**NEW EVIDENCE ON THE AFTERMATH OF FINANCIAL CRISES
IN ADVANCED COUNTRIES**

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**ONLINE APPENDIX C
Additional Empirical Results**

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This appendix provides results for the various additional empirical tests discussed in the text. The notes to the figures and table provide details about the empirical specification and procedures. For simplicity, the appendix typically only reports the results using real GDP as the outcome variable. Where appropriate, we include the baseline results from the paper (panel (a) of Figure 4) in the supplemental figures to facilitate comparison.

FIGURE C1
Comparison of the New Measure and Other Crisis Chronologies in Selected Post-2007 Episodes
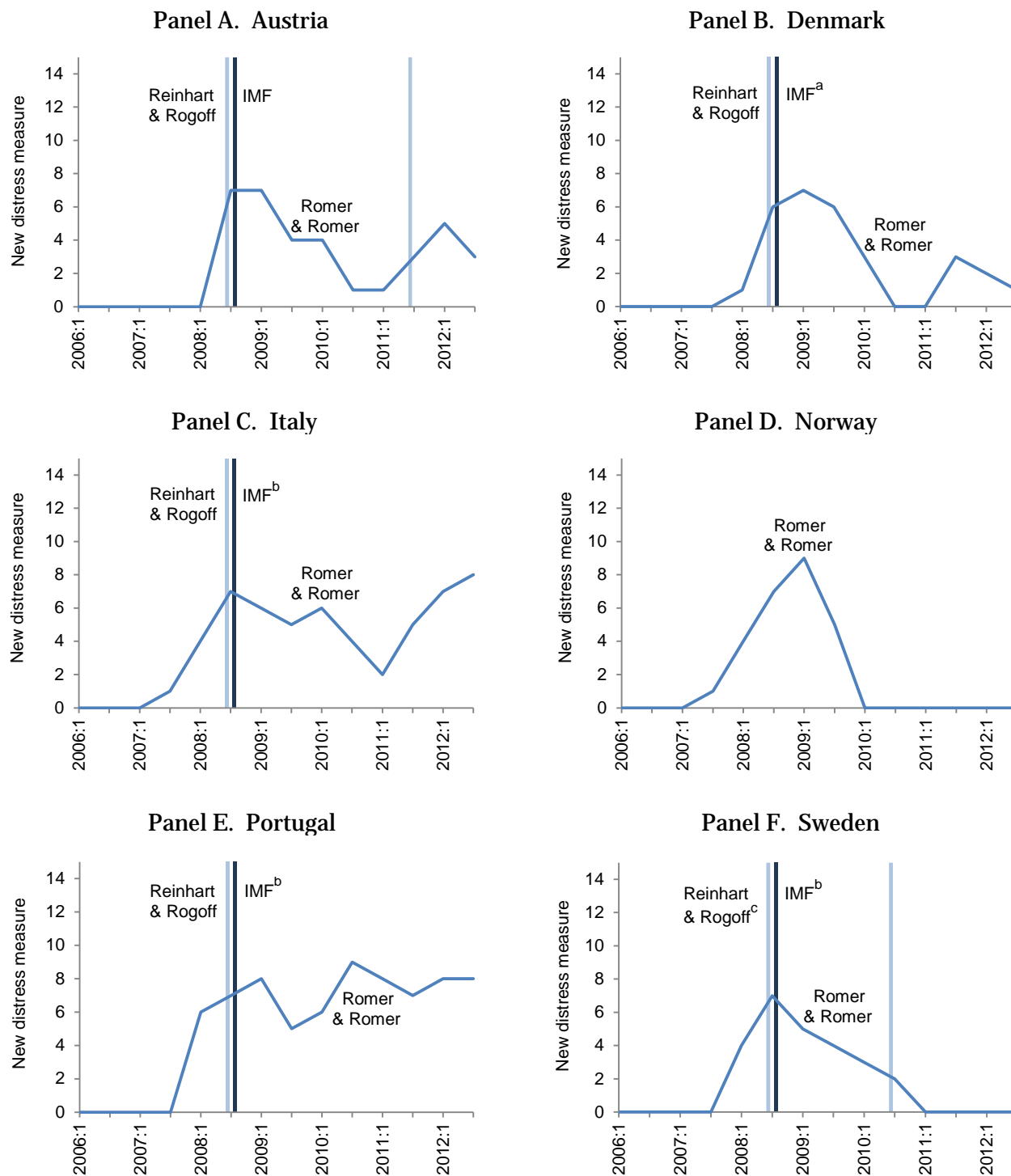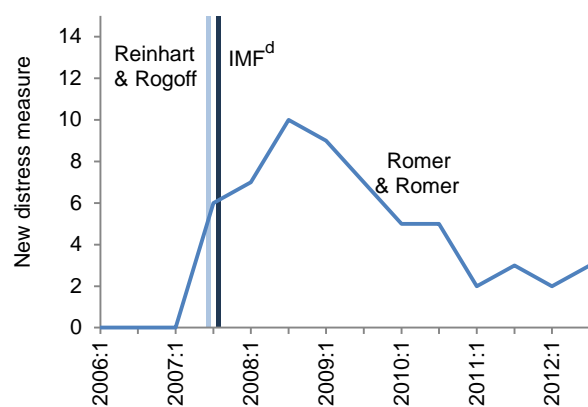

Panel A. Austria

Panel B. Denmark

Panel C. Italy

Panel D. Norway

Panel E. Portugal

Panel F. Sweden

FIGURE **C1** (continued)
Comparison of the New Measure and Other Crisis Chronologies in Selected Post-2007 Episodes

Panel G. United Kingdom

Notes: The vertical lines represent the start and end dates of financial crises in the Reinhart and Rogoff and IMF chronologies, converted to semiannual observations as described in the text. The IMF series ends in 2011:2, so the lack of an end date does not necessarily indicate that the IMF believed the crisis continued through 2012:2.
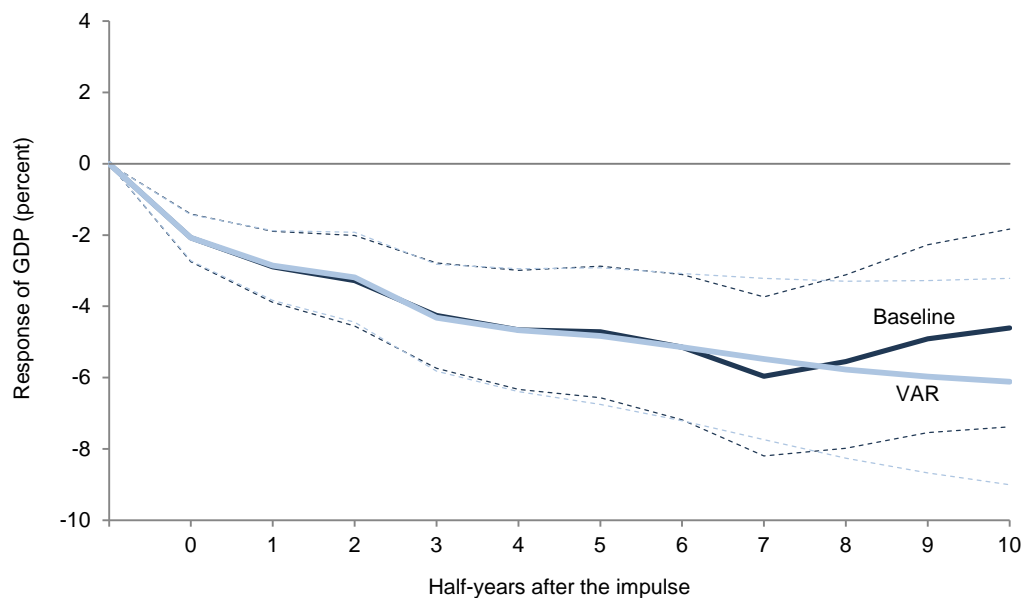[a] Not systemic until 2009:1.
[b] Borderline crisis.
[c] Not systemic.
[d] Not systemic until 2008:2.

FIGURE C2
Response of Real GDP to Financial Distress, Full Sample,
Vector Autoregression

Notes: The dark blue solid line shows the baseline estimate discussed in the paper; the dark blue dashed lines show the two-standard-error confidence bands. The light blue solid line shows the impulse response function for real GDP to an impulse of 7 in our new measure of financial distress derived from a two-equation VAR estimated for the sample of 24 OECD countries over the full sample period. The two variables in the VAR are real GDP, entered in log levels, and our new distress measure. Paralleling the timing assumption in our baseline specification, we order the distress variable first. The VAR includes six lags. The light blue dashed lines show the two-standard-error confidence bands for the VAR specification.

FIGURE C3
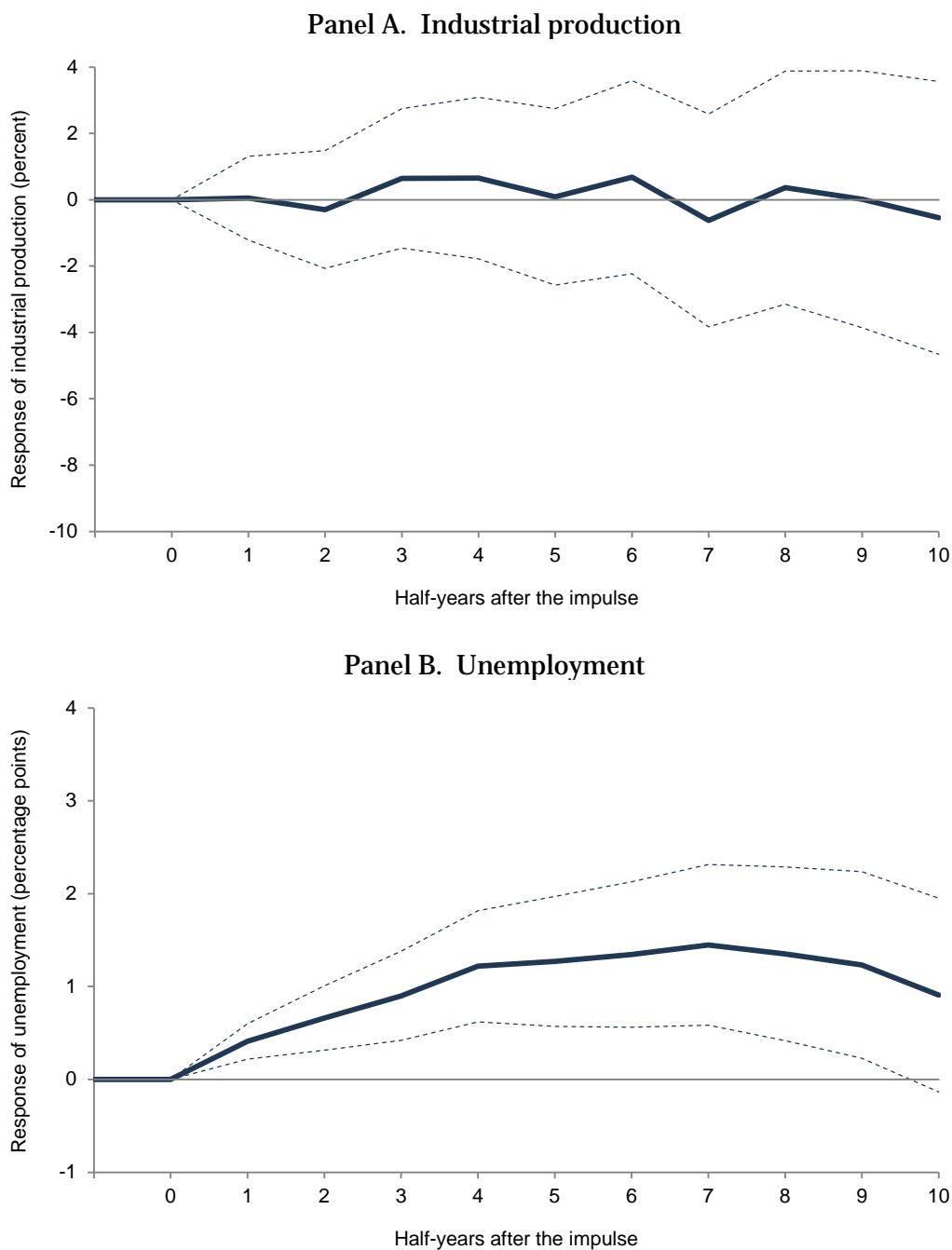Response of Financial Distress to Itself, Full Sample, OLS
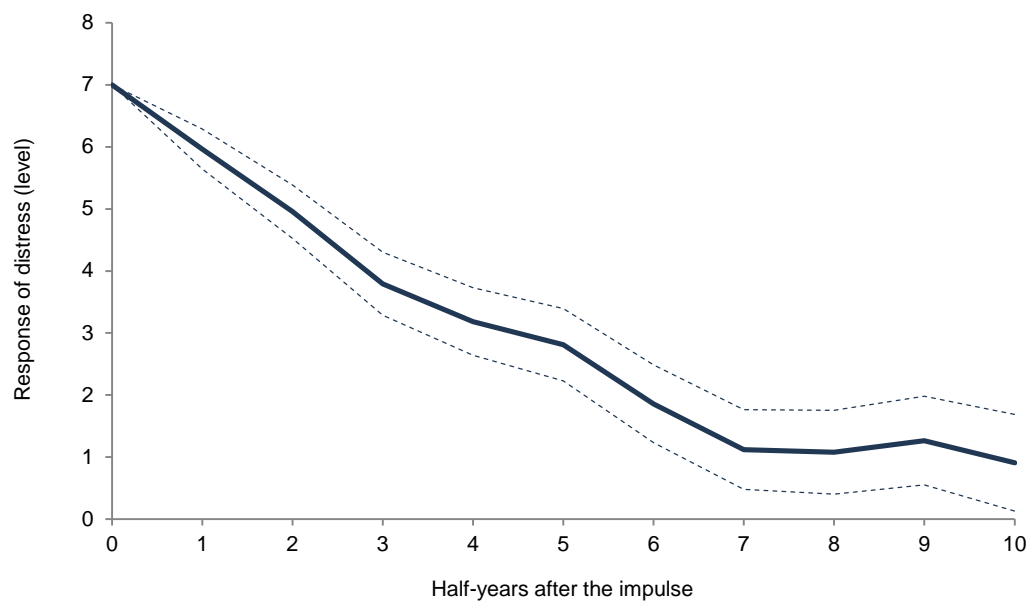
Notes: The figure shows the impulse response function for financial distress to an impulse of 7 in our new measure of financial distress derived from estimating equation (1), but replacing the left-hand-side variable with the new measure of financial distress, for horizons 1 to 10. Real GDP is used as the output measure. The estimation is performed on the sample of 24 OECD countries for the full time period using OLS. The dashed lines show the two-standard-error confidence bands.

FIGURE C4
Response of Real GDP to Financial Distress, Alternative Crisis Chronologies,
Using Dummy for All Half-Years a Country Experienced a Crisis

Panel A. Reinhart and Rogoff crisis chronology

Panel B. IMF crisis chronology
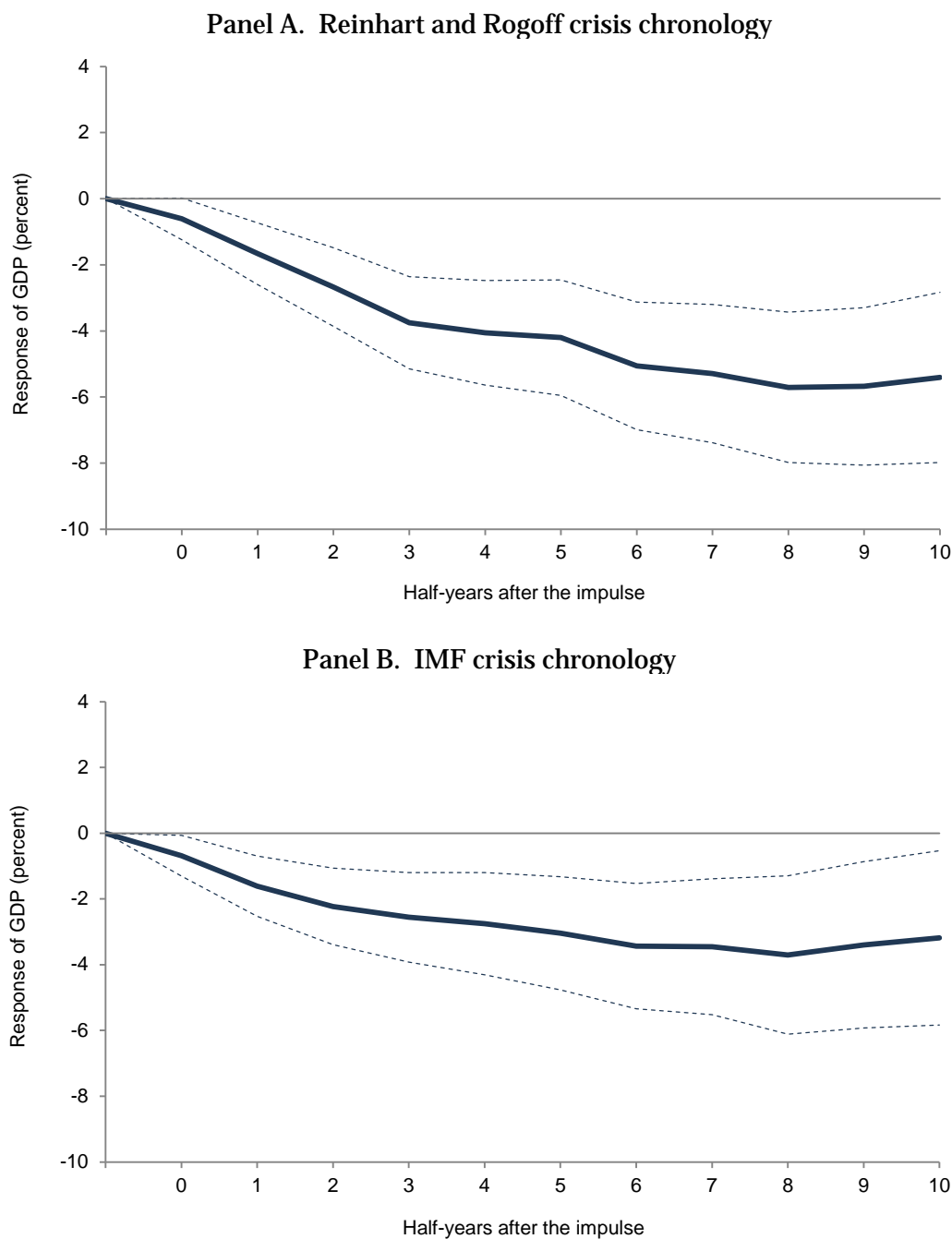
Notes: Panels A and B show the impulse response functions for real GDP to an impulse of 1 in the Reinhart and Rogoff and IMF crisis series, respectively, derived from estimating equation (1) for horizons 0 to 10. The estimation is performed on the same sample of 24 OECD countries we analyze over the full sample period using OLS. Instead of setting the alternative chronologies to 1 only in the half-year(s) in which a country began a crisis, this alternative sets the series to 1 in all the half-years between (and including) the start and end of a crisis. The dashed lines show the two-standard-error confidence bands.

FIGURE C5
Response of Outcome Variables to Financial Distress, Full Sample, OLS,
under the Alternative Assumption that Distress in *t* Cannot Affect Activity in *t*

Panel A. Industrial production

Panel B. Unemployment

Notes: Panels A and B of the figure show the impulse response functions for industrial production and the unemployment rate, respectively, to an impulse of 7 in our new measure of financial distress derived from estimating equation (2) for horizons 1 to 10. The estimation is performed on the sample of 24 OECD countries for the full time period using OLS. The dashed lines show the two-standard-error confidence bands.

FIGURE C6
Univariate and Expanded Forecast Errors for Selected Episodes where Financial Distress
Reached 7

Panel A. Austria (2008:2)

Panel B. Denmark (2009:1)

Panel C. Iceland (2008:1)

Panel D. Ireland (2009:1)

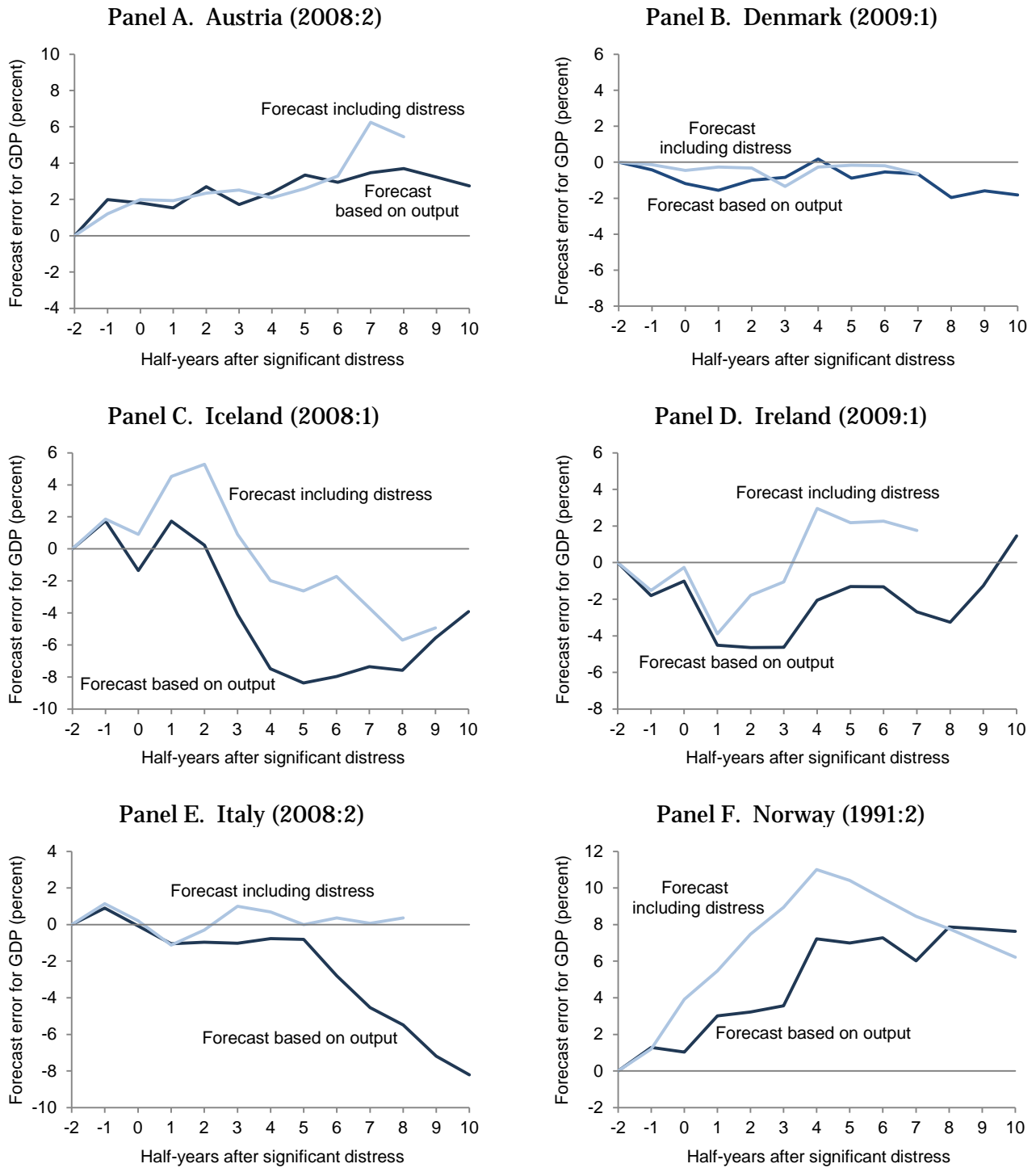Panel E. Italy (2008:2)

Panel F. Norway (1991:2)

FIGURE C6 (continued)
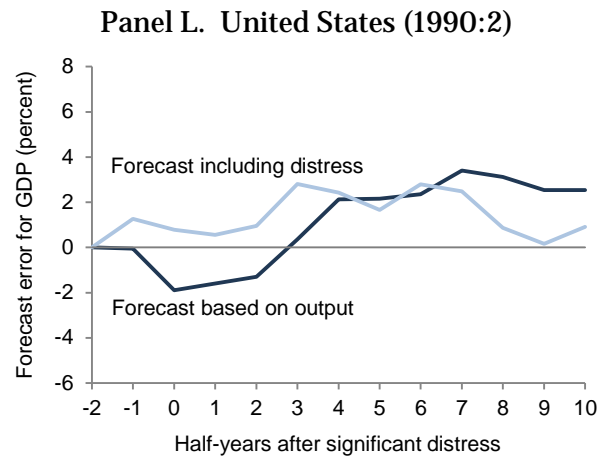Univariate and Expanded Forecast Errors for Selected Episodes where Financial Distress
Reached 7

Panel G. Norway (2008:2)

Panel H. Portugal (2008:2)

Panel I. Sweden (1993:1)

Panel J. Sweden (2008:2)

Panel K. United Kingdom (2008:1)

Panel L. United States (1990:2)

FIGURE C6 (continued)
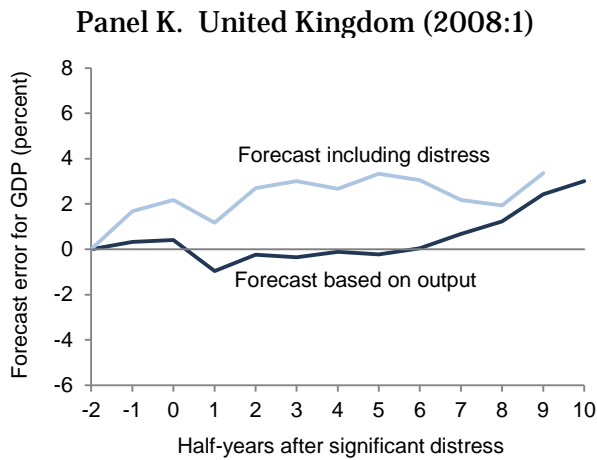Univariate and Expanded Forecast Errors for Selected Episodes where Financial Distress
Reached 7

Panel M. United States (2007:2)
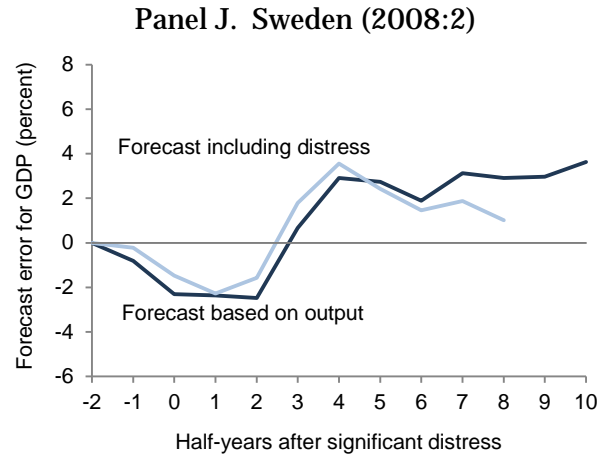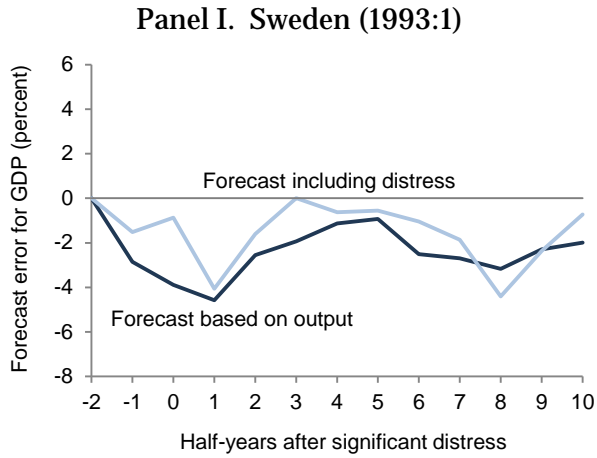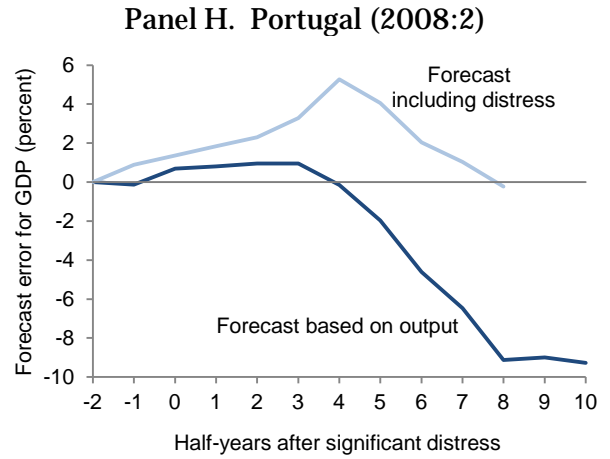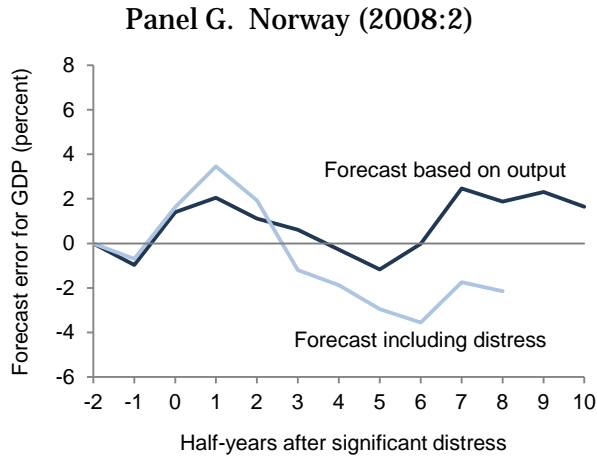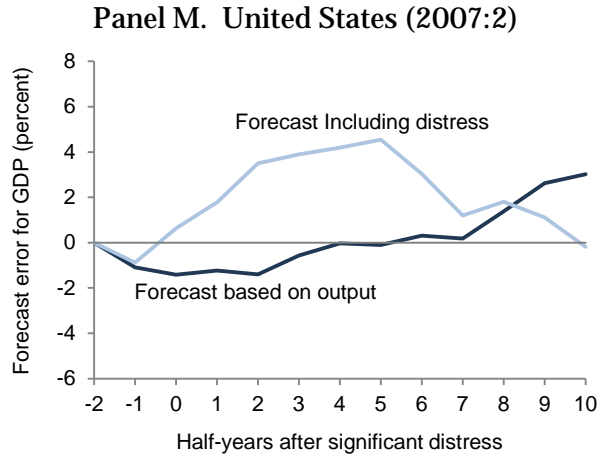

Notes: The figures show the forecast errors for real GDP (defined as actual minus forecast) following episodes of significant financial distress. The date given in parentheses is when the new measure reached 7. The forecast based on output is derived by estimating equation (3), and uses actual data up through a year (two half-years) before the distress variable reached 7. The forecast including distress is derived by estimating equation (4), and uses output through a year before the distress variable reached 7 and the actual financial distress series through the date being forecast.

TABLE C1
Baseline Impulse Response Function for Real GDP to Financial Distress,
Alternative Standard Errors

Horizon	Point Estimate (percent)	Standard Errors			
		Conventional	Hetero-skedasticity-Consistent	Newey-West	Hansen-Hodrick
0	−2.08	0.34	0.50		
1	−2.89	0.50	0.73	0.70	0.68
2	−3.28	0.63	0.76	0.78	0.85
3	−4.26	0.74	0.90	1.00	1.08
4	−4.66	0.83	1.13	1.28	1.34
5	−4.72	0.92	1.19	1.36	1.34
6	−5.14	1.02	1.27	1.47	1.46
7	−5.96	1.11	1.36	1.55	1.53
8	−5.55	1.22	1.56	1.73	1.68
9	−4.91	1.32	1.69	1.92	1.90
10	−4.61	1.39	1.76	1.93	1.91

Notes: The first column reports the impulse response function for real GDP to an impulse of 7 in our new measure of financial distress derived from estimating equation (1) for the sample of 24 OECD countries over the full sample period using OLS. The second column shows conventional standard errors. The right three columns show alternative estimates of the standard errors. The first is heteroskedasticity-consistent standard errors. The other two allow for serial correlation as well as heteroskedasticity. Specifically, for horizons $i = 1$ to 10, we allow for serial correlation over up to i periods; for example, for $i = 1$, we allow for first-order serial correlation of the residuals. We consider both Newey-West standard errors (which damp the off-diagonal elements of the covariance matrix of the residuals) and Hansen-Hodrick standard errors (which have no damping). We have also experimented with clustering either by time period or by country. Clustering by time period produces standard errors about 10 percent larger than the Hansen-Hodrick standard errors. Clustering by country (which should be interpreted with caution, since there are only 24 clusters in this case) yields standard errors about 25 percent larger than the Hansen-Hodrick standard errors at short horizons, but slightly smaller at long horizons.