State-Dependent Forecasting of Economic Activity*

Online Supplementary Material

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Abstract

This document reports additional robustness exercises referenced in Section 5.5 ("Robustness to the estimation vintage"), Section 6.2 ("Asymmetric Risk and Point-Forecast Accuracy") and the Conclusion of the main paper. Section S1 replicates the main out-of-sample pipeline with non-farm payroll employment (PAYEMS) as the target variable. Section S2 repeats the exercise on the year-over-year (YoY) growth rate of PAYEMS. Section S3 does the same on YoY GDP growth. References to equations, sections and figures of the main paper are preceded by "main paper" to distinguish them from internal cross-references.

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S1 Alternative target: employment growth

This section replicates the main out-of-sample forecasting exercise of Section 5.2 of the main paper using the annualized quarterly growth rate of non-farm payroll employment (PAYEMS) as the target variable, keeping everything else unchanged. Real-time vintages are obtained from the Philadelphia Fed real-time data set (quarterly vintages, quarterly observations). The underlying series is seasonally adjusted, and the quarterly observation in each vintage is the arithmetic mean of the three monthly observations within the quarter, as provided directly by the Philadelphia Fed. Growth rates are then computed as $400 \times \log(y_t/y_{t-1})$, exactly as for GDP in the main exercise. The Probit specifications, estimation windows, OOS period (1981Q4–2025Q3) and COVID-exclusion rule are identical to those of Section 5 of the main paper. Since payroll employment is more persistent and less noisy than GDP growth, forecast errors are smaller in absolute terms; what matters here is whether the AAR-PROBIT mechanism continues to improve on the ARD benchmark.

Tables S1 and S2 report MSPE ratios vs ARD for the three univariate term-spread specifications under both the 1st-release and the MRV estimation conventions. Two patterns stand out. First, the AAR-PROBIT continues to deliver meaningful MSPE reductions during recessions: with TS_10Y_2Y as the Probit predictor, AAR-PROBIT with $q = 0$ reaches 0.53 at $h = 4$ and 0.45 at $h = 5$ under the MRV estimation, with similar gains under the 1st-release convention. The autoregressive Probit further sharpens the result at short horizons, reaching 0.47 at $h = 4$ under the MRV estimation. Second, the predictor ranking shifts relative to the GDP exercise: the 10-year minus 2-year spread dominates the canonical 10-year minus 3-month spread when the target is payroll growth, consistent with the view that the long-end of the curve is more informative about labor-market dynamics while the short-end spread is more informative about output. Full-sample ratios

are close to unity for TS and TS_Wright, and mildly below one at long horizons for TS_10Y_2Y, consistent with the main paper's finding that the AAR-PROBIT delivers its gains precisely when the signal activates.

Table S1: MSPE ratios vs ARD: employment growth, NBER Recessions

Predictors	Probit	h=1	h=2	h=3	h=4	h=5	h=6	h=7	h=8
Panel A — Estimation vintage: 1st release									
TS	q=0	0.73^{***}	0.96^{*}	1.27	1.43	1.25	1.01	1.11	1.10^{*}
TS	q=1	1.07	1.18	1.24	1.42	1.73	1.75	1.42	2.15
TS	q=2	1.09	1.19	1.23	1.58	1.87	2.14	1.68	1.28
TS	q=3	1.07	1.16	1.29	1.51	1.66	2.09	1.36	0.95^{**}
TS	q=4	1.04	1.25	1.22	1.69	1.57	1.74	1.11	0.94^{***}
TS_Wright	q=0	0.97	1.17	1.49	1.76	1.54	1.00	1.11^{*}	1.07^{*}
TS_Wright	q=1	1.24	1.47	1.45	1.73	1.89	2.01	1.48	1.84
TS_Wright	q=2	1.30	1.42	1.37	1.75	2.18	1.91	1.79	0.88^{*}
TS_Wright	q=3	1.22	1.32	1.31	1.77	1.62	2.06	1.24	0.90^{**}
TS_Wright	q=4	1.20	1.12	1.40	1.55	1.73	1.70	1.15^{*}	0.90^{**}
TS_10Y_2Y	q=0	0.74	1.02	0.78	0.89	0.74	0.94	0.93	0.75
TS_10Y_2Y	q=1	0.99	1.02	0.79	0.81	0.73	0.92	0.88	0.73
TS_10Y_2Y	q=2	0.98	1.05	0.76	0.82	0.71	0.87	0.87	0.68
TS_10Y_2Y	q=3	0.99	1.05	0.75	0.80	0.71	0.88	0.84	0.67
TS_10Y_2Y	q=4	0.96	1.06	0.74	0.78	0.72	0.83	0.81	0.68
TS	AR-probit	1.00	1.05	1.22	1.38	1.34	1.08	1.10	1.09^{*}
TS_Wright	AR-probit	1.18	1.16	1.37	1.69	1.72	1.15	1.10	1.06^{**}
TS_10Y_2Y	AR-probit	0.96	1.10	0.77	0.80	0.70	0.87	0.86	0.65
Panel B — Estimation vintage: MRV									
TS	q=0	0.81^{***}	1.15	1.42	1.54	1.45	0.99	0.84^{**}	0.80^{***}
TS	q=1	1.01	1.34	1.46	1.48	1.58	1.40	1.24	1.86
TS	q=2	1.13	1.40	1.46	1.53	1.57	1.68	1.55	1.07
TS	q=3	1.19	1.40	1.47	1.42	1.48	1.72	1.15	0.71^{**}
TS	q=4	1.20	1.42	1.41	1.63	1.41	1.47	0.88^{*}	0.72^{**}
TS_Wright	q=0	1.01	1.29	1.58	1.81	1.63	0.97	0.74^{*}	0.74^{**}
TS_Wright	q=1	1.25	1.62	1.64	1.75	1.72	1.62	1.43	1.67
TS_Wright	q=2	1.46	1.67	1.59	1.74	1.89	1.53	1.71	0.71^{**}
TS_Wright	q=3	1.44	1.56	1.50	1.79	1.43	1.61	1.01	0.70^{**}
TS_Wright	q=4	1.40	1.33	1.59	1.52	1.48	1.25	0.90	0.70^{**}
TS_10Y_2Y	q=0	1.10	0.83	0.55	0.53	0.45	0.58	0.59	0.66
TS_10Y_2Y	q=1	1.17	0.81	0.55	0.51	0.44	0.56	0.57	0.65
TS_10Y_2Y	q=2	1.15	0.80	0.54	0.50	0.42	0.54	0.56	0.62
TS_10Y_2Y	q=3	1.12	0.79	0.54	0.49	0.42	0.55	0.55	0.61
TS_10Y_2Y	q=4	1.12	0.79	0.51	0.48	0.43	0.54	0.53	0.62
TS	AR-probit	1.07	1.25	1.45	1.51	1.52	1.21	0.69^{*}	0.70^{**}
TS_Wright	AR-probit	1.31	1.37	1.60	1.76	1.74	1.23	0.65^{*}	0.70^{*}
TS_10Y_2Y	AR-probit	1.19	0.83	0.51	0.47	0.40	0.54	0.55	0.58

Notes: Entries are MSPE ratios of AAR-PROBIT forecasts of non-farm payroll employment growth (annualized log-difference, Philadelphia Fed real-time vintages) relative to ARD, computed over NBER Recessions. Sub-periods exclude the COVID quarters 2020Q1–2020Q2. Panel A uses the 1st-release estimation vintage; Panel B uses the MRV. Forecast errors are evaluated against the MRV of payroll growth at the target quarter. The Probit specification is unchanged from Section 5 of the main paper (NBER-calibrated on the term spread). Significance stars refer to the Clark-West test of equal predictive accuracy against ARD: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table S2: MSPE ratios vs ARD: employment growth, Full OOS

Predictors	Probit	h=1	h=2	h=3	h=4	h=5	h=6	h=7	h=8
Panel A — Estimation vintage: 1st release									
TS	q=0	1.01***	1.00**	1.00*	0.99*	1.01	1.02	1.11	1.27
TS	q=1	1.02	0.99**	0.98*	0.99*	1.02	1.03	1.05	1.22
TS	q=2	1.02	0.99*	0.98*	1.00	1.01	1.04	1.05	1.18
TS	q=3	1.02	1.00	0.98*	0.99*	0.99*	1.02	1.08	1.26
TS	q=4	1.03	1.01	0.98**	1.00*	0.99*	1.02	1.02	1.20
TS_Wright	q=0	1.02**	1.01**	1.03	1.03	1.03	1.02	1.09	1.22
TS_Wright	q=1	1.02	1.03*	1.01	1.03	1.05	1.08	1.09	1.25
TS_Wright	q=2	1.03	1.02*	1.01	1.03	1.07	1.06	1.11	1.26
TS_Wright	q=3	1.02	1.02	1.01	1.03	1.02	1.07	1.10	1.20
TS_Wright	q=4	1.02	0.99*	1.02	1.01	1.03	1.05	1.05	1.22
TS_10Y_2Y	q=0	0.98	0.93	0.94	0.85**	0.82**	0.74***	0.73**	0.65**
TS_10Y_2Y	q=1	0.93	0.91**	0.93*	0.85**	0.82**	0.74***	0.73**	0.64***
TS_10Y_2Y	q=2	0.91*	0.92*	0.96	0.84**	0.82**	0.74***	0.72**	0.65***
TS_10Y_2Y	q=3	0.91**	0.93*	0.94	0.84**	0.82**	0.72***	0.72**	0.64***
TS_10Y_2Y	q=4	0.91*	0.94	0.97	0.85**	0.80**	0.73***	0.72**	0.62***
TS	AR-probit	0.99*	0.97**	0.98*	0.99*	1.01	1.00	1.05	1.14
TS_Wright	AR-probit	1.04	1.01	1.02	1.03	1.04	1.01	1.04	1.10
TS_10Y_2Y	AR-probit	0.89***	0.93*	0.95	0.87**	0.85**	0.76**	0.76**	0.68**
Panel B — Estimation vintage: MRV									
TS	q=0	1.01**	1.03	1.06	1.05	1.02	1.00	1.06	1.14
TS	q=1	1.02	1.04	1.04	1.04	1.04	1.03	1.04	1.20
TS	q=2	1.03	1.04	1.05	1.04	1.03	1.06	1.07	1.15
TS	q=3	1.03	1.04	1.04	1.02	1.02	1.07	1.09	1.25
TS	q=4	1.03	1.05	1.04	1.06	1.02	1.05	0.99	1.20
TS_Wright	q=0	1.03	1.06	1.11	1.13	1.10	1.07	1.11	1.21
TS_Wright	q=1	1.04	1.11	1.10	1.13	1.12	1.16	1.17	1.33
TS_Wright	q=2	1.07	1.11	1.11	1.13	1.15	1.13	1.21	1.31
TS_Wright	q=3	1.06	1.10	1.10	1.14	1.08	1.16	1.18	1.26
TS_Wright	q=4	1.06	1.07	1.12	1.10	1.11	1.13	1.10	1.29
TS_10Y_2Y	q=0	1.12	1.07	1.02	0.95	0.96	0.93	0.90	0.85
TS_10Y_2Y	q=1	1.13	1.07	1.01	0.95	0.97	0.94	0.90	0.84
TS_10Y_2Y	q=2	1.13	1.06	1.02	0.96	0.98	0.95	0.90	0.85
TS_10Y_2Y	q=3	1.12	1.06	1.02	0.95	0.98	0.93	0.89	0.83*
TS_10Y_2Y	q=4	1.13	1.07	1.04	0.96	0.97	0.93	0.90	0.81*
TS	AR-probit	1.00	1.02	1.04	1.04	1.04	1.01	0.98	1.01
TS_Wright	AR-probit	1.07	1.08	1.11	1.13	1.12	1.08	1.04	1.06
TS_10Y_2Y	AR-probit	1.15	1.13	1.08	1.00	1.03	1.00	0.94	0.88

Notes: Entries are MSPE ratios of AAR-PROBIT forecasts of non-farm payroll employment growth (annualized log-difference, Philadelphia Fed real-time vintages) relative to ARD, computed over Full OOS. Sub-periods exclude the COVID quarters 2020Q1–2020Q2. Panel A uses the 1st-release estimation vintage; Panel B uses the MRV. Forecast errors are evaluated against the MRV of payroll growth at the target quarter. The Probit specification is unchanged from Section 5 of the main paper (NBER-calibrated on the term spread). Significance stars refer to the Clark-West test of equal predictive accuracy against ARD: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

S1.1 Scenario forecasts on employment growth

We also apply the conditional-forecast framework of Section 6 of the main paper to the PAYEMS target, using the same IMR-augmented regression and scenario formulas for each of the three univariate term-spread predictors. Table S3 reports conditional MSPE ratios by state, and Table S4

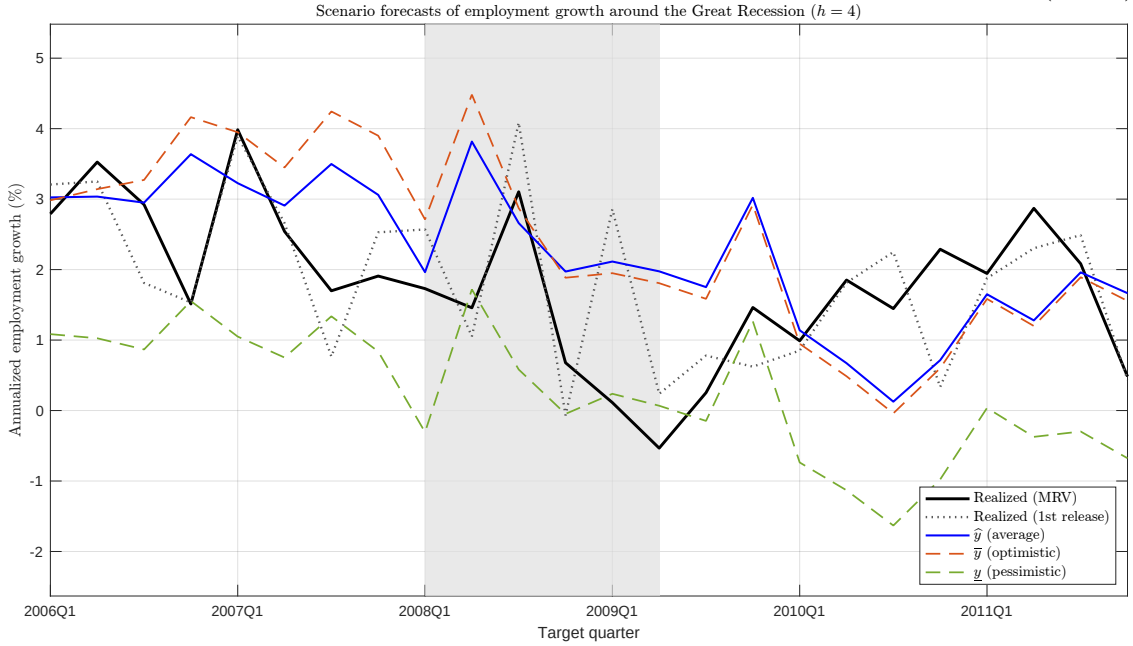
the mean upside and downside of the scenarios around the AAR-PROBIT average, both under the MRV estimation vintage.

Two findings parallel and one contrasts with the GDP exercise of Section 6 of the main paper. First, for TS_10Y_2Y (the predictor that performs best for PAYEMS in the main OOS exercise of this supplement), the pessimistic scenario in recessions delivers MSPE ratios well below one at the medium and long horizons: 0.48 at $h = 2$, 0.50 at $h = 4$, and as low as 0.30–0.38 at $h = 7$–8. The mechanism described in Section 6.2 of the main paper carries over: once the Probit signal has sharpened in a recession, conditioning on the recession state produces more accurate point predictions than the probability-weighted average. Second, for TS and TS_Wright, the pessimistic scenario in recessions is severely penalized at most horizons, an even stronger version of the pattern documented for GDP. When the Probit signal is weak for the target (as is the case when these two yield-curve measures are used to forecast payroll growth), the inverse Mills correction amplifies the departure from the AR path and scenarios become unreliable as point forecasts.

The contrast is on the asymmetry direction. For GDP, the downside of the pessimistic scenario systematically exceeded the upside of the optimistic one, reflecting a clean growth-at-risk interpretation. For PAYEMS, the asymmetry of the TS_10Y_2Y scenarios is more muted and partially flips sign at the shortest horizons. Employment growth is persistent and smooth: during expansions, the AAR-PROBIT average is essentially at the long-run mean, and the conditioning on a future recession shifts the forecast only moderately in annualized-growth units. The growth-at-risk reading of the GDP scenarios does not translate mechanically to payroll growth, which argues for caution in exporting the framework to smoother targets without further adjustment.

Figure S1 provides the PAYEMS counterpart of Figure 2 of the main paper around the 2007–2009 recession. We use TS_10Y_2Y as the Probit predictor, since Table S1 identifies it as the dominant yield-curve measure for payroll growth. The pessimistic path anticipates the sustained contraction in employment growth through 2009, and tracks the realized path of the MRV more closely than the AAR-PROBIT average from 2008Q4 onward. The optimistic scenario diverges upward throughout the recession, and the wedge between the two scenarios widens before the realized collapse, consistent with a real-time signal of heightened state-dependent risk in the labor market.

Figure S1: Scenario forecasts of employment growth around the Great Recession ($h = 4$)



Notes: Four-quarter-ahead scenario forecasts of non-farm payroll employment growth around the 2007–2009 recession, using TS_10Y_2Y as the Probit predictor. The black solid line is the realized growth evaluated against the MRV; the gray dotted line is the 1st-release observation. The blue line is the average AAR-PROBIT forecast $\widehat{y}_{t+4}$; the orange and green dashed lines are the optimistic $\overline{y}_{t+4}$ and pessimistic $\underline{y}_{t+4}$ scenarios. All forecasts use the MRV estimation convention. The shaded band marks the NBER recession.

Table S3: Scenario forecasts of employment growth: conditional MSPE ratios vs ARD

Predictor	State	Forecast	h=1	h=2	h=3	h=4	h=5	h=6	h=7	h=8
TS	NBER Recessions	average	0.81	1.15	1.42	1.54	1.45	0.99	0.84	0.80
		pessimistic	91.34	7.41	4.11	4.49	4.79	1.04	270.91	88.69
	Expansions	average	1.04	1.01	0.98	0.95	0.94	1.00	1.09	1.19
		optimistic	6.47	1.23	0.95	0.91	0.94	1.16	2.75	10.43
TS_Wright	NBER Recessions	average	1.01	1.29	1.58	1.81	1.63	0.97	0.74	0.74
		pessimistic	83.02	9.14	5.21	5.50	5.13	1.40	4193.22	51.29
	Expansions	average	1.04	1.02	1.01	0.99	1.01	1.09	1.17	1.27
		optimistic	4.19	1.19	0.97	0.95	1.02	1.27	11.46	6.97
TS_10Y_2Y	NBER Recessions	average	0.86	0.90	0.84	0.85	0.71	0.77	0.69	0.63
		pessimistic	8.46	0.48	1.29	0.50	0.55	1.00	0.38	0.30
	Expansions	average	1.05	1.03	1.02	1.00	1.00	1.00	1.00	1.00
		optimistic	4.19	1.06	1.18	1.16	1.17	1.14	1.10	1.14

Notes: Conditional MSPE ratios vs ARD for the pessimistic, optimistic and average AAR-PROBIT forecasts of non-farm payroll employment growth, for each of the three univariate term-spread predictors. Entries use the MRV as estimation vintage, and the MRV as evaluation target. Sub-periods exclude the COVID quarters 2020Q1–2020Q2. Scenario forecasts follow the pessimistic and optimistic equations of Section 2 of the main paper, applied to the PAYEMS target defined in Section S1 of this supplement.

Table S4: Scenario forecasts of employment growth: asymmetry around the AAR-PROBIT average

Predictor	Sub-period	Quantity	h=1	h=2	h=3	h=4	h=5	h=6	h=7	h=8
TS	Full OOS	$\overline{y}-\widehat{y}$	-2.42	-0.48	-0.26	-0.21	-0.04	+0.43	+0.84	+2.92
		$\widehat{y}-\underline{y}$	-14.54	-3.55	-1.85	-1.98	-1.85	+0.40	+3.55	+13.78
	NBER Recessions	$\overline{y}-\widehat{y}$	-1.74	-0.86	-1.30	-1.34	-0.56	+1.47	-2.51	+2.87
		$\widehat{y}-\underline{y}$	-11.48	-3.19	-1.89	-2.00	-1.93	+0.57	-17.18	+6.54
	Expansions	$\overline{y}-\widehat{y}$	-2.49	-0.44	-0.15	-0.09	+0.01	+0.33	+1.18	+2.92
		$\widehat{y}-\underline{y}$	-14.85	-3.59	-1.85	-1.97	-1.84	+0.39	+5.65	+14.51
TS_Wright	Full OOS	$\overline{y}-\widehat{y}$	-2.03	-0.54	-0.32	-0.24	+0.01	+0.50	+3.57	+2.73
		$\widehat{y}-\underline{y}$	-11.90	-3.53	-2.16	-2.37	-2.11	+0.08	+14.72	+11.39
	NBER Recessions	$\overline{y}-\widehat{y}$	-1.82	-1.14	-2.14	-2.16	-1.15	+1.11	+21.08	+2.64
		$\widehat{y}-\underline{y}$	-10.49	-3.57	-2.31	-2.33	-2.12	-0.12	+86.32	+5.14
	Expansions	$\overline{y}-\widehat{y}$	-2.05	-0.48	-0.13	-0.04	+0.12	+0.44	+1.80	+2.74
		$\widehat{y}-\underline{y}$	-12.04	-3.52	-2.14	-2.37	-2.11	+0.10	+7.47	+12.03
TS_10Y_2Y	Full OOS	$\overline{y}-\widehat{y}$	-1.32	+0.06	+0.30	+0.30	+0.37	+0.40	+0.29	+0.47
		$\widehat{y}-\underline{y}$	-9.62	+0.69	+2.66	+1.68	+2.33	+3.09	+1.67	+1.69
	NBER Recessions	$\overline{y}-\widehat{y}$	-0.13	+0.13	+0.39	+0.68	+0.87	+0.86	+0.40	+0.69
		$\widehat{y}-\underline{y}$	-3.36	+1.42	+2.65	+1.92	+2.18	+2.78	+0.67	+0.87
	Expansions	$\overline{y}-\widehat{y}$	-1.41	+0.06	+0.29	+0.28	+0.34	+0.36	+0.28	+0.45
		$\widehat{y}-\underline{y}$	-10.09	+0.64	+2.66	+1.66	+2.34	+3.11	+1.75	+1.75

Notes: Entries are mean values in annualized percentage points of the vertical distance between the scenario forecast and the AAR average, computed over the indicated sub-period on the PAYEMS target. $\overline{y}-\widehat{y}$ measures the upside of the optimistic scenario; $\widehat{y}-\underline{y}$ measures the downside of the pessimistic scenario. MRV estimation.

S2 Year-over-year employment growth

Quarterly annualized payroll growth is volatile and masks the low-frequency co-movement between employment and the business cycle. As a natural complement to Section S1, we re-run the full AAR-PROBIT pipeline with the target redefined as the year-over-year (YoY) log-growth of non-farm payroll employment, $100 \times [\log(y_t) - \log(y_{t-4})]$. This transformation smooths out quarter-to-quarter noise while preserving the information content of cyclical fluctuations. All other conventions are unchanged: the same three univariate term-spread predictors, the same Probit windows and estimation schedule, the same OOS period (1981Q4–2025Q3), the same COVID-exclusion rule, and the same 1st-release and MRV estimation conventions. Forecast errors are evaluated against the MRV of the YoY target.

Main OOS results. Tables S5 and S6 report MSPE ratios vs ARD. The smoothing produced by the annual difference brings the term-spread signal into sharp focus. With TS_10Y_2Y as the Probit predictor, the AAR-PROBIT at $q = 0$ delivers extraordinary MSPE reductions during recessions: 0.25 at $h = 1$, 0.20 at $h = 2$, 0.20 at $h = 3$, 0.25 at $h = 4$, and reaches a floor of 0.18 at $h = 3$ for $q = 2$–4. The autoregressive Probit is in the same range (0.19–0.30 across $h = 1$–4 during recessions). Over the full out-of-sample period, TS_10Y_2Y remains consistently below one, with MSPE ratios ranging from 0.96 at $h = 1$ down to 0.75 at $h = 8$ under the MRV estimation. The two other yield-curve predictors, TS and TS_Wright, remain weak on this target at short horizons: their MSPE ratios exceed unity in recessions through $h = 4$–5, consistent with the Section S1 finding that the long-end of the curve is the appropriate signal for payroll growth. The YoY specification simply amplifies the magnitude of the improvements attainable with the dominant predictor.

Scenario forecasts. Table S7 reports conditional MSPE ratios of the pessimistic and optimistic scenarios for each predictor, and Table S8 the associated upside and downside. The pattern documented in Section S1 for quarterly growth carries over and is sharpened. With TS_10Y_2Y, the pessimistic scenario in recessions is 0.15 at $h = 6$, 0.69 at $h = 5$, and 0.85 at $h = 4$; the optimistic scenario in expansions stays close to one. The asymmetry between downside and upside is now visible on the YoY target: the pessimistic scenario sits systematically below the average by 0.5 to 2.0 percentage points during recessions for TS_10Y_2Y, against an upside of 0.3 to 0.9 percentage

Table S5: MSPE ratios vs ARD: YoY employment growth, NBER Recessions

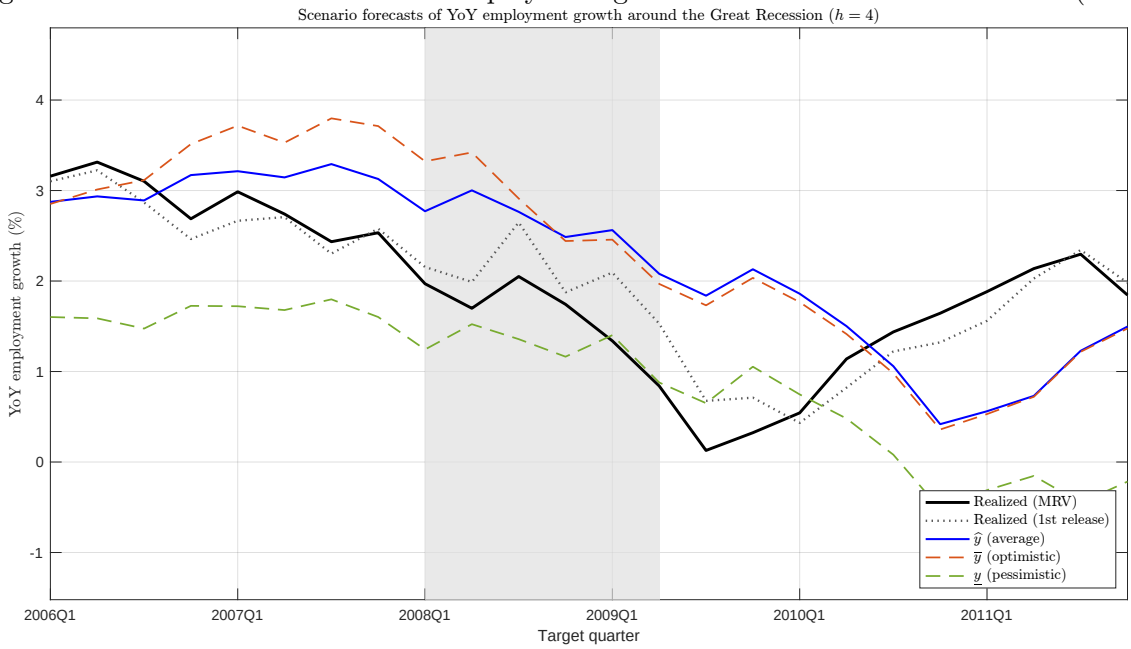
Predictors	Probit	h=1	h=2	h=3	h=4	h=5	h=6	h=7	h=8
Panel A — Estimation vintage: 1st release									
TS	q=0	0.56^{***}	1.02	1.76	2.43	2.68	1.79	1.55	1.79
TS	q=1	1.25	1.53	1.88	2.36	2.66	2.61	2.23	2.92
TS	q=2	1.21	1.58	1.91	2.38	2.87	3.65	2.59	1.80
TS	q=3	1.20	1.59	1.83	2.27	2.75	3.70	2.27	1.31
TS	q=4	1.18	1.65	2.03	3.11	2.76	2.98	1.85	1.30
TS_Wright	q=0	0.83^{*}	1.31	2.06	3.13	3.80	2.37	1.40	1.72
TS_Wright	q=1	1.38	1.83	2.23	2.95	3.50	3.34	2.32	2.60
TS_Wright	q=2	1.35	1.90	2.32	2.96	3.79	3.43	2.87	1.38
TS_Wright	q=3	1.33	1.90	2.21	3.07	3.12	3.69	2.11	1.28
TS_Wright	q=4	1.32	1.49	2.41	2.89	3.33	3.01	1.90	1.28
TS_10Y_2Y	q=0	0.39	0.41	0.36	0.48	0.64	0.65	0.60	0.50
TS_10Y_2Y	q=1	0.44	0.43	0.36	0.51	0.66	0.69	0.63	0.49
TS_10Y_2Y	q=2	0.46	0.44	0.37	0.52	0.71	0.76	0.62	0.54
TS_10Y_2Y	q=3	0.48	0.44	0.37	0.54	0.70	0.68	0.65	0.53
TS_10Y_2Y	q=4	0.50	0.43	0.38	0.56	0.66	0.77	0.73	0.40
TS	AR-probit	1.01	1.30	1.89	2.37	2.63	2.15	1.98	1.87
TS_Wright	AR-probit	1.36	1.58	2.27	3.01	3.80	2.94	2.01	1.83
TS_10Y_2Y	AR-probit	0.50	0.48	0.41	0.62	0.82	0.84	0.66	0.35
Panel B — Estimation vintage: MRV									
TS	q=0	0.67^{**}	1.08	1.43	1.84	2.38	2.08	1.42	1.10
TS	q=1	1.27	1.46	1.51	1.65	1.77	1.83	1.79	2.17
TS	q=2	1.27	1.52	1.52	1.58	1.76	2.51	2.28	1.25
TS	q=3	1.31	1.54	1.43	1.45	1.76	2.66	1.79	0.79
TS	q=4	1.32	1.49	1.48	1.94	1.69	2.18	1.28	0.81
TS_Wright	q=0	0.82^{*}	1.19	1.48	2.03	2.82	2.70	1.51	1.05
TS_Wright	q=1	1.33	1.55	1.57	1.86	2.27	2.38	2.12	1.99
TS_Wright	q=2	1.35	1.63	1.65	1.85	2.33	2.42	2.56	0.86
TS_Wright	q=3	1.39	1.66	1.58	1.92	1.85	2.54	1.58	0.82
TS_Wright	q=4	1.38	1.37	1.67	1.77	1.92	1.90	1.33	0.84
TS_10Y_2Y	q=0	0.25	0.20	0.20	0.25	0.35	0.45	0.58	0.64
TS_10Y_2Y	q=1	0.26	0.21	0.19	0.24	0.34	0.45	0.57	0.63
TS_10Y_2Y	q=2	0.27	0.20	0.19	0.24	0.34	0.45	0.56	0.63
TS_10Y_2Y	q=3	0.26	0.19	0.19	0.24	0.34	0.44	0.56	0.61
TS_10Y_2Y	q=4	0.25	0.19	0.18	0.24	0.34	0.44	0.56	0.55
TS	AR-probit	1.18	1.35	1.53	1.76	2.22	2.69	0.95	0.96
TS_Wright	AR-probit	1.52	1.50	1.63	1.93	2.72	3.09	0.95	0.98
TS_10Y_2Y	AR-probit	0.30	0.20	0.19	0.25	0.36	0.46	0.56	0.50

Notes: Entries are MSPE ratios of AAR-PROBIT forecasts of year-over-year PAYEMS growth, $100 \times [\log(y_t) - \log(y_{t-4})]$, relative to ARD, computed over NBER Recessions. The Probit specification is unchanged from Section 5 of the main paper (NBER-calibrated on the term spread). Sub-periods exclude the COVID quarters 2020Q1–2020Q2. Panel A uses the 1st-release estimation vintage; Panel B uses the MRV. Significance stars refer to the Clark-West test of equal predictive accuracy against ARD: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

points from the optimistic scenario. Figure S2 displays the fan chart of the TS_10Y_2Y scenarios around the 2007–2009 recession: the pessimistic path tracks the realized MRV trough closely, while the optimistic scenario brackets the subsequent recovery.

The comparison between Sections S1 and S2 highlights the interaction between target smoothness and the AAR-PROBIT mechanism: when the target has a substantial high-frequency compo-

Figure S2: Scenario forecasts of YoY employment growth around the Great Recession ($h = 4$)



Notes: Four-quarter-ahead scenario forecasts of year-over-year PAYEMS growth around the 2007–2009 recession, using TS_10Y_2Y as the Probit predictor. The black solid line is the realized YoY growth evaluated against the MRV; the gray dotted line is the 1st-release observation. The blue line is the average AAR-PROBIT forecast; the orange and green dashed lines are the optimistic and pessimistic scenarios. All forecasts use the MRV estimation convention. The shaded band marks the NBER recession.

Table S6: MSPE ratios vs ARD: YoY employment growth, Full OOS

Predictors	Probit	h=1	h=2	h=3	h=4	h=5	h=6	h=7	h=8
Panel A — Estimation vintage: 1st release									
TS	q=0	1.07**	1.10	1.11	1.08	1.04	0.99	1.03	1.13
TS	q=1	1.03	1.04	1.06	1.05	1.04	1.05	1.07	1.19
TS	q=2	1.02	1.03	1.05	1.05	1.04	1.06	1.05	1.17
TS	q=3	1.02	1.02	1.04*	1.04	1.04	1.06	1.10	1.32
TS	q=4	1.02	1.03	1.05	1.10	1.05	1.04	1.03	1.26
TS_Wright	q=0	1.05**	1.10	1.12	1.12	1.10	1.03	1.02	1.11
TS_Wright	q=1	1.04	1.10	1.11	1.10	1.09	1.12	1.13	1.20
TS_Wright	q=2	1.03	1.11	1.12	1.10	1.12	1.09	1.14	1.24
TS_Wright	q=3	1.03	1.09	1.10	1.11	1.08	1.12	1.14	1.22
TS_Wright	q=4	1.03	1.04	1.12	1.11	1.11	1.09	1.08	1.24
TS_10Y_2Y	q=0	0.94	0.89*	0.85**	0.80**	0.74***	0.68***	0.63***	0.59***
TS_10Y_2Y	q=1	0.95	0.89**	0.84**	0.79***	0.74***	0.69***	0.64***	0.59***
TS_10Y_2Y	q=2	0.96	0.91*	0.87**	0.81***	0.76***	0.71***	0.64***	0.59***
TS_10Y_2Y	q=3	0.97	0.95*	0.89**	0.83**	0.77***	0.69***	0.65***	0.59***
TS_10Y_2Y	q=4	0.99	0.97	0.93**	0.85**	0.77**	0.71***	0.66***	0.57***
TS	AR-probit	0.98**	0.98**	1.02*	1.04	1.05	1.02	1.02	1.10
TS_Wright	AR-probit	1.06	1.04	1.08	1.10	1.10	1.06	1.03	1.08
TS_10Y_2Y	AR-probit	1.02*	0.98**	0.93**	0.87**	0.81**	0.74***	0.66**	0.61**
Panel B — Estimation vintage: MRV									
TS	q=0	1.14	1.15	1.16	1.16	1.15	1.07	1.02	1.02
TS	q=1	1.05	1.09	1.11	1.11	1.10	1.08	1.06	1.09
TS	q=2	1.05	1.09	1.11	1.10	1.07	1.10	1.05	1.06
TS	q=3	1.06	1.09	1.09	1.08	1.09	1.12	1.08	1.23
TS	q=4	1.06	1.09	1.10	1.16	1.09	1.06	0.97	1.19
TS_Wright	q=0	1.12	1.13	1.14	1.18	1.20	1.16	1.08	1.07
TS_Wright	q=1	1.07	1.13	1.13	1.15	1.15	1.17	1.17	1.16
TS_Wright	q=2	1.07	1.15	1.15	1.15	1.17	1.14	1.19	1.20
TS_Wright	q=3	1.08	1.15	1.14	1.16	1.12	1.17	1.16	1.20
TS_Wright	q=4	1.08	1.09	1.16	1.15	1.15	1.11	1.07	1.23
TS_10Y_2Y	q=0	0.96	0.92	0.91	0.89	0.86	0.83*	0.79*	0.75*
TS_10Y_2Y	q=1	0.98	0.93	0.91*	0.88*	0.86*	0.83*	0.80*	0.75*
TS_10Y_2Y	q=2	1.00	0.95	0.92	0.88	0.86*	0.83*	0.79*	0.76*
TS_10Y_2Y	q=3	1.01	0.97	0.93	0.89	0.86	0.83*	0.79*	0.75*
TS_10Y_2Y	q=4	1.01	0.97	0.94	0.90	0.86	0.82*	0.79*	0.73*
TS	AR-probit	1.03	1.05	1.08	1.12	1.15	1.13	0.93*	0.95
TS_Wright	AR-probit	1.12	1.10	1.12	1.15	1.20	1.20	0.97	0.99
TS_10Y_2Y	AR-probit	1.04	1.00	0.97	0.93	0.89	0.86	0.82	0.78

Notes: Entries are MSPE ratios of AAR forecasts of year-over-year PAYEMS growth, $100 \times [\log(y_t) - \log(y_{t-4})]$, relative to ARD, computed over Full OOS. The Probit specification is unchanged from Section 5 of the main paper (NBER-calibrated on the term spread). Sub-periods exclude the COVID quarters 2020Q1–2020Q2. Panel A uses the 1st-release estimation vintage; Panel B uses the MRV. Significance stars refer to the Clark-West test of equal predictive accuracy against ARD: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

nent (quarterly-annualized growth), the Probit signal explains a limited fraction of the variance and gains are concentrated in recessions; when the target is smoothed (YoY growth), the slow-moving term-spread signal explains a large fraction of the variance and the gains widen dramatically and extend across horizons. The result is consistent with the view that business-cycle information delivered by financial variables is naturally low-frequency.

Table S7: Scenario forecasts of YoY employment growth: conditional MSPE ratios vs ARD

Predictor	State	Forecast	h=1	h=2	h=3	h=4	h=5	h=6	h=7	h=8
TS	NBER Recessions	average	0.67	1.08	1.43	1.84	2.38	2.08	1.42	1.10
		pessimistic	72.94	8.56	5.74	6.56	8.75	14.49	54.66	40.76
	Expansions	average	1.25	1.17	1.10	1.04	0.98	0.97	0.99	1.01
		optimistic	8.45	1.01	0.85	0.83	0.86	0.84	1.21	3.05
TS_Wright	NBER Recessions	average	0.82	1.19	1.48	2.03	2.82	2.70	1.51	1.05
		pessimistic	70.27	9.61	6.96	7.56	8.84	9.96	670.51	23.56
	Expansions	average	1.20	1.12	1.07	1.03	0.98	1.00	1.04	1.08
		optimistic	6.12	0.92	0.88	0.86	0.90	0.93	2.50	2.45
TS_10Y_2Y	NBER Recessions	average	0.70	0.71	0.71	0.72	0.75	0.76	0.73	0.65
		pessimistic	2.24	1.63	2.18	0.85	0.69	0.15	1.51	1.18
	Expansions	average	1.04	1.01	1.01	1.00	0.99	0.97	0.96	0.95
		optimistic	1.17	1.16	1.21	1.19	1.25	1.14	1.02	1.03

Notes: Conditional MSPE ratios vs ARD for scenario forecasts of year-over-year PAYEMS growth. MRV estimation, ex-COVID. Pessimistic and optimistic scenario formulas of Section 2 of the main paper applied to the YoY target defined in Section S2 of this supplement.

Table S8: Scenario forecasts of YoY employment growth: asymmetry around the AAR-PROBIT average

Predictor	Sub-period	Quantity	h=1	h=2	h=3	h=4	h=5	h=6	h=7	h=8
TS	Full OOS	$\overline{y} - \widehat{y}$	-1.65	-0.43	-0.33	-0.29	-0.22	-0.13	+0.28	+1.25
		$\widehat{y} - \underline{y}$	-9.73	-3.21	-2.37	-2.53	-2.85	-2.43	+0.04	+5.05
	NBER Recessions	$\overline{y} - \widehat{y}$	-1.17	-0.64	-1.16	-1.43	-1.06	-0.54	-0.29	+1.44
		$\widehat{y} - \underline{y}$	-7.58	-2.85	-2.21	-2.27	-2.55	-3.31	-5.19	+1.56
	Expansions	$\overline{y} - \widehat{y}$	-1.70	-0.41	-0.24	-0.18	-0.14	-0.09	+0.33	+1.23
		$\widehat{y} - \underline{y}$	-9.94	-3.24	-2.39	-2.56	-2.88	-2.34	+0.57	+5.40
TS_Wright	Full OOS	$\overline{y} - \widehat{y}$	-1.45	-0.41	-0.34	-0.31	-0.17	-0.01	+1.11	+1.20
		$\widehat{y} - \underline{y}$	-8.36	-2.99	-2.44	-2.75	-2.96	-2.21	+3.30	+4.04
	NBER Recessions	$\overline{y} - \widehat{y}$	-1.26	-0.70	-1.69	-1.95	-1.42	-0.65	+6.23	+1.42
		$\widehat{y} - \underline{y}$	-7.13	-2.94	-2.45	-2.46	-2.56	-2.57	+23.52	+0.76
	Expansions	$\overline{y} - \widehat{y}$	-1.47	-0.38	-0.21	-0.14	-0.04	+0.05	+0.59	+1.17
		$\widehat{y} - \underline{y}$	-8.48	-3.00	-2.44	-2.78	-3.00	-2.18	+1.26	+4.37
TS_10Y_2Y	Full OOS	$\overline{y} - \widehat{y}$	+0.20	+0.18	+0.23	+0.27	+0.36	+0.36	+0.25	+0.31
		$\widehat{y} - \underline{y}$	+1.71	+1.46	+1.95	+1.41	+0.76	+0.49	-0.47	-0.36
	NBER Recessions	$\overline{y} - \widehat{y}$	+0.02	+0.07	+0.27	+0.54	+0.85	+0.71	+0.28	+0.31
		$\widehat{y} - \underline{y}$	+1.17	+1.36	+1.81	+1.40	+0.93	+0.57	-1.00	-0.96
	Expansions	$\overline{y} - \widehat{y}$	+0.21	+0.19	+0.23	+0.25	+0.32	+0.33	+0.25	+0.31
		$\widehat{y} - \underline{y}$	+1.75	+1.46	+1.96	+1.42	+0.74	+0.48	-0.43	-0.31

Notes: Entries are mean values in percentage points of the vertical distance between the scenario forecast and the AAR-PROBIT average on YoY PAYEMS growth. MRV estimation, ex-COVID.

S3 Year-over-year GDP growth

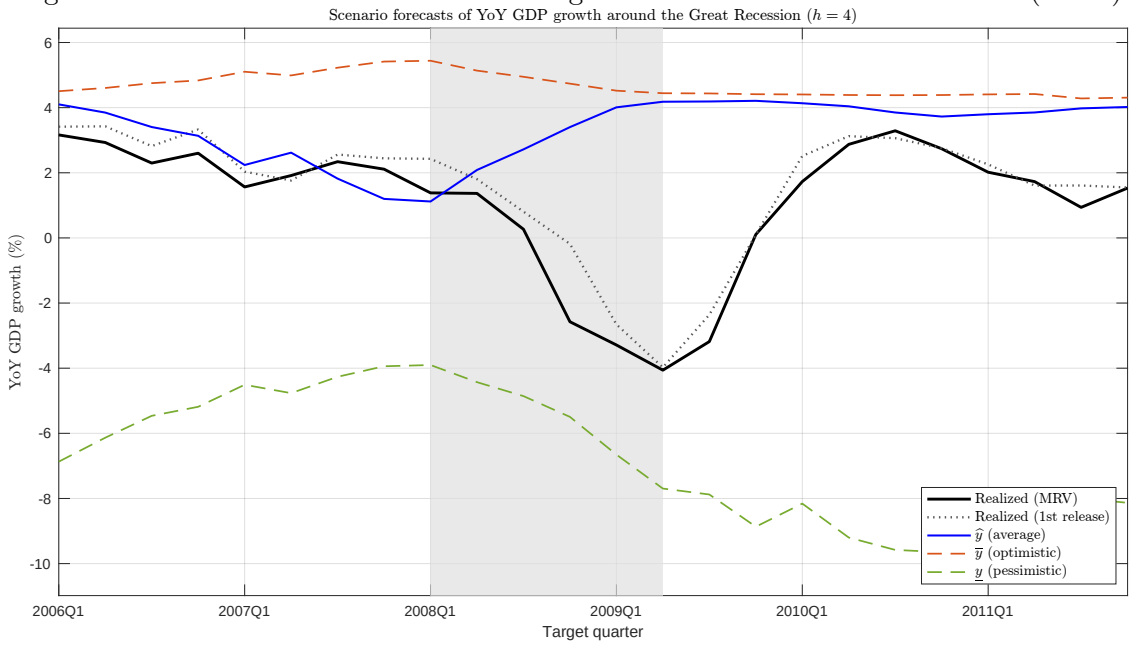
To isolate the role of target smoothness independently of the choice of activity variable, we re-run the AAR-PROBIT pipeline on year-over-year real GDP growth, $100 \times [\log(y_t) - \log(y_{t-4})]$, keeping the three univariate term-spread Probits and every other sampling convention identical to Section 5 of the main paper and Section S2 of this supplement. The comparison with the quarterly-annualized exercise of the main paper cleans the low-frequency analog of the main results for GDP, and with Section S2 disentangles target smoothness from target choice.

Main OOS results. Tables S9 and S10 report MSPE ratios vs ARD. During recessions, the AAR-PROBIT again delivers substantial MSPE reductions across the yield-curve predictors: TS_Wright at $q = 0$ reaches 0.44 at $h = 5$ and 0.51 at $h = 6$ under the MRV estimation; TS at $q = 0$ delivers 0.55 at $h = 5$; TS_10Y_2Y at $q = 0$ delivers 0.75 at $h = 8$. The predictor ranking preserves the main paper's finding that TS_Wright is the strongest single-predictor for GDP, with the improvement now visible across a wider range of horizons thanks to the lower-frequency target. Full-OOS ratios for TS_10Y_2Y range from 0.79–0.95 under MRV estimation, and for TS_Wright from 0.80–1.11, indicating that the AAR-PROBIT extracts cyclical information even outside recession periods. The autoregressive Probit closely tracks the static-$q = 0$ results for each predictor.

Scenario forecasts. Table S11 reports conditional MSPE ratios of the pessimistic and optimistic scenarios on YoY GDP growth, and Table S12 the associated upside and downside. The mechanism of Section 6.2 of the main paper carries over: the pessimistic forecast remains above one at short horizons, in line with the Mills-ratio penalty when the signal diverges from the prevailing state, but the scenarios contain genuine information about asymmetric risk. For TS and TS_Wright, the downside of the pessimistic scenario ($\widehat{y} - \underline{y}$) exceeds the upside of the optimistic scenario ($\overline{y} - \widehat{y}$) by a factor of four to six at medium horizons in both expansion and recession. The growth-at-risk reading of the scenarios, which was clean for quarterly GDP in the main paper but attenuated for PAYEMS in Sections S1–S2, is thus fully recovered on the YoY GDP target. Figure S3 displays the fan chart of the TS scenarios around the 2007–2009 recession.

Taken together, Sections S1–S3 suggest a consistent pattern. The AAR-PROBIT mechanism is robust to the choice of activity target (GDP or PAYEMS) and to the differencing convention

Figure S3: Scenario forecasts of YoY GDP growth around the Great Recession ($h = 4$)



Notes: Four-quarter-ahead scenario forecasts of year-over-year GDP growth around the 2007–2009 recession, using TS as the Probit predictor, to parallel Figure 2 of the main paper. The black solid line is the realized YoY growth evaluated against the MRV; the gray dotted line is the 1st-release observation. The blue line is the average AAR-PROBIT forecast; the orange and green dashed lines are the optimistic and pessimistic scenarios. All forecasts use the MRV estimation convention. The shaded band marks the NBER recession.

Table S9: MSPE ratios vs ARD: YoY GDP growth, NBER Recessions

Predictors	Probit	h=1	h=2	h=3	h=4	h=5	h=6	h=7	h=8
Panel A — Estimation vintage: 1st release									
TS	q=0	1.28	1.33	1.21	0.96*	0.57**	0.59**	0.75***	0.94
TS	q=1	1.15	1.19	1.20	1.01*	0.74*	0.80**	0.81**	0.88**
TS	q=2	1.21	1.22	1.20	0.97*	0.73*	0.69**	0.71**	0.97
TS	q=3	1.27	1.22	1.12	0.91	0.69*	0.62**	0.80**	1.02
TS	q=4	1.31	1.09	1.08	0.81*	0.78*	0.71**	0.85**	1.01
TS_Wright	q=0	1.07	1.15	0.99*	0.81**	0.47**	0.50**	0.66***	0.96
TS_Wright	q=1	1.02	0.98	0.96*	0.80**	0.54**	0.67**	0.74**	0.91**
TS_Wright	q=2	1.02	0.98*	0.95**	0.79**	0.50**	0.63**	0.70**	1.03
TS_Wright	q=3	1.05*	0.98*	0.95**	0.66**	0.65***	0.59**	0.82**	1.03
TS_Wright	q=4	1.04*	1.02	0.99**	0.74***	0.65**	0.68**	0.83**	1.04
TS_10Y_2Y	q=0	1.39	1.30	1.19	1.07	0.87	0.70	0.63	0.63
TS_10Y_2Y	q=1	1.31	1.28	1.16	1.04	0.86	0.68	0.61	0.62
TS_10Y_2Y	q=2	1.31	1.28	1.14	1.03	0.85	0.66	0.61	0.62
TS_10Y_2Y	q=3	1.31	1.27	1.14	1.02	0.85	0.67	0.60	0.62
TS_10Y_2Y	q=4	1.32	1.28	1.15	1.02	0.85	0.67	0.60	0.62
TS	AR-probit	1.21	1.31	1.19	1.00*	0.64*	0.68**	0.88**	0.96
TS_Wright	AR-probit	0.81**	0.99*	0.95**	0.82**	0.48**	0.62**	0.89*	1.00
TS_10Y_2Y	AR-probit	1.39	1.27	1.14	1.03	0.85	0.67	0.61	0.63
Panel B — Estimation vintage: MRV									
TS	q=0	1.19	1.16	0.97	0.74*	0.55**	0.64***	0.78***	0.91**
TS	q=1	0.99	0.99	0.94	0.80*	0.69**	0.78***	0.80***	0.88***
TS	q=2	1.03	1.00	0.95	0.81*	0.68**	0.67**	0.71**	0.97
TS	q=3	1.05	1.01	0.94	0.79*	0.64**	0.60**	0.79**	1.00
TS	q=4	1.10	0.95	0.92	0.70**	0.70**	0.68**	0.83***	0.99
TS_Wright	q=0	1.12	1.10	0.88*	0.67**	0.44**	0.51**	0.70***	0.91*
TS_Wright	q=1	0.97	0.89	0.83**	0.70**	0.53**	0.64**	0.72***	0.89**
TS_Wright	q=2	0.95	0.86*	0.81**	0.70**	0.51**	0.61**	0.70**	0.97
TS_Wright	q=3	0.95	0.85*	0.81**	0.61**	0.60***	0.58**	0.80***	0.96
TS_Wright	q=4	0.95	0.91	0.83**	0.66***	0.60***	0.66**	0.81***	0.97
TS_10Y_2Y	q=0	0.96	1.07	0.98	0.87	0.75	0.65	0.63	0.64
TS_10Y_2Y	q=1	0.96	1.05	0.95	0.85	0.73	0.64	0.62	0.63
TS_10Y_2Y	q=2	0.99	1.07	0.95	0.85	0.74	0.63	0.61	0.64
TS_10Y_2Y	q=3	1.07	1.09	0.95	0.86	0.74	0.63	0.61	0.64
TS_10Y_2Y	q=4	1.09	1.10	0.98	0.86	0.73	0.63	0.61	0.64
TS	AR-probit	1.13	1.11	0.94	0.78*	0.60**	0.67**	0.89**	0.95
TS_Wright	AR-probit	0.87*	0.95	0.83*	0.70**	0.46**	0.57**	0.88**	0.96
TS_10Y_2Y	AR-probit	1.04	1.10	0.98	0.86	0.73	0.63	0.62	0.64

Notes: Entries are MSPE ratios of AAR-PROBIT forecasts of year-over-year GDP growth, $100 \times [\log(y_t) - \log(y_{t-4})]$, relative to ARD, computed over NBER Recessions. The Probit specification is unchanged from Section 5 of the main paper (NBER-calibrated on the term spread). Sub-periods exclude the COVID quarters 2020Q1–2020Q2. Panel A uses the 1st-release estimation vintage; Panel B uses the MRV. Significance stars refer to the Clark-West test of equal predictive accuracy against ARD: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

(quarterly annualized or YoY). What varies is the magnitude of the MSPE improvement and the ranking of term-spread predictors: TS and TS_Wright dominate for GDP, TS_10Y_2Y dominates for PAYEMS, and the gains are larger when the target is smoothed. The asymmetric-risk reading of the scenarios is strongest on GDP, whether quarterly or YoY, and more muted on payroll growth where the conditional distribution of output is less skewed.

Table S10: MSPE ratios vs ARD: YoY GDP growth, Full OOS

Predictors	Probit	h=1	h=2	h=3	h=4	h=5	h=6	h=7	h=8
Panel A — Estimation vintage: 1st release									
TS	q=0	1.04^{**}	1.12^{*}	1.18^{**}	1.12^{**}	0.93^{**}	0.85^{***}	0.88^{***}	0.96^{*}
TS	q=1	0.96^{***}	1.10^{***}	1.21^{**}	1.15^{***}	1.01^{**}	1.01^{**}	1.04^{*}	1.00^{*}
TS	q=2	0.98^{***}	1.13^{***}	1.23^{***}	1.15^{***}	1.02^{**}	0.95^{**}	0.96^{*}	1.01
TS	q=3	1.01^{***}	1.15^{***}	1.21^{***}	1.14^{***}	1.03^{**}	0.93^{**}	1.00^{*}	1.11
TS	q=4	1.03^{***}	1.12^{***}	1.20^{***}	1.11^{***}	1.07^{**}	0.94^{**}	1.01^{*}	1.10
TS_Wright	q=0	1.00^{**}	1.05^{**}	1.07^{**}	1.01^{***}	0.83^{**}	0.75^{**}	0.80^{***}	0.95^{*}
TS_Wright	q=1	0.96^{***}	1.03^{***}	1.10^{***}	1.03^{***}	0.87^{***}	0.91^{***}	1.00^{*}	0.97^{**}
TS_Wright	q=2	0.97^{***}	1.07^{***}	1.11^{***}	1.03^{***}	0.91^{**}	0.90^{**}	0.97^{*}	1.00
TS_Wright	q=3	0.99^{***}	1.06^{***}	1.10^{***}	1.01^{***}	0.99^{***}	0.90^{**}	1.00^{*}	1.02
TS_Wright	q=4	0.99^{***}	1.06^{***}	1.12^{***}	1.05^{***}	1.02^{***}	0.91^{**}	0.99^{*}	1.03
TS_10Y_2Y	q=0	0.99	1.00	1.03	0.96	0.90	0.80^{**}	0.75^{**}	0.73^{**}
TS_10Y_2Y	q=1	0.98	1.00	1.02	0.95	0.89	0.80^{**}	0.75^{**}	0.74^{**}
TS_10Y_2Y	q=2	0.97	0.98	0.99	0.93	0.88	0.80^{**}	0.76^{**}	0.74^{**}
TS_10Y_2Y	q=3	0.94^{*}	0.96	0.96	0.92	0.87	0.80^{**}	0.76^{**}	0.75^{**}
TS_10Y_2Y	q=4	0.94^{*}	0.94	0.94	0.91	0.87	0.80^{**}	0.77^{**}	0.76^{**}
TS	AR-probit	1.00^{***}	1.14^{**}	1.20^{***}	1.15^{***}	0.96^{**}	0.91^{**}	0.95^{**}	0.97^{*}
TS_Wright	AR-probit	0.97^{***}	1.07^{***}	1.10^{***}	1.04^{***}	0.84^{**}	0.81^{**}	0.91^{***}	0.96^{*}
TS_10Y_2Y	AR-probit	0.95	0.95	0.96	0.91	0.85	0.77^{***}	0.74^{**}	0.73^{**}
Panel B — Estimation vintage: MRV									
TS	q=0	1.08	1.14	1.16	1.12^{*}	1.01^{*}	0.97^{*}	1.00^{*}	1.03
TS	q=1	1.04^{**}	1.14^{*}	1.20	1.16^{*}	1.08^{*}	1.10	1.13	1.05
TS	q=2	1.06^{*}	1.18^{*}	1.23	1.18^{*}	1.09	1.04	1.06	1.04
TS	q=3	1.11^{**}	1.20^{*}	1.22	1.18^{*}	1.08^{*}	1.01	1.08	1.12
TS	q=4	1.14^{*}	1.18^{*}	1.22	1.13^{*}	1.12^{*}	1.02	1.10	1.11
TS_Wright	q=0	1.07	1.10	1.09^{*}	1.02^{**}	0.86^{**}	0.80^{**}	0.87^{**}	0.97
TS_Wright	q=1	1.03^{**}	1.07^{*}	1.11^{**}	1.05^{**}	0.92^{**}	0.94^{*}	1.04	0.99
TS_Wright	q=2	1.03^{**}	1.10^{**}	1.11^{**}	1.05^{**}	0.96^{*}	0.94^{*}	1.01	0.99
TS_Wright	q=3	1.06^{**}	1.09^{**}	1.10^{**}	1.03^{**}	1.02^{**}	0.94^{*}	1.03	1.00
TS_Wright	q=4	1.06^{**}	1.10^{**}	1.11^{**}	1.05^{**}	1.04^{**}	0.95^{*}	1.03	1.01
TS_10Y_2Y	q=0	0.95	0.98	1.00	0.97	0.93	0.84	0.81^{*}	0.79^{*}
TS_10Y_2Y	q=1	1.01	1.00	1.01	0.97	0.91	0.83	0.80^{*}	0.80^{*}
TS_10Y_2Y	q=2	1.01	1.00	1.01	0.95	0.91	0.83	0.80^{*}	0.79^{*}
TS_10Y_2Y	q=3	1.01	1.01	0.98	0.95	0.90	0.82	0.80	0.79
TS_10Y_2Y	q=4	1.02	0.99	0.98	0.95	0.89	0.81	0.80	0.79^{*}
TS	AR-probit	1.11	1.19	1.20	1.15^{*}	1.03^{*}	0.99^{*}	1.07	1.05
TS_Wright	AR-probit	1.06^{*}	1.15^{*}	1.14^{**}	1.06^{**}	0.87^{**}	0.84^{**}	0.98^{**}	1.00
TS_10Y_2Y	AR-probit	0.97	0.99	1.00	0.95	0.89	0.82	0.80^{*}	0.79

Notes: Entries are MSPE ratios of AAR-PROBIT forecasts of year-over-year GDP growth, $100 \times [\log(y_t) - \log(y_{t-4})]$, relative to ARD, computed over Full OOS. The Probit specification is unchanged from Section 5 of the main paper (NBER-calibrated on the term spread). Sub-periods exclude the COVID quarters 2020Q1–2020Q2. Panel A uses the 1st-release estimation vintage; Panel B uses the MRV. Significance stars refer to the Clark-West test of equal predictive accuracy against ARD: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table S11: Scenario forecasts of YoY GDP growth: conditional MSPE ratios vs ARD

Predictor	State	Forecast	h=1	h=2	h=3	h=4	h=5	h=6	h=7	h=8
TS	NBER Recessions	average	1.19	1.16	0.97	0.74	0.55	0.64	0.78	0.91
		pessimistic	4.06	1.76	1.24	1.09	1.61	3.09	5.56	2.24
	Expansions	average	1.03	1.13	1.29	1.42	1.43	1.30	1.21	1.13
		optimistic	2.03	1.76	1.88	2.14	2.74	3.23	3.49	3.75
TS_Wright	NBER Recessions	average	1.12	1.10	0.88	0.67	0.44	0.51	0.70	0.91
		pessimistic	4.45	1.71	1.37	1.16	1.43	2.05	99.22	2.32
	Expansions	average	1.04	1.10	1.22	1.30	1.24	1.08	1.03	1.03
		optimistic	2.17	1.79	1.84	2.06	2.56	2.86	4.47	3.84
TS_10Y_2Y	NBER Recessions	average	1.12	1.13	1.04	0.95	0.89	0.81	0.77	0.75
		pessimistic	4.00	2.80	2.37	2.11	2.03	2.17	1.50	1.38
	Expansions	average	1.04	1.13	1.24	1.29	1.27	1.14	1.08	1.04
		optimistic	1.34	1.52	1.65	1.81	1.95	1.90	1.72	1.70

Notes: Conditional MSPE ratios vs ARD for scenario forecasts of year-over-year GDP growth. MRV estimation, ex-COVID. Pessimistic and optimistic scenario formulas of Section 2 of the main paper applied to the YoY target defined in Section S3 of this supplement.

Table S12: Scenario forecasts of YoY GDP growth: asymmetry around the AAR-PROBIT average

Predictor	Sub-period	Quantity	h=1	h=2	h=3	h=4	h=5	h=6	h=7	h=8
TS	Full OOS	$\overline{y}-\widehat{y}$	+1.53	+1.33	+1.37	+1.45	+1.65	+1.88	+1.82	+2.06
		$\widehat{y}-\underline{y}$	+8.22	+9.08	+10.19	+10.74	+11.49	+12.46	+11.99	+12.25
	NBER Recessions	$\overline{y}-\widehat{y}$	+1.73	+1.97	+3.16	+4.35	+4.54	+3.93	+0.83	+1.88
		$\widehat{y}-\underline{y}$	+9.01	+8.46	+7.73	+6.99	+8.63	+11.96	+3.81	+10.94
	Expansions	$\overline{y}-\widehat{y}$	+1.51	+1.27	+1.19	+1.15	+1.36	+1.67	+1.92	+2.08
		$\widehat{y}-\underline{y}$	+8.14	+9.14	+10.44	+11.12	+11.78	+12.51	+12.82	+12.39
TS_Wright	Full OOS	$\overline{y}-\widehat{y}$	+1.67	+1.45	+1.51	+1.59	+1.82	+1.94	+2.82	+2.30
		$\widehat{y}-\underline{y}$	+8.87	+8.87	+9.62	+10.05	+10.72	+11.16	+15.01	+11.94
	NBER Recessions	$\overline{y}-\widehat{y}$	+1.89	+2.21	+3.65	+4.56	+4.84	+4.02	+8.23	+1.54
		$\widehat{y}-\underline{y}$	+9.14	+8.06	+7.50	+6.65	+7.69	+9.88	+36.80	+11.16
	Expansions	$\overline{y}-\widehat{y}$	+1.64	+1.37	+1.29	+1.29	+1.52	+1.73	+2.27	+2.38
		$\widehat{y}-\underline{y}$	+8.85	+8.95	+9.83	+10.39	+11.03	+11.29	+12.80	+12.02
TS_10Y_2Y	Full OOS	$\overline{y}-\widehat{y}$	+1.03	+1.17	+1.22	+1.24	+1.37	+1.39	+1.25	+1.23
		$\widehat{y}-\underline{y}$	+6.76	+9.29	+10.48	+11.08	+11.14	+11.33	+10.57	+10.05
	NBER Recessions	$\overline{y}-\widehat{y}$	+1.08	+0.84	+1.15	+1.66	+2.21	+2.32	+1.93	+2.02
		$\widehat{y}-\underline{y}$	+8.30	+9.88	+10.23	+9.82	+9.45	+9.65	+8.41	+8.15
	Expansions	$\overline{y}-\widehat{y}$	+1.02	+1.19	+1.23	+1.20	+1.31	+1.32	+1.20	+1.17
		$\widehat{y}-\underline{y}$	+6.64	+9.24	+10.50	+11.17	+11.27	+11.46	+10.74	+10.20

Notes: Entries are mean values in percentage points of the vertical distance between the scenario forecast and the AAR-PROBIT average on YoY GDP growth. MRV estimation, ex-COVID.