

Online Appendix to Monetary Policy during Financial Crises: Is the Transmission Mechanism Impaired?

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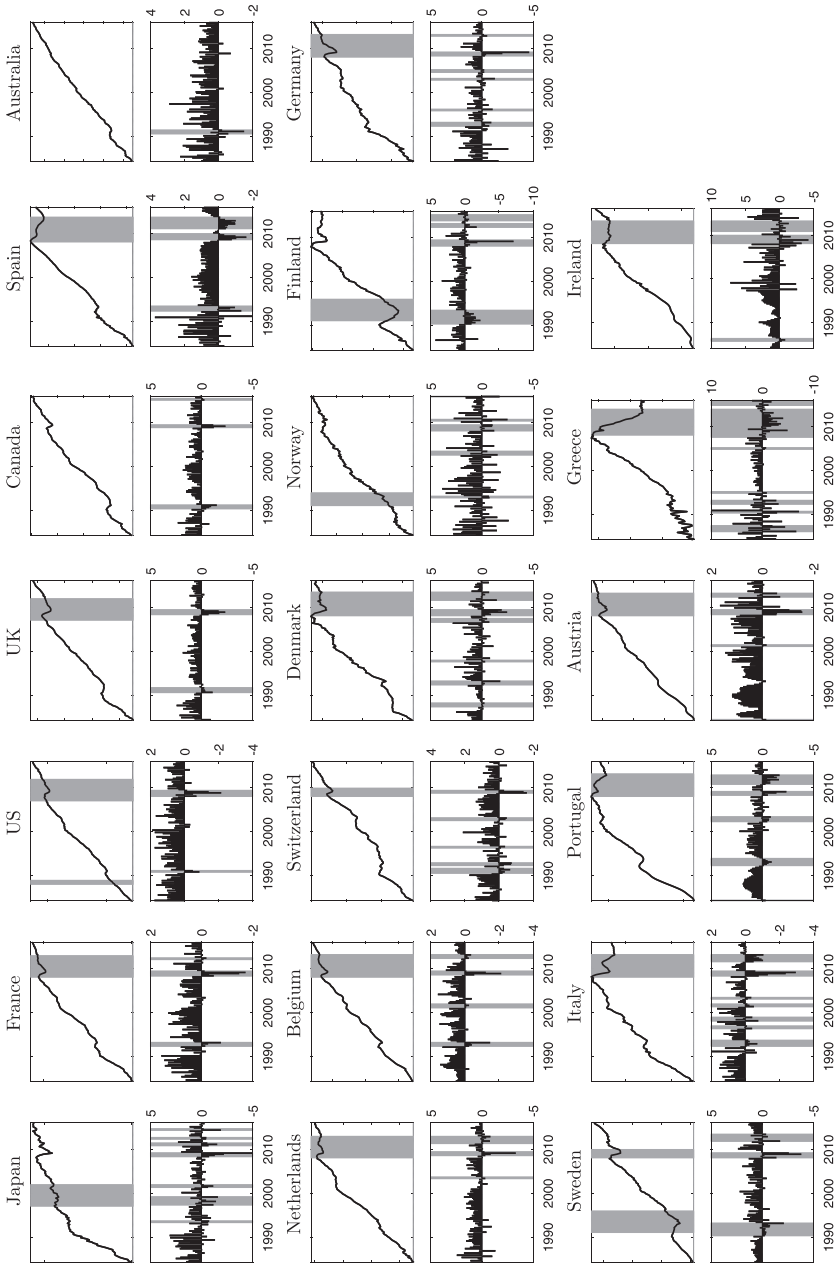
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In this complementary appendix we provide additional material, which gives a more detailed picture of our results, but which is of secondary importance to the main results presented in the paper. In table A1, we show information on the data sources for our main endogenous variables and on the twenty countries included in the panel analysis. In figure A1 we present the financial crisis and recession episodes for each country. Figures A2 and A3 present additional results for the extended interacted panel VAR model with four regimes. Finally, figures A4–A8 show detailed results for the robustness checks that we discuss in the paper.

Table A1. Data Sources and Description

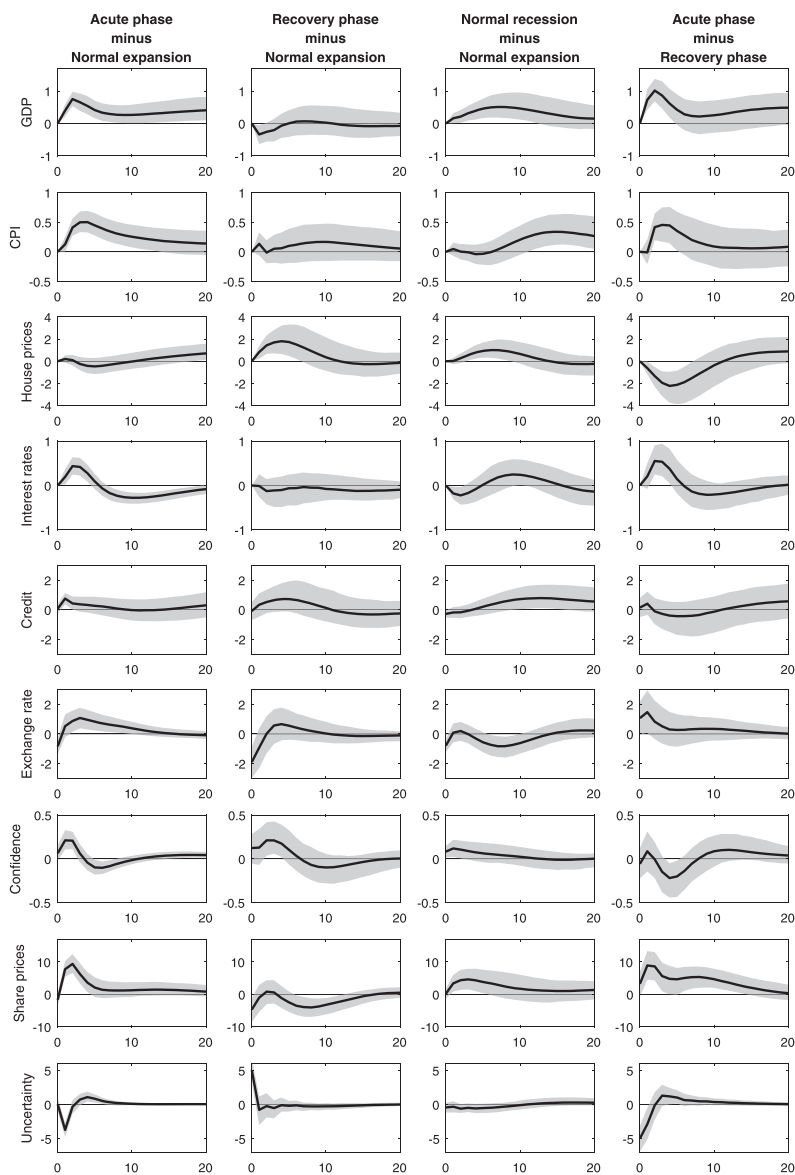
Variable	Source	Remarks
Gross Domestic Product	OECD Economic Outlook	Seasonally adjusted (SA). At 2005 market prices.
CPI, All Items	OECD Main Economic Indicators	SA (seasonal filter). Index including all items, 2010 = 100.
Short-Term Interest Rate	OECD Economic Outlook	Three-month short-term interest rate, Greece from 1995, Ireland from 1990.
House Prices	Federal Reserve Bank of Dallas	SA (seasonal filter). Portugal from 1988, Austria from 2000, Greece from 1997.
Total Credit to Private Sector	Bank for International Settlements	SA (seasonal filter). Total amount of nominal credit (i.e., loans and debt securities) provided by domestic banks to non-financial corporations, households, and non-profit institutions serving households. In national currency. See http://www.bis.org/statistics/credtopriv.htm .
Effective Exchange Rate	OECD Economic Outlook	SA (seasonal filter). Greece from 1995, Ireland from 1990.
Consumer Confidence Indicator	National Sources	SA (seasonal filter). Standardized. From 1985 for most countries. Norway from 1992, Sweden from 1990, Austria from 1996.
Share Prices	OECD Main Economic Indicators	SA (seasonal filter). Spain, Belgium, Greece from 1985, Norway from 1986, Portugal from 1988.
Stock Volatility	Based on Daily Major Stock Market Indexes from Datastream	SA (seasonal filter), own calculation as in Cesa-Bianchi, Pesaran, and Rebucci (2018), Spain, Finland, Greece from 1988, Portugal from 1990.
Countries Included	Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, United States.	

Figure A1. Financial Crises and Recessions Data for Twenty OECD Economies



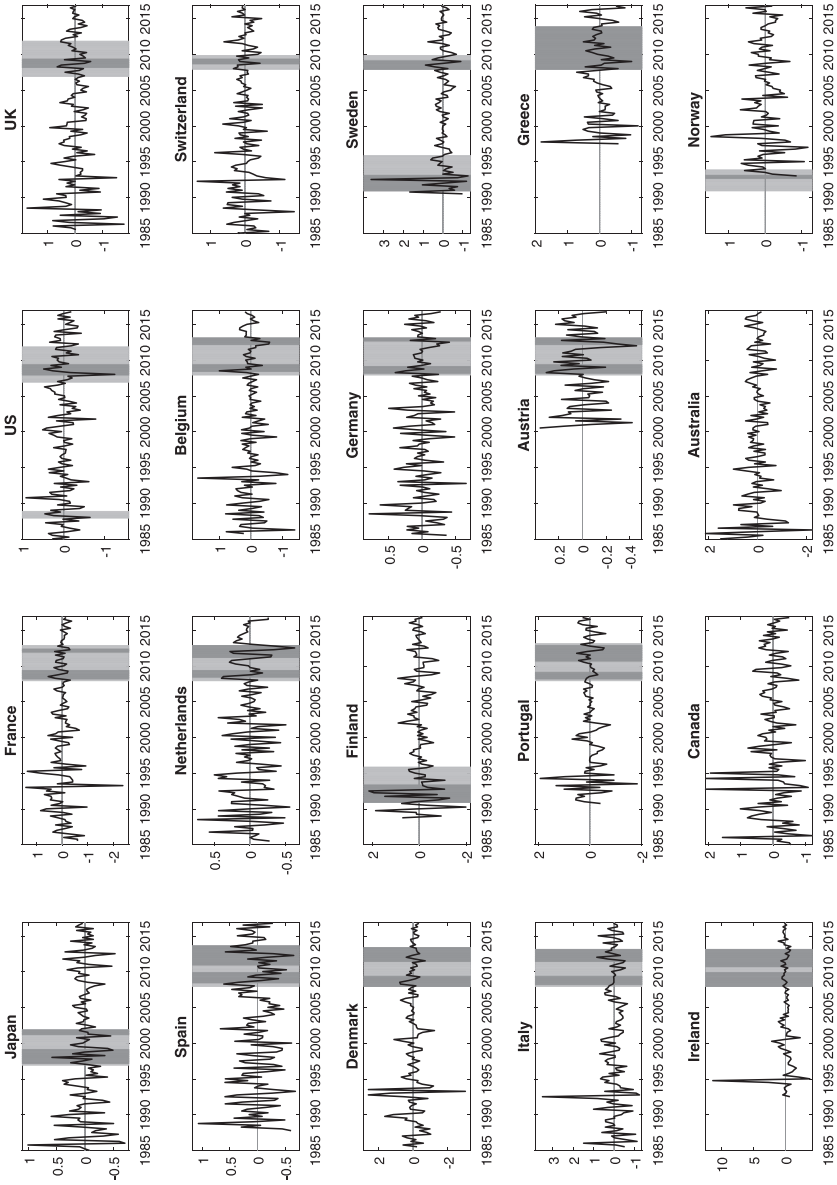
Notes: The figures in the upper part show log real GDP and the figures in the lower part show quarterly (non-annualized) real GDP growth. Shaded areas represent identified financial crisis episodes in the upper part and identified recessions in the lower part. The outlier in GDP growth in Ireland in 2015:Q1 was replaced by the median of the five previous observations of the time series.

Figure A2. Differences between Acute and Recovery Phases of Financial Crisis and Normal-Times Regimes



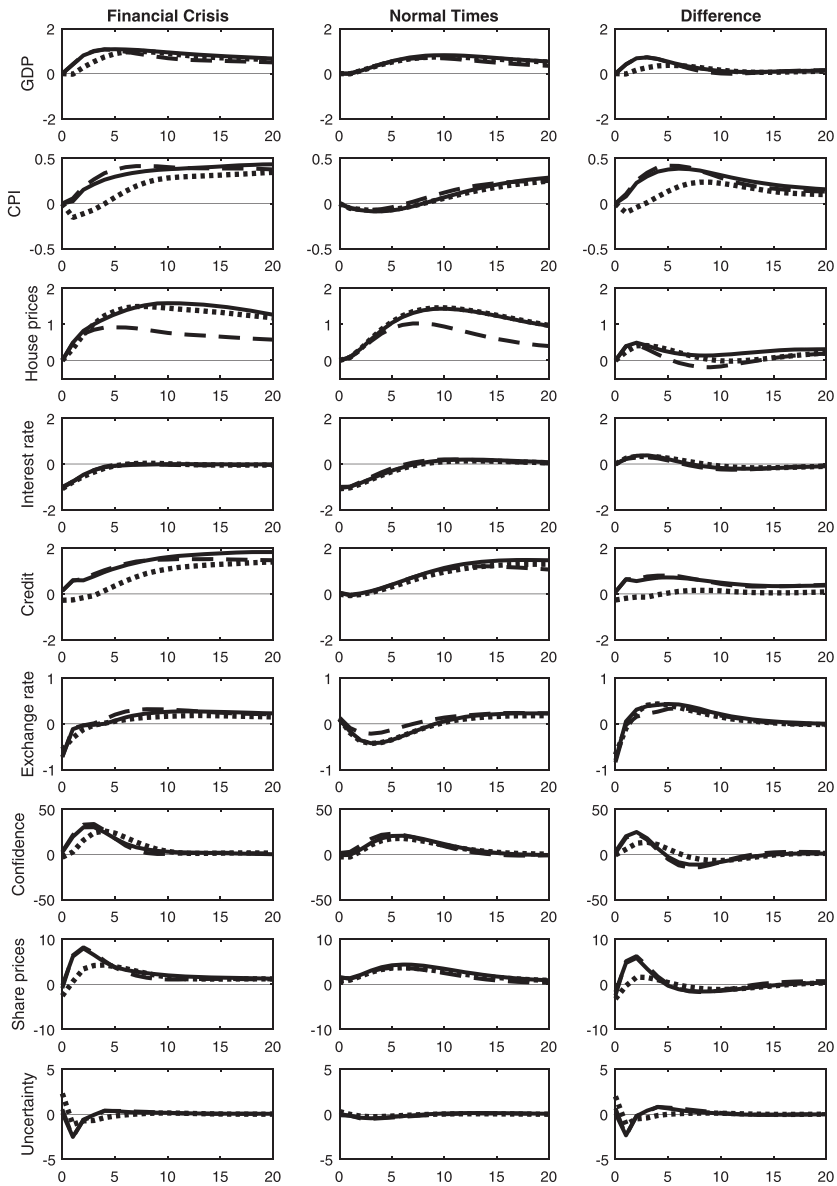
Notes: Columns 1–3 show median differences between the impulse responses evaluated in the acute phase, the recovery phase, and normal recessions, respectively, relative to the impulse responses evaluated in the normal expansion regime, in percentage points. Column 4 shows the difference between the impulse responses evaluated in the acute phase of a financial crisis and in normal recessions, in percentage points. Gray areas represent 90 percent probability bands. These results were obtained by calculating, for each draw, the difference between the impulse responses evaluated at two respective regimes and by taking the median and percentile values of these differences.

Figure A3. Estimated Monetary Policy Shocks



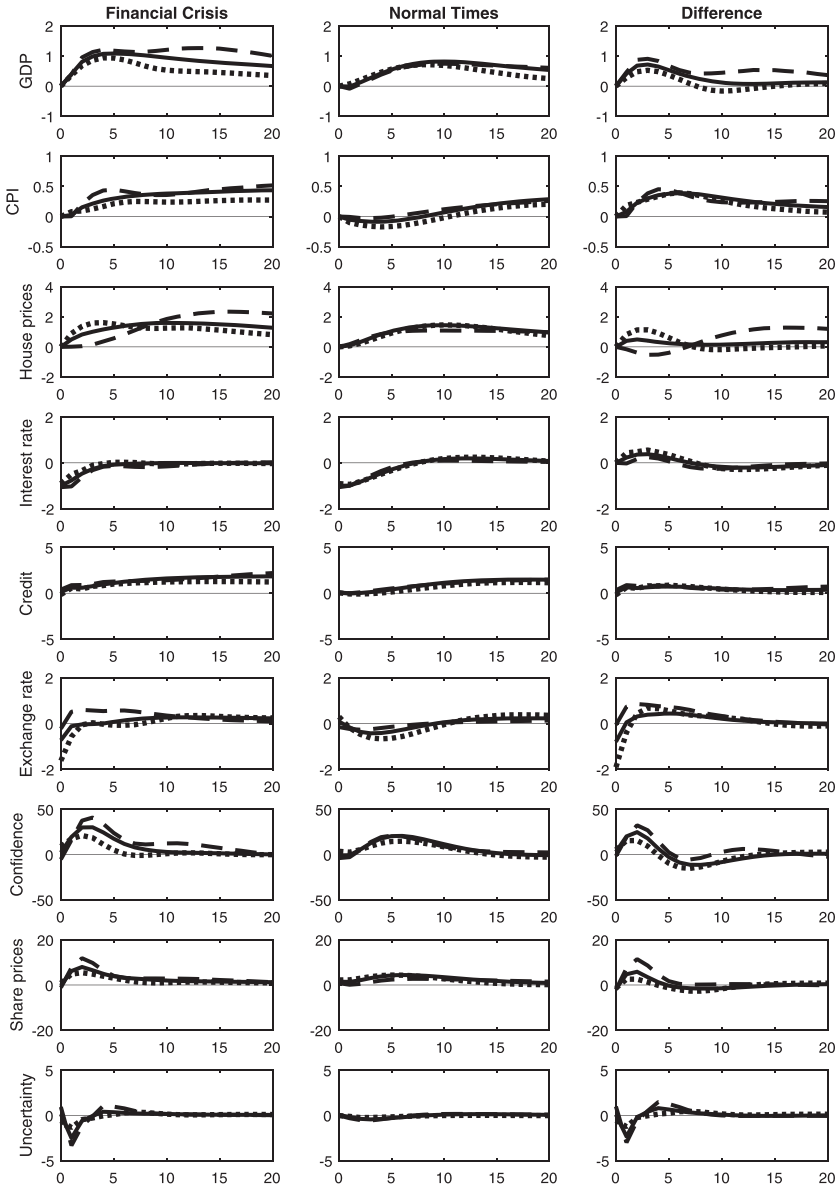
Notes: Solid lines show the residuals corresponding to the interest rate equation of each country from the structural form of the IPVAR of equation (2), extended model with four regimes. Light gray bars show the financial crisis episodes for each country; dark gray bars show recession episodes that occur during financial crises (acute phase).

**Figure A4. Accounting for the Zero Lower Bound:
Full Results**



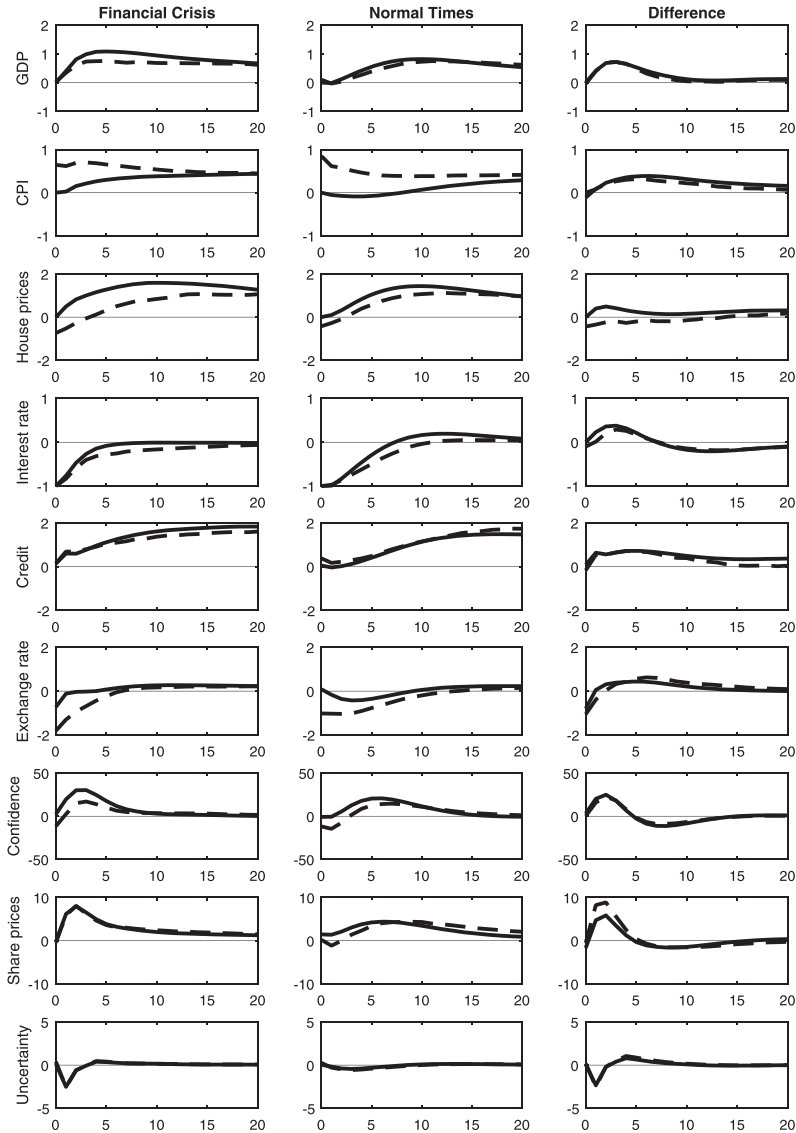
Notes: Solid lines show results for the baseline estimation; dotted lines show results for the estimation with the shadow interest rate as monetary policy variable; dashed lines show results for the estimation where the 298 observations in which the zero lower bound was reached were excluded. Median impulse responses to a 100 basis point expansionary monetary policy shock during financial crises and normal times are in percent; median differences between regimes are in percentage points.

**Figure A5. Euro-Area and Non-euro-area Samples:
Full Results**



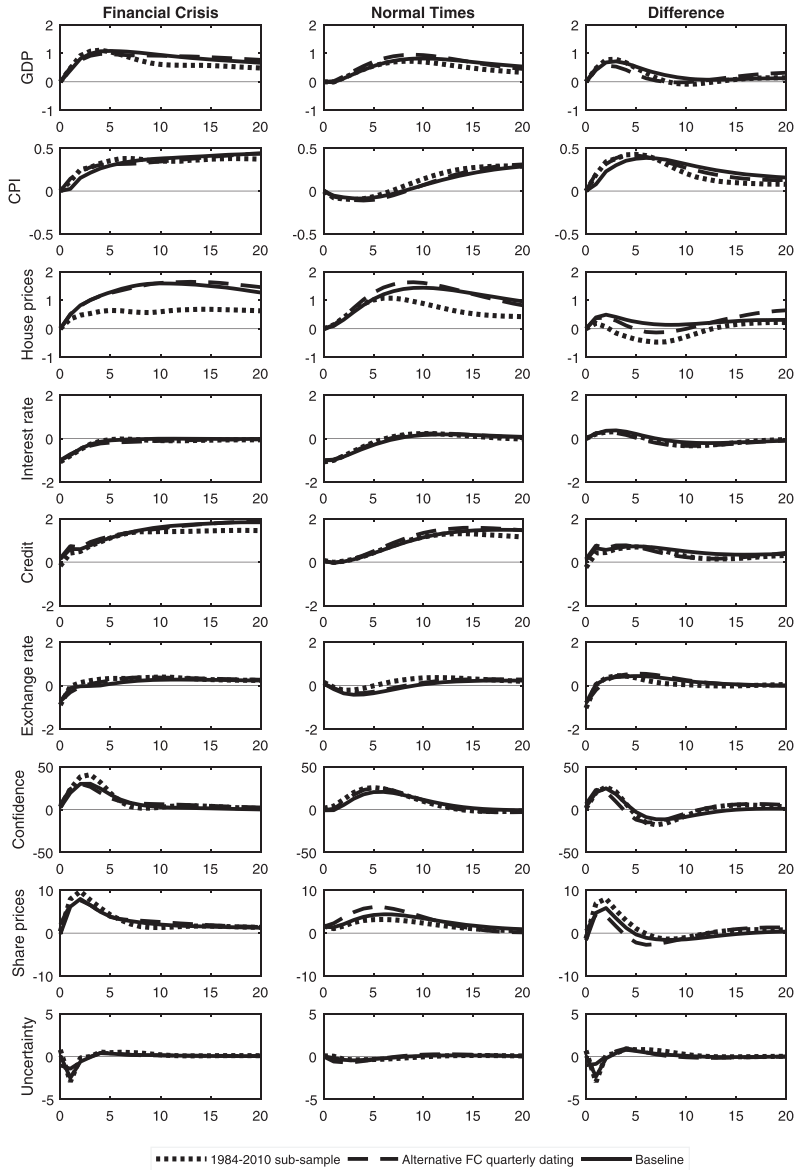
Notes: Solid lines show results from the baseline estimation; dashed (dotted) lines show results for the estimation over the euro-area (non-euro-area) subsample. Median impulse responses to a 100 basis point expansionary monetary policy shock during financial crises and normal times are in percent; median differences between regimes are in percentage points.

**Figure A6. Identification via Sign Restrictions:
Full Results**



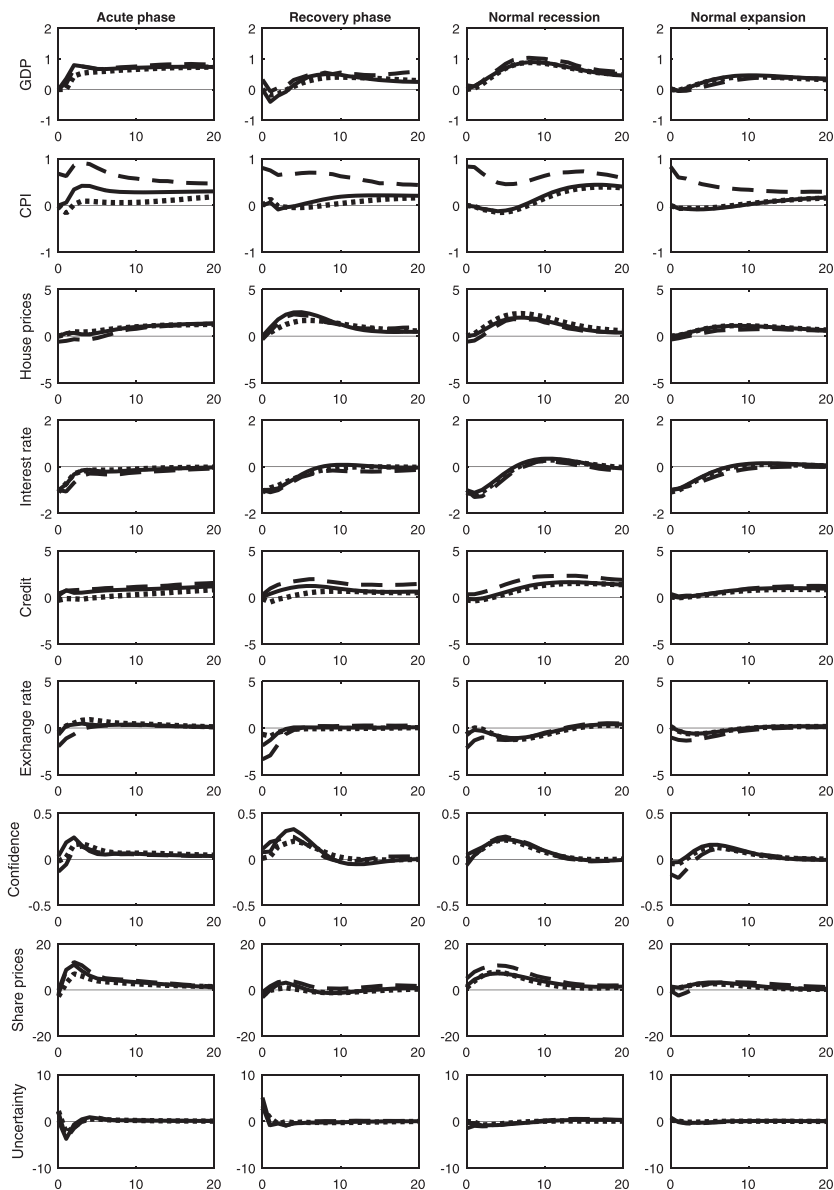
Notes: Solid lines show results from the baseline estimation; dashed lines show results for the estimation, where the monetary policy shock is identified via sign restrictions. Median impulse responses to a 100 basis point expansionary monetary policy shock during financial crises and normal times are in percent; median differences between regimes are in percentage points. In the robustness check, the recursively estimated coefficients are evaluated at different values of the interaction terms and reduced-form parameters are calculated for each draw from the posterior. Then, for each parameter draw and regime, rotations of the impulse responses are generated until 100 rotations satisfy the sign restrictions. The median over the accepted rotations is then retained for each parameter draw and another median is calculated over all parameter draws.

Figure A7. Additional Robustness Checks



Notes: Solid lines show results from the baseline estimation; dashed lines show results for the estimation with an alternative quarterly dating of financial crisis episodes (beginning in the last quarter of the first financial crisis year and ending in the first quarter of the last year). Dotted lines show results for the estimation over the 1984–2010 sub-sample which excludes the double-dip recession period after the global financial crisis. Median impulse responses to a 100 basis point expansionary monetary policy shock during financial crises and normal times are in percent; median differences between regimes are in percentage points.

Figure A8. Four Regimes: Estimation with Shadow Interest Rates and Identification via Sign Restrictions



Notes: Solid lines show the baseline estimation over four regimes; dashed lines show results for the estimation, where the monetary policy shock is identified via sign restrictions; dotted lines show results for the estimation with the shadow interest rate as monetary policy variable (with recursive identification as in the baseline). Median impulse responses to a 100 basis point expansionary monetary policy shock are in percent. For each draw from the posterior, impulse responses are computed for the different regimes.