Discussion of: Assessment of Investment Incentives for Technologically Advanced Capital Goods (Industry 4.0)

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This paper contribution and why it is important

- Prolonged slump in private investment after Global Financial Crisis $\rightarrow$ years 2017-(onwards): **significant public finance effort in subsidizing investment**, especially in technologically advanced goods (Industry 4.0).

  In this paper, comparative impact assessment of Industry 4.0 tax incentives on investment/employment:

  - three cohorts $\approx$ Budget Law 2017, 2018, 2019: "iperammortamento", i.e. 150% enhanced deduction on Industry 4.0 tangible goods (2017-18 irrespective of investment size; 2019 decreasing in investment size) $\rightarrow$ so far potential of **6.6 billion-worth incentives** (Rapporto upB 2025)
  - three cohorts $\approx$ Budget Law 2020, 2021, 2022: tax credit on same type of goods, decreasing in investment size and especially generous for purchases done in 2021 $\rightarrow$ **roughly 18 billions of matured tax credits** (Rapporto upB 2025)

Contribution / findings

- Detailed comparison of the two tax incentives
- Contemporaneous and lagged impact on investment at time $t+1$ and $t+2$ and discussion of potential mechanisms
- Analysis of beneficiaries / take-up of policy

1. Effect on investment:
   - stronger contemporaneous impact for tax credit
   - effect intensifies in later cohorts, consistent with increasing take-up among firms subject to stronger investment frictions and featuring larger potential gains
   - significant lagged impact, consistent with a "tax savings" channel
2. Similar patterns for employment $\rightarrow$ reassuring with respect to potential labor substitution channel

Evaluating the impact of tax incentives / 1

- The "ideal" setup to compare the effect of **enhanced deductions vs. tax credits:**
  1. similar firms benefiting from either of the two schemes
  2. at around the same time
  3. and with similar net present values of tax savings

  $\rightarrow$ in current setup 2) and 3) do not hold: **normalize treatment elasticity by the change in the user cost of capital to better compare the different policies** (e.g., Agrawal et al., 2020)?

- Comparing the effects for **small vs. large firms:**
  1. how large and how small compared to the actual distribution (potential issue with PSM)?
  2. effect mechanically smaller for large firms due to the tax credit schedule?

  $\rightarrow$ information on % of subsidized investment cost / **normalize the size-specific elasticities by the reduction in cost of capital for different size classes?**

Evaluating the impact of tax incentives / 2

1. Standard issue with **intertemporal substitution of investment** $\rightarrow$ smooth it by looking at N-year period investment patterns
2. Comparison with results of Scientific Committee evaluation
3. Separate middle from large firms: **hump-shaped effective tax rates in firm size**
4. Net present value of tax savings by cohort rather than year
5. Balance of covariates table (PSM)
6. Strong selection to get to "clean" cohorts: pros and cons with **several tax incentives at play** besides the considered ones (e.g., crisis measures)

Some policy considerations

Nearing the end of these policies: way forward may be dictated by savings-related considerations rather than effectiveness. Return to enhanced deductions?

- Were the policies cost-effective?
- **Distributional considerations:** tax credits significantly broadened the access $(+)$
  - but tax advantage $>$ tax due for a third of companies $(-) \rightarrow$ reduce generosity?
- **Aggregate cost considerations:** actual revenue losses for tax credits in 2021-23 exceeded by 6 bn euros the overall cost estimate for 2021 to 2028 $(-)$. At the same time revenue losses more transparent and concentrated in a shorter period of time $(+)$
  - stricter monitoring
  - tax credit with spending cap: would it be efficient given that late adopters might be those who most need it?