Response Times in Business Surveys: When, how long, and determinants

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- Examples include web surveys for consumers
- often comparisons concerning the mode of survey (online, mail, telephone etc.)
- no literature concerning analysis of response time in business surveys so far

Why is it important to study response times?

- **Data Quality Assessment:** Analyzing response times can help identify low-quality responses, such as those completed too quickly (indicating potential satisficing or lack of attention) or those taking an unusually long time (which may suggest confusion or disengagement).

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- **Improving Survey Design:** Identifying questions or sections with high response times can reveal areas where respondents struggle, leading to potential revisions in wording or format to enhance clarity and reduce completion time.
- **Evaluating Cognitive Effort:** Response times can be used as a proxy for cognitive effort, helping to understand which questions require more thinking or are perceived as more complex by respondents.

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- **Monitoring Survey Fatigue:** Changes in response times throughout the survey can be indicative of fatigue, allowing researchers to identify optimal survey length and reduce dropout rates.
- **Linking Response Times to Firm Characteristics:** Response times can be analyzed in conjunction with firm characteristics (e.g., firm size, sector) to explore how these factors influence response behavior, providing context-specific insights.

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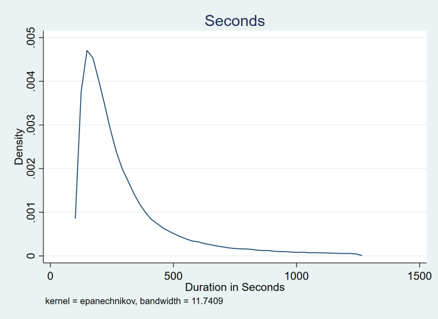
- determinants of individual response behaviour

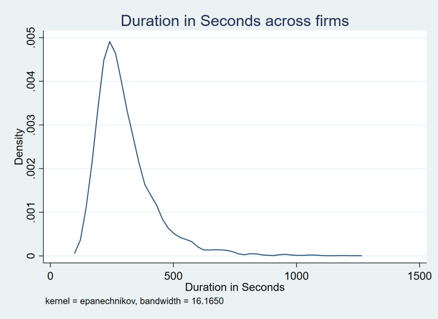
A raw look at the data

Table: Summary Statistics of Response time

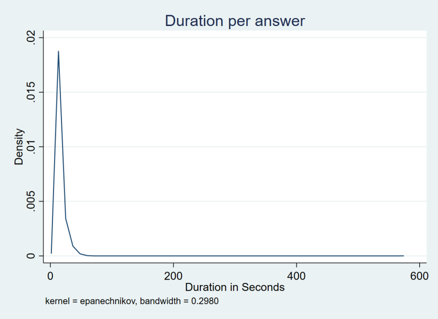
Variable	N	Mean	Std. dev.	Min	Max	Median
Raw Data						
Seconds	135776	21808.28	122076.5	3	1729912	230
Minutes	135776	363.4713	2034.60	.05	28831.87	3.83
Only Observations between 10 and 90% percentile						
Seconds	108,870	296.86	199.6576	113	1254	229
Minutes	108,870	4.94	3.327627	1.88	20.9	3.81
Per answer in Seconds	108,839	8.12	6.21	1.82	574	6.25
Across individual firms (firm averages)						
Seconds	3,745	304.47	124.25	114	1249	274.92
Per answer in seconds	3,744	8.57	3.86	2.65	46.64	7.62

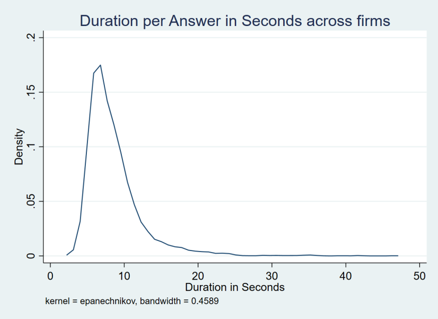
Kernel Estimates for response time total



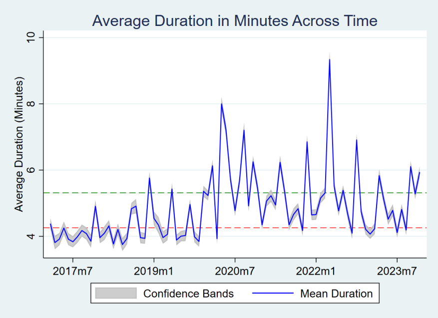


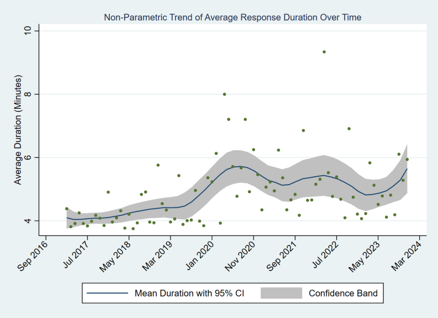
Kernel Estimates for response time per answer





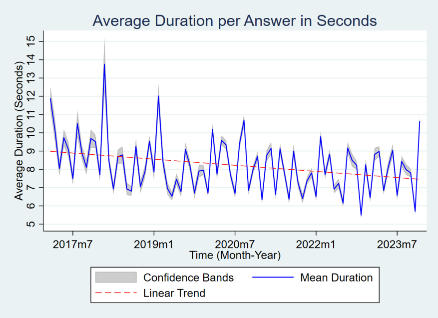
Duration Estimates over time

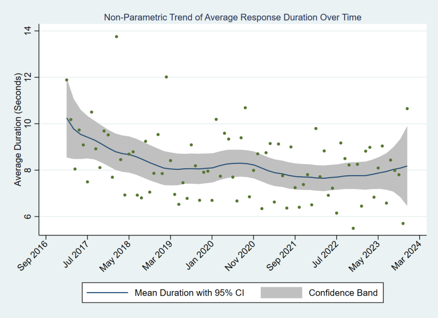




⇒ significant increase over time with about one second per months (controlling for branch and firm fixed effects)

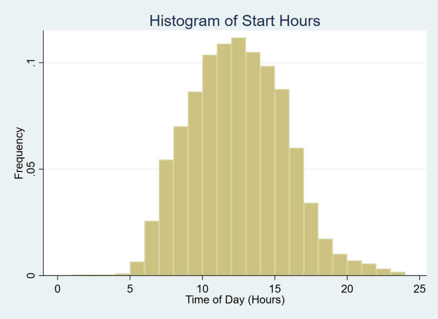
Duration Estimates per ANSWER over time

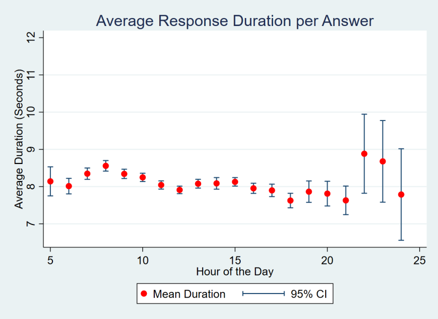




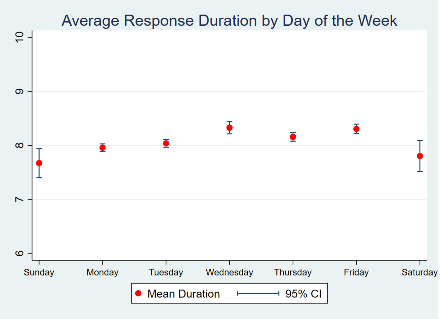
⇒ mainly constant over regression results, time trend is significantly negative, but really small

Distribution across the day





Distribution across size classes or weekdays



Average across firms

Table: Determinants of average response times of firms

	Average duration per answer	Average duration in seconds
Months participated	-0.019***	-0.516***
	(0.004)	(0.080)
Average number of questions		2.735***
		(0.390)
Size		
2	-0.012	-3.466
	(0.138)	(4.619)
3	0.568***	7.895
	(0.194)	(5.725)
4	1.156***	21.804***
	(0.256)	(7.818)
5	6.938**	70.710***
	(3.143)	(22.197)
		(0.390)
Constant	8.856***	212.087***
	(0.310)	(16.755)
Branch fixed effects	yes	yes
N	4214	4214

Is there any learning for new firms?

We run the following regression model

$$y_{it} = \alpha + \beta_1 Time_{it} + \gamma_i + \theta_j + \varepsilon_{it} \tag{1}$$

where $y_i t$ denotes **Average Time (per Answer) in Seconds** . $Time_{it}$ is the number of months in the survey for firm i.
We control for firm (γ_i) and branch fixed effects (θ_j).

Is there any learning for new firms?

Table: Learning Effects

	Duration Time	Duration Time per Answer
Time since entry	-0.538***	-0.021***
	(0.054)	(0.001)
Number of Answers	4.385***	
	(0.085)	
Firm fixed effects	yes	yes
Branch fixed effects	yes	yes
N	42499	42498

Does the response time depends on the current state of the firm?

$$y_{it} = \alpha + \beta_1 Sit_{it} + \beta_2 Exp_{it} + \beta_3 Answers_{it} + \theta_i + \gamma_j + \mu_t + \varepsilon_{it} \quad (2)$$

where $y_i t$ denotes **Average Time in Seconds**. Sit_{it} Exp_{it} is the number of months in the survey for firm i.
We control for number of answers, time, firm and branch fixed effects.

Does the response time depends on the current state of the firm?

Table: State dependances of response time

	(1)	(2)	(3)
Situation	1.524		1.549
	(0.943)		(0.951)
Expectations		-0.023	-0.214
		(0.913)	(0.921)
Number of Answers	1.909***	1.898***	1.910***
	(0.106)	(0.106)	(0.106)
Time fixed effects	yes	yes	yes
Firm fixed effects	yes	yes	yes
Branch fixed effects	yes	yes	yes
N	108020	107929	107428

Summary of Response Time Analysis

- **Key Findings:**
  - Average response time per firm shows significant variation.
  - average response time increased due to more questions since Covid
  - Average response time per answer remains mainly constant over time

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- **Key Findings:**
  - Average response time per firm shows significant variation.
  - average response time increased due to more questions since Covid
  - Average response time per answer remains mainly constant over time
- **Determinants of Response Times:**
  - Longer participation is associated with shorter average response times, suggesting learning effects.
  - Firm size has a significant impact, with larger firms tending to have longer response times.
  - Day of the week or hour during the day has no influence on response time

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- Any experiences or analysis of response times in other countries?