Poor Performance as a Predictable Outcome:
Financing the Administration of Unemployment Insurance

ONLINE APPENDIX

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Section II reports estimates of a simple model of first-payment promptness as a function of workload [equation (1)]. This appendix provides further details about the data and construction of the variables used in the analysis, as well as the results of robustness tests of the model using a first-differenced estimator (rather than the fixed effects estimator used in the main text) and an alternative measure of workload (UI initial claims rather than volume of first payments).

The source of data for the dependent variable (first-payment promptness, or the percentage of first payments counted in a month that were paid within 21 days of the week ending date of the first compensable week) and first-payment volume (the measure of workload we use in the text) is the ETA 9050 Time Lapse report (USDOL 2017), which is compiled from the monthly reports each UI agency makes to the USDOL. A consistent series of monthly time-lapse data is available back to 1997. Another natural measure of workload is the number of initial claims in a month, and in this appendix we test the robustness of estimates of equation (1) using this alternative workload measure (from the ETA 5159 Claims and Payment Activities report—USDOL 2017).

The dependent variable, first-payment promptness, amounts to a retrospective measure because when the UI system is flooded with initial claims, first payments are delayed and made

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one or two months after the initial claim. For this reason we use a three-month moving average of workload (either volume of first payments or initial claims) when estimating equation (1).

Appendix Table 1 displays descriptive statistics for the state-by-month variables used to estimate the model: first-payment promptness, the log of first-payment volume, and the log of initial claims volume for the 50 states during 1997–2021. We divide this 25-year spell into three subperiods of roughly equal length (1997–2004, 2005–2012, and 2013–2021), with each including one of the three most recent recessions.

Comparison of first-payment promptness and workload measures across the three periods shows two points. First, the distribution of first-payment promptness became increasingly left-skewed and more dispersed over time. Although *median* promptness fell somewhat between 1997–2004 and 2013–2021 (from 94.2% to 91.5%), *mean* promptness fell substantially (from 93.1% to 86.3%). Moreover, the left tail of the promptness distribution is especially long for the 2013–2021 period, showing how overwhelming the Covid Recession was for many states.[1] Second, and perhaps surprisingly, measures of average workload do not vary dramatically across the three periods: in fact, mean and median measures of workload (volume of first payments and initial UI claims) were lower for 2013–2021 than for either of the earlier two periods. (This likely results from the unusually robust labor market in 2015–2019). That first-payment promptness has deteriorated while workload has been relatively stable suggests again that the technology of administering the UI program has worsened during the last 25 years.

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[1] Note that the data on first-payment promptness and initial claims are for regular state initial UI claims—they do not include initial claims made under Pandemic Unemployment Assistance (PUA), the program legislated under the CARES Act that made UI benefits available to self-employed, contract, and gig workers who would normally be ineligible for UI. As a result, UI agencies' workloads during the Covid Recession increased by even more than is indicated by the measures we are using.

Appendix Table 1 also shows the within-state and between-state standard deviations for each variable and time period. Over the full 1997–2021 period, within-state variation is the main source of variation in promptness (s-within = 9.52, compared with s-between = 3.68). Because of differences in states' size, between-state variation is the main source of variation in workload (for example, for volume of first payments, s-between = 1.08, compared with s-within = 0.48), but within-state variation in workload is nevertheless substantial: because the workload variables are in logs, the s-within of 0.48 implies typical within-state variation in workload on the order of 60%. Not surprisingly, within-state variation in workload was greater during 2014–2021 (s-within = 0.57) than in either earlier period (s-within = 0.34 during 1997–2004, and s-within = 0.36 during 2005–2012).

Appendix Table 2 (panel A) shows fixed effects estimates of equation (1) for the full 1997–2021 period, as well as the three subperiods (1997–2004, 2005–2012, and 2013–2021) using log of first payments as the measure of workload. The estimates show clearly that the tradeoff between workload and first-payment promptness (the estimated coefficient on log of first payments) worsened in each successive period, and that the tradeoff for 2013–2021 period is far more negative (–10.1, or an expected reduction in promptness of about 1 percentage point associated with a 10 percent increase in workload)[2] than for either of the two earlier periods (expected reductions of roughly 0.3 and 0.4 percentage points). We also show estimates for the longer 1997–2012 period, which underlie one of the binscatters in Figure 3.

Panel B of Appendix Table 2 shows estimates of equation (1) using log of initial UI claims as the measure of workload. These estimates are broadly similar to those using the volume of first payments as the measure of workload—a worsening tradeoff between workload

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[2] This implies that a within-state workload increase of one standard deviation during 2014–2021 was related to an expected decrease of nearly 6 percentage points in first-payment promptness (s-within = 0.57 for 2024–2021.)

and first-payment promptness during 1997–2021, with the 2013–2021 period showing a substantially worse tradeoff than the pre-2013 periods.

Appendix Table 3 shows estimates of equation (1) where we have eliminated state fixed effects by first differencing rather than least-squares with dummy variables. The estimates again show that the tradeoff between workload and first-payment timeliness worsened during 1997–2021, but the difference between the most recent period (2013–2021) and the earlier periods is less striking than the fixed effects estimates suggest. Put differently, the first-differenced estimates suggest a less dramatic deterioration of the technology of UI administration than the fixed effects estimates. This in turn suggests that the strongly negative tradeoff for 2013–2021 estimated by fixed effects (–10.1) is to some extent driven by the years of the pandemic (2020–2021), when state workloads were much higher than their average over the full 2013–2021 period. Overall, the tradeoff estimated for the full 1997–2021 period is similar using either estimator (–4.7 versus –5.8).

Appendix Table 1

Sample descriptive statistics for first-payment promptness, log of the number of first payments, and log of the number of initial UI claims (50 states, 1997-2021 and subperiods)

	(1) Mean	(2) Std. dev.	(3) minimum	(4) 25th centile	(5) median	(6) 75th centile	(7) maximum
1997–2021 (N = 14,859)							
Promptness (%)	89.78	10.19	3.53	88.17	92.87	95.51	100.00
between / within	—	3.68 / 9.52	82.53	—	—	—	97.42
log first payments (smoothed)	8.85	1.17	5.18	8.02	8.84	9.68	13.70
between / within	—	1.08 / 0.48	6.47	—	—	—	11.43
log initial UI claims (smoothed)	9.72	1.16	6.37	9.74	9.74	10.75	14.27
between / within	—	1.09 / 0.44	7.31	—	—	—	12.38
1997–2004 (N = 4,727)							
Promptness (%)	93.07	5.05	47.42	91.56	94.18	96.01	99.79
between / within	—	3.38 / 3.79	80.36	—	—	—	99.06
log first payments (smoothed)	8.88	1.13	5.68	8.07	8.89	9.72	11.84
between / within	—	1.09 / 0.33	6.59	—	—	—	11.48
log initial UI claims (smoothed)	9.70	1.12	6.73	8.87	9.75	10.53	12.70
between / within	—	1.10 / 0.26	7.38	—	—	—	12.35
2005–2012 (N = 4,800)							
Promptness (%)	90.35	7.20	27.54	87.38	92.01	95.20	99.75
between / within	—	4.46 / 5.68	78.06	—	—	—	98.70
log first payments (smoothed)	8.99	1.14	5.19	8.16	9.06	9.83	12.00
between / within	—	1.09 / 0.36	6.59	—	—	—	11.47
log initial UI claims (smoothed)	9.84	1.33	6.80	9.00	9.94	10.70	12.76
between / within	—	1.11 / 0.29	7.46	—	—	—	12.38
2013–2021 (N = 5,332)							
Promptness (%)	86.33	14.10	3.53	83.64	91.52	95.14	100.00
between / within	—	5.20 / 13.13	73.99	—	—	—	96.65
log first payments (smoothed)	8.68	1.21	5.18	7.83	8.63	9.47	13.70
between / within	—	1.08 / 0.57	6.25	—	—	—	11.36
log initial UI claims (smoothed)	9.62	1.22	6.37	8.74	9.59	10.41	14.27
between / within	—	1.09 / 0.58	7.10	—	—	—	12.40

Notes: The data are state-by-month observations for the 50 states during 1997–2021 from the ETA 9050 Time Lapse report (promptness and number of first payments) and the ETA 5159 Claims and Payment Activities report (number of initial UI claims). Both reports are described in U.S. Department of Labor (2017). Promptness refers to the percentage of first payments paid within 21 days of the end of the first compensable week in state s, month t. The first payment and initial UI claim variables are smoothed by taking three-month moving averages. Entries in the "between / within" cells are between-state and within-state standard deviations.

Appendix Table 2

Fixed effects estimates of the association of first-payment promptness with volume of first payments and volume of initial UI claims, 50 states, 1997-2021 and subperiods

	(1) 1997–2021	(2) 1997–2004	(3) 2005–2012	(4) 2013–2021	(5) 1997–2012
Panel A					
log of first-payment volume	–4.740	–2.891	–3.764	–10.062	–3.877
(smoothed)	(0.720)	(0.594)	(0.622)	(1.039)	(0.496)
Constant	133.83	121.52	124.93	177.40	128.28
	(6.62)	(5.47)	(5.83)	(9.36)	(4.61)
Observations	14,859	4,727	4,800	5,332	9,527
R^2	0.177	0.474	0.412	0.296	0.352
RMSE	9.27	3.68	5.55	11.89	5.14
Panel B					
log of initial UI claims (smoothed)	–8.277	–3.157	–4.734	–13.37	–4.544
	(0.991)	(0.859)	(0.820)	(0.913)	(0.582)
Constant	173.64	126.89	138.11	219.19	138.45
	(9.99)	(8.71)	(8.36)	(9.05)	(5.91)
Observations	14,859	4,727	4,800	5,332	9,527
R^2	0.254	0.464	0.413	0.433	0.348
RMSE	8.83	3.72	5.54	10.67	5.16

Notes: This table shows estimates of equation (1) using a fixed effects (least-squares dummy variable) estimator. Standard errors clustered by state are shown in parentheses. The samples are described in Appendix Table 1.

Appendix Table 3

First-differenced estimates of the association of first-payment promptness with volume of first payments and volume of initial UI claims, 50 states, 1997-2021 and subperiods

	(1) 1997–2021	(2) 1997–2004	(3) 2005–2012	(4) 2013–2021	(5) 1997–2012
Panel A					
log of first-payment volume	–5.818	–4.388	–5.479	–6.735	–4.906
(smoothed)	(0.613)	(0.693)	(0.902)	(0.739)	(0.730)
Constant	–0.129	–0.021	–0.042	–0.298	–0.034
	(0.011)	(0.007)	(0.011)	(0.028)	(0.007)
Observations	14,810	4,678	4,800	5,332	9,478
R^2	0.057	0.061	0.060	0.059	0.060
RMSE	5.044	3.367	3.967	6.813	3.684
Panel B					
log of initial UI claims (smoothed)	–7.305	–4.709	–6.028	–8.708	–5.300
	(0.765)	(0.794)	(1.288)	(0.930)	(0.879)
Constant	–0.118	–0.006	–0.039	–0.280	–0.024
	(0.010)	(0.006)	(0.011)	(0.027)	(0.007)
Observations	14,810	4,678	4,800	5,332	9,478
R^2	0.054	0.036	0.033	0.068	0.034
RMSE	5.055	3.411	4.023	6.778	3.734

Notes: This table shows estimates of equation (1) using a first-differenced estimator. Standard errors clustered by state are shown in parentheses. The samples are described in Appendix Table 1.