: Different Lag Parametrizations (2019-24)

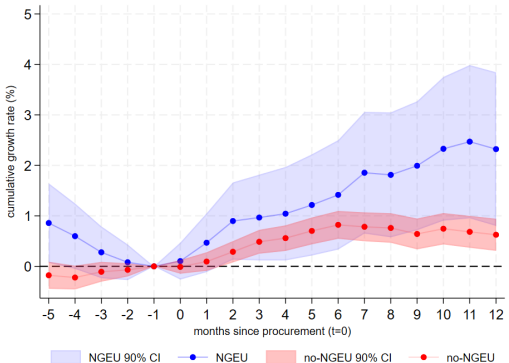


(a) 3 lags **(b) 6 lags**

Notes: Panel (a) shows the results for the case of controlling for 3 lags of the public procurement dummy and dependent variable, and panel (b) is similar to (a) but controlling for 6 lags.

Appendix: Robustness Checks - Time Sample Selection

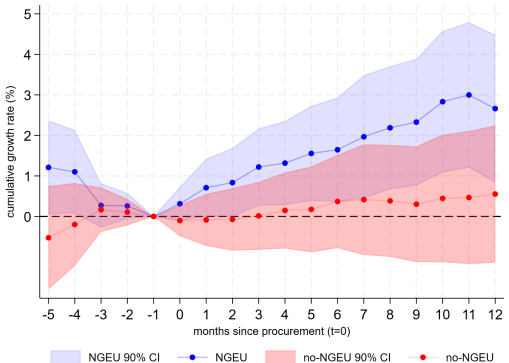
Response of New Credit Operations to Public Procurement Bids: NGEU vs no-NGEU since NGEU EU Council Approval (July 2020-2024)



Notes: The time sample has been restricted to begin at the time when the EU Council approved the implementation of the NGEU program (July 2020).

Appendix: Robustness Checks - Expert Procurement Firms

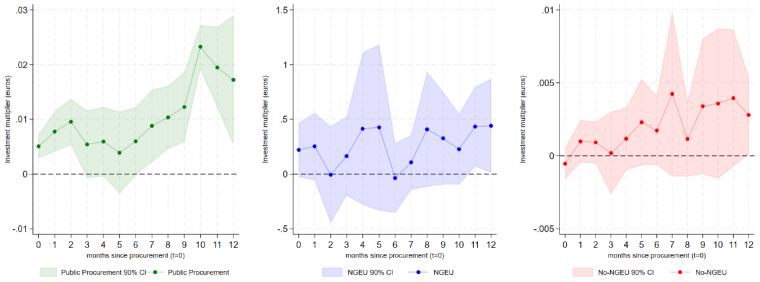
Response of New Credit to Public Procurement of "Expert Firms": NGEU(2019-24) vs no-NGEU (2021-24)



Notes: The sample has been restricted to those firms, denominated as experts, that have been awarded NGEU and no-NGEU bids at some point in the time sample.

Appendix: Effects on Investment relative to sectoral turnover

Response of Investment to Public Procurement Bids Relative to Sectoral Turnover: All Procurement & NGEU vs no-NGEU (2019-24)



(a) **All** (b) **NGEU** (c) **no-NGEU**

Notes: the plot displays the estimated coefficients β from regressions of equation (3) for each horizon h relative to 1 month before public procurement awards, as well as their 90% confidence bands (shaded areas). Panel (a), (b) and (c) represent the dynamic investment multiplier (measured in euros) after all public procurement (both NGEU and no-NGEU), NGEU and no-NGEU procurement, respectively. The impact on investment is evaluated at the sectoral level, thus aggregating tender value and investment accordingly. Both the public procurement value (main regressor) and the dependent variable (sectoral investment) are normalized by average sectoral turnover.