

# Measuring and understanding perceived response burden: an application to Italian establishment surveys

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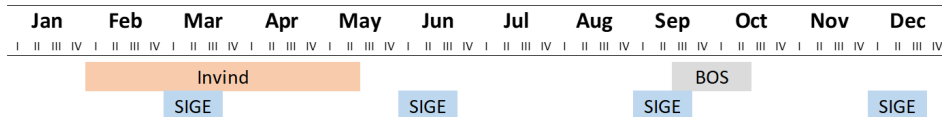
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# Motivations

- Policymakers require high-quality, detailed information on firms' decisions and performance to monitor the economy and evaluate the impact of their policies.
- However, participating in surveys is often seen as costly for firms, with no direct financial benefits.
- The perceived response burden serves as a proxy for the costs of participation, and its increase is linked to non-response or low-quality data.
- Therefore, accurately measuring and understanding perceived response burden is essential.

# Banca d'Italia business surveys

	ANNUAL Survey of Industrial and Service Firms (INVIND)	ANNUAL Business Outlook Survey (BOS)	QUARTERLY Survey on Inflation and growth expectations
Period of collection	More than 3 months from Feb. to May	3 weeks across Sep. and Oct.	First 2 weeks of each quarter
Type of data collected	Quantitative and qualitative data	Only qualitative data	Mainly qualitative
Collection of data	Regional branches	Regional branches	External company
Mode of interview	Mixed (Email /Web /Tel /Pers)	Mixed (Email/Web/Tel)	Mixed



# Perceived burden from Banca d'Italia surveys

In **INVIND**, perceived burden is monitored through a set of specific questions:

- **How would you rate the level of complexity of the survey?**

1 = modest; 2 = average; 3 = large; 4 = excessive.

- **To what extent do you think the following factors made it difficult to fill in the questionnaire?**

Rate (from 1 to 10)

**A** Too many questions

**B** It was necessary to seek the help of several people to answer the questions

**C** It was not always easy to understand the questions because of some unclear terms

**D** The possible answers did not include my situation

**E** For some questions, it was difficult to choose the correct answer

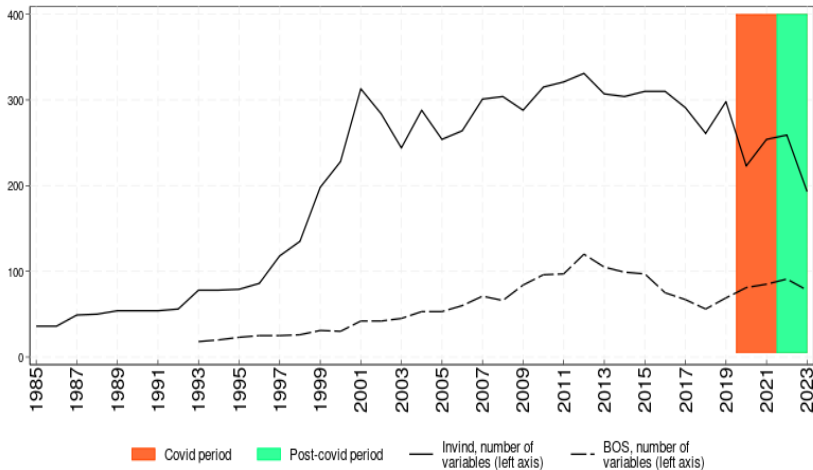
- **How many people, including yourself, were involved in completing the survey?**
- **Was it necessary to involve external consultants? (Yes/No)**
- **Could you please indicate how much time approximately it took your firm to collect the necessary information and fill in the questionnaire? *(please indicate the number of hours)***

# Contribution

- We present Banca d'Italia's experience in measuring perceived response burden among businesses.
- We analyze the dynamics of response burden over time and identify key factors influencing it.
- Additionally, we examine the impact of the Covid-19 pandemic on businesses' perceptions, linking survey data with external information on daily Covid-19 cases and death tolls.

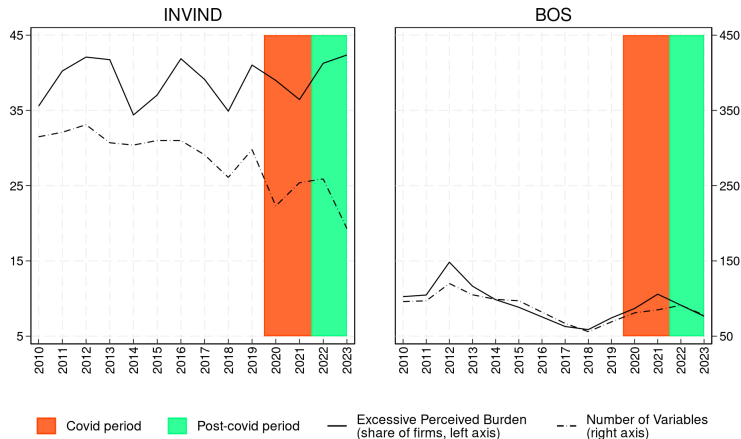
# The complexity of INVIND and BOS questionnaires over time

- Complexity increased steadily until 2016.
- Recently, it has been on a downward trend.
- The BOS survey is significantly less complex compared to the INVIND survey.



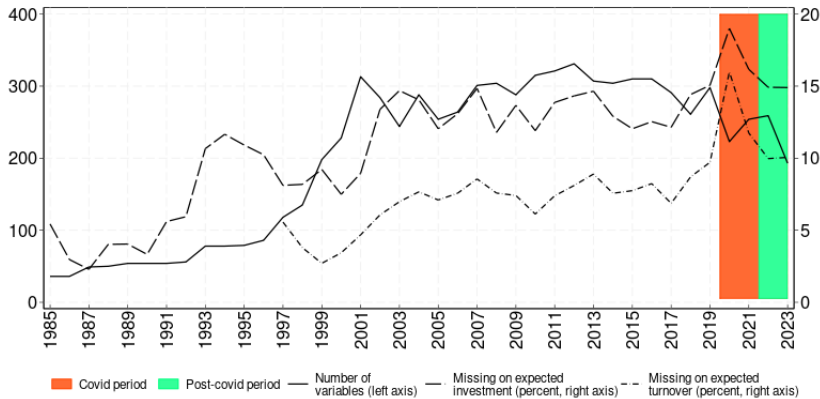
# Firms' perceived burden and number of variables over time

- Higher complexity leads to an increased response burden.
- In the BOS survey, the number of variables correlates with the perceived excessive burden.
- In the INVIND survey, however, this relationship weakens, particularly during the Covid-19 period.



# The complexity of INVIND and BOS questionnaires over time

- The number of variables is correlated with item non-response.
- During the Covid-19 period, item non-response surged despite a reduction in the number of variables.





# Average score by perceived response burden

- The number of questions and the number of people involved are the main factors contributing to the increased response burden.
- The influence of all factors remained stable before and after the Covid-19 crisis.

Response burden	2017	2018	2019	2020	2021	2022	2023	Total
<b>Too many questions</b>								
Low	3.2	2.6	3.0	2.9	3.1	3.0	3.1	3.0
Average	4.8	4.4	4.7	4.9	4.9	5.1	5.2	4.8
High	7.0	6.6	6.9	7.0	6.9	7.2	7.1	7.0
Excessive	8.3	8.5	8.6	8.8	8.7	9.0	8.8	8.7
Total	5.7	5.2	5.7	5.8	5.7	6.1	6.1	5.8
<b>More people involved</b>								
Low	2.3	2.1	2.4	2.3	2.3	2.4	2.4	2.3
Average	4.2	4.0	4.2	4.4	4.3	4.4	4.5	4.3
High	6.1	6.0	6.1	6.0	6.3	6.1	6.3	6.1
Excessive	7.2	7.1	6.8	7.0	7.3	7.4	7.7	7.2
Total	4.9	4.6	4.9	5.0	5.0	5.1	5.3	5.0
<b>Use of unclear terms</b>								
Low	2.1	1.8	2.1	2.1	1.9	1.8	1.8	1.9
Average	2.9	3.2	3.2	3.1	3.1	2.9	2.9	3.0
High	4.0	4.3	4.3	4.0	4.2	3.8	3.7	4.0
Excessive	4.9	5.3	5.2	4.9	5.6	4.9	4.7	5.1
Total	3.4	3.5	3.7	3.5	3.5	3.3	3.3	3.5
<b>Not exhaustive response options</b>								
Low	2.1	1.9	2.2	2.4	2.1	2.2	2.1	2.1
Average	3.0	3.0	3.3	3.6	3.2	3.1	3.0	3.1
High	3.4	3.4	3.8	4.1	3.7	3.6	3.6	3.6
Excessive	4.0	3.9	4.3	4.3	4.7	4.2	4.4	4.3
Total	3.1	3.1	3.5	3.7	3.4	3.3	3.3	3.3
<b>Difficulties in choosing the answer</b>								
Low	2.1	1.9	2.1	2.1	2.0	2.0	2.0	2.0
Average	3.2	3.2	3.5	3.7	3.3	3.2	3.1	3.3
High	4.0	4.3	4.5	4.5	4.4	4.1	4.1	4.2
Excessive	4.7	5.3	4.9	5.1	5.6	5.1	5.1	5.1
Total	3.5	3.6	3.8	4.0	3.7	3.6	3.6	3.7

# Regression analyses: 4 model tested

1  $P(\text{perceived burden} = \text{high}) = \Lambda(\alpha + \beta \text{ actual burden} + \gamma \text{ Covid} + \omega X + \epsilon)$

2  $P(\text{attrition}=1) = \Lambda(\alpha + \beta_1 \text{ perceived burden} + \beta_2 \text{ actual burden} + \gamma \text{ Covid} + \omega X + \epsilon)$

3  $P(\text{item non response}=1) = \Lambda(\alpha + \beta_1 \text{ perceived burden} + \beta_2 \text{ actual burden} + \gamma \text{ Covid} + \omega X + \epsilon)$

4  $P(\text{response errors}=1) = \Lambda(\alpha + \beta_1 \text{ perceived burden} + \beta_2 \text{ actual burden} + \gamma \text{ Covid} + \omega X + \epsilon)$

# Probability of reporting a high (“elevated” or “excessive”) perceived response burden (logit model, marginal effects)

- Involving more people increases the probability of experiencing excessive burden from 10% to 20%.

- The requirement for external consultants only affected the burden before Covid, with an increase from 8% to 16%.

- Higher completion time has the strongest impact, with an increase of up to 25%.

- Excessive burden is correlated with Covid-19 deaths from 2021 to 2023, showing a decreasing trend.

	(1) 2017	(2) 2018	(3) 2019	(4) 2020	(5) 2021	(6) 2022	(7) 2023
People inv.( > 75th)	0.203*** (0.034)	0.103** (0.032)	0.120*** (0.036)	0.154*** (0.044)	0.153*** (0.032)	0.166*** (0.033)	0.175*** (0.035)
People inv. miss	0.0263 (0.098)	-0.0453 (0.060)	0.0571 (0.078)	0.103 (0.094)	0.152* (0.070)	-0.259*** (0.045)	0.208** (0.072)
External Cons: Y	0.0954** (0.032)	0.161*** (0.031)	0.0862** (0.033)	0.0273 (0.039)	0.0573* (0.029)	0.0182 (0.028)	0.0358 (0.033)
External Cons miss	0.150 (0.102)	0.226** (0.082)	-0.0553 (0.075)	0.0338 (0.091)	0.0608 (0.071)	0.276*** (0.072)	0.0190 (0.076)
Completion time (> 75th)	0.173*** (0.034)	0.168*** (0.034)	0.233*** (0.038)	0.198*** (0.048)	0.245*** (0.036)	0.183*** (0.037)	0.171*** (0.038)
Completion time miss	0.0330 (0.062)	0.110* (0.050)	0.206*** (0.054)	0.0787 (0.065)	-0.0127 (0.038)	0.131** (0.051)	-0.0693 (0.042)
Essential activities				-0.00519 (0.032)	-0.00574 (0.024)	0.000900 (0.026)	0.0314 (0.027)
Covid-19 total infected				-0.0158 (0.031)	-0.00680* (0.003)	0.00338 (0.002)	-0.0102 (0.006)
Covid-19 deaths				-0.00860 (0.086)	0.159*** (0.039)	0.117*** (0.032)	0.0656* (0.030)
Controls	Yes+FE	Yes+FE	Yes+FE	Yes+FE	Yes+FE	Yes+FE	Yes+FE
Pseudo R2	0.09	0.11	0.09	0.11	0.13	0.11	0.10
N	3877	4065	3900	2429	3687	3828	3868

# Probability of attrition (logit mode, marginal effects)

- High perceived burden increases the probability of attrition by 3% to 7%.

- The number of survey waves has a “U” effect, initially decreasing attrition due to a learning effect.

- Covid-19 deaths “substitute” the effect of perceived burden in 2020 and 2021.

	(1) 2017	(2) 2018	(3) 2019	(4) 2020	(5) 2021	(6) 2022
High Perc. Burd.	0.0408** (0.021)	0.0392* (0.023)	0.0696** (0.029)	0.0248 (0.024)	0.0165 (0.019)	0.0697*** (0.023)
Perc. Burd. miss.	0.0931** (0.047)	-0.0274 (0.036)	0.105 (0.066)	0.114** (0.051)	0.151** (0.071)	-0.00254 (0.035)
People inv.(> 75th)	0.0238 (0.026)	-0.0562** (0.023)	-0.0131 (0.033)	-0.00763 (0.034)	-0.0195 (0.025)	0.00187 (0.024)
People inv. miss	-0.0221 (0.044)	0.154* (0.087)	0.151** (0.076)	-0.0105 (0.058)	-0.127*** (0.035)	0.0661 (0.063)
External Cons: Y	-0.0264 (0.019)	0.0130 (0.024)	-0.00201 (0.032)	0.0174 (0.031)	0.0313 (0.022)	0.0267 (0.024)
External Cons miss	0.0986 (0.085)	-0.0189 (0.068)	-0.0963 (0.067)	0.0150 (0.070)	0.128 (0.092)	0.0760 (0.070)
Completion time (> 75th)	-0.0356 (0.025)	-0.00335 (0.029)	-0.0672** (0.034)	0.0256 (0.044)	-0.00891 (0.025)	-0.0330 (0.025)
Completion time miss	-0.0396 (0.064)	-0.0540 (0.042)	0.0392 (0.063)	-0.00422 (0.036)	0.0232 (0.035)	0.0154 (0.037)
N. of waves	-0.0130*** (0.004)	-0.0146*** (0.004)	-0.0304*** (0.005)	-0.0149*** (0.004)	-0.0122*** (0.004)	-0.00935** (0.004)
N. of waves <sup>2</sup>	0.000326** (0.000)	0.000234 (0.000)	0.000770*** (0.000)	0.000347** (0.000)	0.000245* (0.000)	0.000200* (0.000)
log(empl)	0.0134 (0.039)	0.0318 (0.047)	-0.0280 (0.050)	-0.112** (0.048)	-0.0903** (0.039)	-0.0463 (0.041)
Essential activities				0.0176 (0.023)	0.0310 (0.019)	0.00780 (0.019)
Covid-19 total infected				0.00169 (0.021)	-0.00423 (0.003)	-0.00379** (0.002)
Covid-19 deaths				0.0907** (0.044)	0.0764** (0.032)	-0.0294 (0.024)
Controls	Yes+FE	Yes+FE	Yes+FE	Yes+FE	Yes+FE	Yes+FE
Pseudo R2	0.05	0.07	0.06	0.09	0.07	0.09
N	4133	4310	4209	3056	3730	3682

# Probability of item non-response (logit model, marginal effects)

- High perceived burden correlates with an increase in the probability of item non-response by 3% to 5%.

- Covid-19 deaths are associated with an 18% increase in item non-response in 2020.

	Non-response on expected investment					Non-response on expected turnover				
	(1) 2018	(2) 2019	(3) 2020	(4) 2021	(5) 2022	(6) 2018	(7) 2019	(8) 2020	(9) 2021	(10) 2022
High Perc. Burd.	0.0358** (0.012)	0.0406*** (0.012)	0.0293 (0.017)	-0.0113 (0.013)	-0.0174 (0.012)	0.0334*** (0.009)	0.0346*** (0.010)	0.0506** (0.016)	-0.0124 (0.012)	-0.0108 (0.010)
Perc. Burd. miss.	0.0385* (0.019)	0.0720*** (0.019)	0.0438 (0.023)	0.102*** (0.022)	0.000517 (0.020)	0.0648*** (0.014)	0.0973*** (0.015)	0.0738*** (0.021)	0.0809*** (0.018)	0.00422 (0.015)
People inv.(> 75th)	-0.00593 (0.015)	0.00158 (0.015)	-0.0268 (0.023)	-0.00873 (0.017)	-0.00982 (0.016)	-0.0105 (0.012)	-0.00419 (0.013)	-0.0666** (0.022)	-0.0165 (0.016)	-0.0205 (0.014)
People inv. miss	0.0407 (0.031)	0.110*** (0.029)	0.0381 (0.046)	0.0103 (0.037)	0.0935*** (0.028)	0.0294 (0.025)	0.0563* (0.024)	0.0613 (0.041)	-0.0162 (0.032)	-0.0212 (0.027)
External Cons: Y	-0.00766 (0.015)	-0.0395* (0.017)	-0.0679* (0.027)	-0.0977*** (0.020)	-0.0248 (0.017)	0.00756 (0.013)	-0.0415** (0.016)	-0.0272 (0.024)	-0.106*** (0.021)	-0.0321 (0.016)
External Cons miss	0.0198 (0.032)	-0.0300 (0.030)	0.0294 (0.046)	0.00960 (0.038)	-0.0460 (0.028)	-0.00542 (0.025)	-0.0423 (0.025)	-0.0160 (0.041)	0.0181 (0.032)	0.0413 (0.027)
Completion time (> 75th)	-0.0410* (0.016)	-0.0248 (0.016)	-0.00899 (0.025)	-0.0301 (0.018)	-0.00272 (0.017)	-0.0308* (0.013)	-0.0245 (0.014)	0.00712 (0.023)	-0.00693 (0.017)	0.0123 (0.016)
Completion time miss	0.0805*** (0.020)	0.0854*** (0.020)	0.0680* (0.029)	0.0703*** (0.019)	0.124*** (0.018)	0.0614*** (0.015)	0.0634*** (0.017)	0.0516 (0.027)	0.0785*** (0.016)	0.111*** (0.015)
log(empl)	0.0443** (0.015)	0.0477** (0.015)	0.0337 (0.020)	0.0175 (0.017)	0.0257 (0.015)	0.0344** (0.011)	0.0230* (0.011)	0.0465** (0.018)	0.0114 (0.014)	0.0160 (0.012)
Essential activities			0.00726 (0.013)	0.0211 (0.012)	0.00744 (0.011)			-0.0115 (0.012)	0.0184 (0.010)	0.00779 (0.009)
Covid-19 total infected			-0.0149 (0.012)	-0.00868*** (0.002)	-0.00120 (0.001)			-0.0110 (0.011)	-0.00716*** (0.002)	-0.00266** (0.001)
Covid-19 deaths			0.180*** (0.029)	-0.0205 (0.019)	0.0319* (0.013)			0.176*** (0.025)	-0.0268 (0.016)	0.00970 (0.011)
Controls	Yes+FE	Yes+FE	Yes+FE	Yes+FE	Yes+FE	Yes+FE	Yes+FE	Yes+FE	Yes+FE	Yes+FE
Pseudo R2	0.09	0.13	0.15	0.10	0.13	0.16	0.16	0.20	0.14	0.17
N	4390	4209	3189	3983	4081	4390	4209	3189	3983	4081

# Response error in turnover and investment (linear model)

- High perceived burden correlates with increased errors in reporting turnover, but only in 2020.

- Total Covid-19 infections had a moderate effect in 2021.

- No clear trend emerges for investment

	Errors in turnover					Errors in investment				
	(1) 2018	(2) 2019	(3) 2020	(4) 2021	(5) 2022	(6) 2018	(7) 2019	(8) 2020	(9) 2021	(10) 2022
High Perc. Burd.	-5.201 (161.340)	-179.5 (196.186)	368.3* (206.259)	116.1 (182.980)	436.5 (539.448)	-30.93 (103.596)	94.79 (108.615)	-133.0 (127.150)	160.0 (108.867)	-290.6*** (111.961)
Perc. Burd. miss.	-625.3 (404.055)	-53.92 (306.884)	171.7 (285.045)	439.6 (309.357)	-766.2 (943.273)	-84.42 (216.013)	224.5 (237.104)	-42.38 (264.385)	-165.3 (220.288)	-85.78 (245.449)
People inv.( > 75th)	69.08 (167.669)	322.1 (237.518)	-163.6 (252.423)	218.2 (203.489)	160.7 (258.064)	184.3 (120.852)	132.7 (141.627)	-72.49 (159.871)	-40.97 (127.694)	277.5** (132.552)
People inv. miss	-367.3 (504.936)	-94.55 (246.875)	-61.01 (248.177)	123.2 (300.704)	711.4 (595.671)	240.5 (375.031)	-143.4 (283.361)	5.229 (378.281)	48.36 (402.691)	129.7 (260.466)
External Cons: Y	11.81 (183.367)	-360.7* (217.845)	-230.2 (215.901)	-357.9* (196.268)	-23.19 (272.662)	36.03 (116.302)	85.09 (138.219)	70.34 (156.700)	-26.44 (125.281)	-169.2 (126.675)
External Cons miss	714.5 (695.739)	100.0 (307.341)	92.05 (307.794)	-840.7** (402.787)	620.6 (993.171)	-66.78 (398.596)	481.2* (263.076)	50.41 (377.957)	-143.3 (413.109)	69.90 (282.823)
Completion time (> 75th)	80.01 (214.130)	331.4 (290.231)	276.2 (329.462)	121.9 (245.314)	-226.8 (295.537)	-148.7 (103.009)	-138.2 (130.255)	141.2 (184.641)	107.1 (141.563)	19.20 (145.598)
Completion time miss	264.8 (297.048)	-39.26 (275.411)	-40.83 (304.364)	456.8 (328.115)	56.14 (275.855)	-34.71 (175.855)	182.2 (213.676)	68.10 (282.341)	182.2 (213.342)	-77.42 (165.718)
Part of a group	264.7* (158.616)	567.0*** (195.441)	513.7** (202.495)	365.8** (167.106)	212.5 (309.149)	69.50 (89.861)	73.26 (127.488)	176.8 (162.118)	-39.53 (91.277)	-110.2 (94.157)
Essential activities			-178.2 (223.075)	167.7 (211.458)	593.2 (609.718)			-45.25 (188.673)	-29.59 (120.905)	156.5 (167.568)
Covid-19 total infected			-56.12 (143.839)	44.47** (22.344)	5.853 (16.413)			100.4 (113.269)	4.429 (12.922)	7.373 (7.610)
Covid-19 deaths			544.4 (443.505)	69.52 (262.604)	260.4 (420.142)			10.35 (311.943)	-183.3 (174.836)	-80.46 (120.266)
Constant	-3701.8*** (1074.769)	-2878.8** (1166.212)	-2426.9* (1370.810)	-4662.7*** (1215.756)	-3030.6* (1686.288)	462.8 (539.758)	1900.4** (844.894)	1240.0 (954.288)	979.6 (679.159)	1228.3* (716.650)
Controls	YES+FE	YES+FE	YES+FE	YES+FE	YES+FE	YES+FE	YES+FE	YES+FE	YES+FE	YES+FE
Adj. R2	0.14	0.13	0.14	0.15	0.10	0.08	0.07	0.05	0.05	0.07
N	3972	3816	2928	3635	3699	3972	3816	2928	3635	3699

# Conclusions

- The perceived difficulty of completing the survey is associated with actual burden measures, such as questionnaire complexity; we also find that a higher number of people involved in the survey correlates with increased perceived burden.
- Perceived burden is linked to higher attrition rates; however, this effect diminishes during the Covid-19 period, when Covid-19 deaths become more relevant.
- Perceived burden does not increase significantly during the Covid-19 period, likely because firms compensate by reducing survey participation.
- Data quality is directly related to perceived burden, with Covid-19 deaths having a notable effect in 2020.
- Conversely, we find no evidence that a high burden correlates with more inaccurate answers, at least concerning turnover or investment data.

# Thanks for your attention!

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