

Online Appendix to “From Window Guidance to Interbank Rates”

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A.1 Overview of Data Series and Characteristics

Table A.1. Data Series and Their Characteristics, Japan

Variable	Concept	Notes	ADF	KPSS	Unit	Source
<i>jp.bfyg</i>	Bank Financing Growth Rate	Year-on-year growth rate of commercial banks' claims on the private sector	-1.914 -1.917	0.302*** 0.573**	Percent	IMF, via CEIC
<i>jp.ibor</i>	Interbank Overnight Rate	Collateralized overnight call rate before July 1985, then uncollateralized rate	-2.724 -3.151**	0.067 0.449*	Percent	BOJ, via CEIC
<i>jp.disc</i>	Discount Rate	Interest rate on central bank's discount window	-2.684 -2.862*	0.063 0.687**	Percent	BOJ, via CEIC
<i>jp.retr</i>	Retail Rates	Mean of (regulated) retail lending and deposit rates	-1.266 -2.027	0.067 0.807***	Percent	IMF, via CEIC
<i>jp.rrrr</i>	Reserve Requirement Ratio	Commercial bank reserve requirement ratio	-2.808 -3.139**	0.275*** 0.546**	Percent	BOJ
<i>jp.ugc</i>	City Bank Window Guidance Quota Growth Rate	Quota growth vis-à-vis actual loan growth in corresponding period of previous year	-2.510 -2.462	0.206** 0.259	Percent	<i>Kim'gyū, Nihon Keizai Shimbun</i>
<i>jp.indygy</i>	Industrial Activity	Month-on-month change of industrial production index	-4.197*** -4.381***	0.037 0.043	Index Value	IMF, via CEIC
<i>jp.errepc</i>	Exchange Rate Percentage Change	Month-on-month percentage change of exchange rate of Japanese yen per U.S. dollar	-9.073*** -9.102***	0.053 0.061	Percent	IMF, via CEIC
<i>jp.infl</i>	Price-Level Change	Year-on-year percentage change of CPI	-2.792 -3.667***	0.187** 1.068***	Percent	IMF, via CEIC

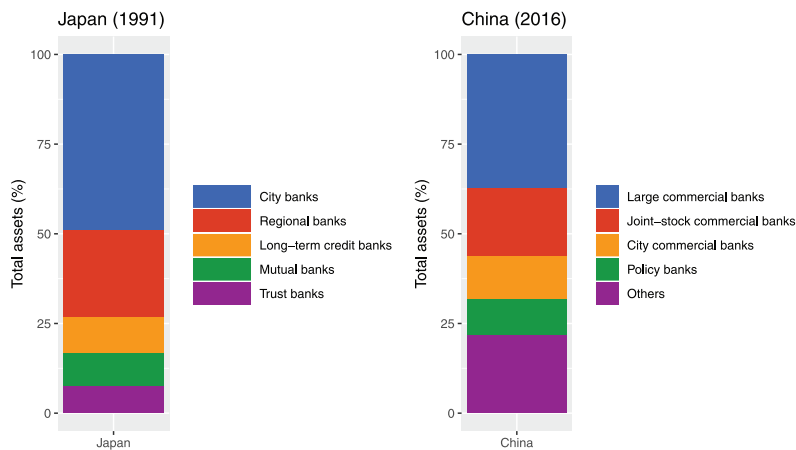
Notes: Stationarity tested using augmented Dickey-Fuller test (ADF) and Kwiatkowski-Phillips-Schmidt-Shin test (KPSS), tested with a constant and a trend (first result) and with a constant only (second result), critical values, and corresponding significance level (*** 0.01, ** 0.05, * 0.1).

Table A.2. Data Series and Their Characteristics, China

Variable	Concept	Notes	ADF	KPSS	Unit	Source
<i>cn.bfyy</i>	Bank Financing Growth Rate	Year-on-year growth rate of commercial banks' claims on the private sector	-2.864 -2.791*	0.151** 0.168	Percent	IMF, via CEIC
<i>cn.ibor</i>	Interbank Overnight Rate	Transaction-based China Interbank Offered Rate, CHIBOR	-4.390*** -4.085***	0.112 0.264	Percent	PBOC, via CEIC
<i>cn.disc</i>	Discount Rate	Interest rate on central bank's discount window	-2.724 -2.790*	0.094 0.103	Percent	IMF, via CEIC
<i>cn.retr</i>	Retail Rates	Mean of (regulated) retail lending and deposit rates	-1.631 -1.879	0.190** 0.189	Percent	IMF, via CEIC
<i>cn.rrrc</i>	Reserve Requirement Ratio Change	Month-on-month change of the mean of ratio for large depository institutions and ratio for small and medium depository institutions	-5.430*** -5.237***	0.127* 0.217	Percent	PBOC
<i>cn.ci</i>	Credit and Window Guidance Indicators	Credit (broad) and window guidance (narrow) indicators constructed from text analysis	-3.071 -2.441	0.146* 0.194	Index Value	Author
<i>cn.indyy</i>	Industrial Activity	Year-on-year growth of value added in industry	-5.210*** -2.124	0.258*** 0.740***	Percent	NBS, via CEIC
<i>cn.exrepc</i>	Exchange Rate Percentage Change	Month-on-month percentage change of exchange rate of Chinese yuan per U.S. dollar	-3.287* -3.154**	0.216** 0.274	Percent	IMF, via CEIC
<i>cn.infl</i>	Price-Level Change	Year-on-year percentage change of CPI	-1.822 -3.198**	0.137* 0.240	Percent	IMF, NBS, via CEIC

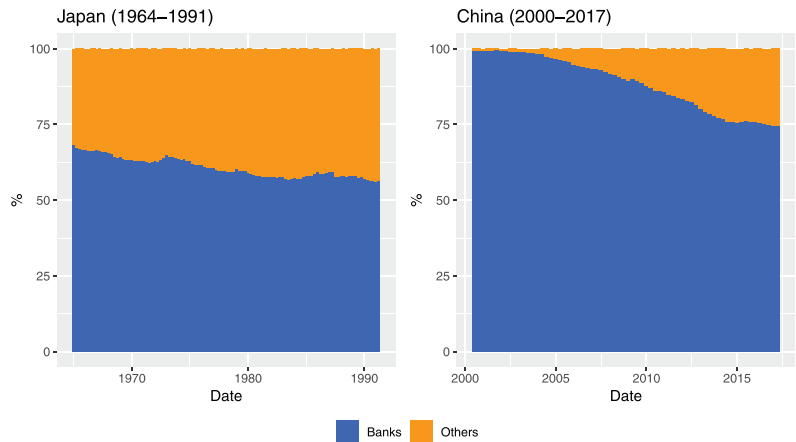
A.2 Banking System Structure in Japan and China

Figure A.1. Types of Banks by Market (Total Assets) in Japan and China



Sources: Bank of Japan and China Banking Regulatory Commission.

Figure A.2. Share of Bank Credit to Total Credit to the Nonfinancial Sector



Source: Bank for International Settlements.

A.3 Notes on Credit and Window Guidance Indicators

To capture window guidance in China, we applied a Romer–Romer narrative text analysis (Romer and Romer 1989) and sentiment analysis using the Loughran–McDonald dictionary (Loughran and McDonald 2011). Under both approaches, we constructed a narrow indicator that only captures information explicitly related to window guidance and a broad indicator that takes into account statements on liquidity and credit growth along with window guidance. In total, we constructed four indicators. With all four indicators, positive values signal expansionary window guidance and negative values signal contractionary window guidance. See table A.3.

Narrative indicators based on Romer–Romer text analysis rely on the Chinese-language Monetary Policy Committee meeting notes and Monetary Policy Reports released by the People’s Bank of China (PBOC). Sentiment indicators rely on the English-language Monetary Policy Reports. The PBOC releases its reports at quarterly intervals, so our indicators use quarterly frequency data. Release dates vary somewhat for earlier reports, however, so we record different assignment values for months within a quarter with changes between the Monetary Policy Committee meeting notes and the Monetary Policy Report for a quarter. All documents were downloaded from the PBOC’s homepage.

We consistently interpret documents as “as-is” (ex ante) assessments of the situation, i.e., the authorities’ reading of the situation *at that point in time*. This is different from other indicators of Chinese monetary policy found in the literature, which commonly follow an ex post evaluation of documents. The difference between an ex post and an ex ante interpretation is best illustrated by the Monetary Policy Committee meeting notes from 2008:Q3 released on October 10, 2008 and the Monetary Policy Report from 2008:Q3 released on November 11, 2008. While the latter document explicitly addresses

Table A.3. Overview of Indicators

	Broad	Narrow
Narrative Analysis	<i>cn.ci</i>	<i>cn.wgi</i>
Sentiment Analysis	<i>cn.cil</i>	<i>cn.wil</i>

the impact of the global financial crisis on China, the former document is considerably more neutral. This difference has also been noted by Sun (2015). Since an ex post interpretation of these reports would carry the danger of exaggerating the central bank's ability to forecast the economy and overstate the role of window guidance, the indicator constructed here records separate values for each month.

A.3.1 Methodological Notes on Sentiment Analysis

For sentiment analysis, documents were converted from their original formats to plain text using LibreOffice, Lynx, pdftotext, Calibre, and Perl scripts (the actual tool used depends on the source format). Sentiment analysis was conducted in R using the package "SentimentAnalysis" (<https://github.com/sfeuerriegel/SentimentAnalysis>).

Sentiment analysis quantifies the tone of a document by executing a number of computational processing and analytical operations. Text is first converted into plain text (formatting removed) and tokenized into single words. Next, punctuation and stop words (words without semantic significance) are removed. Tokens are then stemmed to keep only the root or main part of a word, and converted to lowercase. This ensures that two instances of the same token are treated identically. Finally, the text is quantified using a dictionary which translates words and, ultimately, the whole text into a sentiment score (see Bholat et al. 2015 for more detail). We rely on the Loughran–McDonald dictionary (Loughran and McDonald 2011) to score the PBOC's reports. The dictionary is suited for scoring economic and finance-related texts. It also has the attractive property of providing us with stationary time series that appear robust against structural changes. The final score depends on the number of positive and negative words as well as the total number of words in the text.

A detailed table (table A.4) listing assignment dates and scores for the narrative indicators is included in the next section of this appendix. To save space, we only list instances where the value of the credit indicator or the window guidance indicator changes.

*A.4 Overview of Narrative Indicators and Value Assignments***Table A.4. Overview of Narrative Indicators**

Document	Issue	<i>ci</i>	<i>wgi</i>	Notes
MPC	2000:Q2	1	0	First meeting, support for growth
MPC	2000:Q3	2	0	Re-deploy support
MPC	2001:Q1	0	0	Stable monetary policy, avoid inflation/deflation
MPC	2001:Q2	1	0	Support demand
MPR	2002:Q1	2	0	Prevent economic slowdown
MPR	2002:Q2	2	-1	Need to improve credit structure
MPC	2002:Q3	1	-1	Maintain stable monetary policy
MPR	2002:Q4	1	0	Neutral credit policy stance
MPC	2003:Q1	0	0	Need to improve credit quality
MPR	2003:Q2	0	-2	Financial risks, improve credit structure
MPC	2003:Q3	-1	-2	Relatively fast credit growth, inflation risk
MPC	2004:Q1	-2	-2	Prevent inflation and financial instability
MPC	2004:Q2	-1	-2	Measures taking effect, avoid stifling growth
MPR	2005:Q1	-1	-1	Improve credit structure
MPC	2006:Q2	-2	-1	Stability-oriented policy, curb excess credit growth
MPR	2006:Q2	-2	-2	Excess credit growth and risk
MPC	2006:Q3	-1	-2	Stable monetary policy, expand domestic demand
MPC	2007:Q2	-2	-2	Irrational developments, prevent overheating
MPC	2008:Q2	-1	-2	Inflation and growth declining, uncertainty
MPR	2008:Q2	-1	-1	Strengthen window guidance, less emphasis of risks
MPC	2008:Q3	1	-1	U.S. crisis becoming global crisis, support demand
MPR	2008:Q3	2	2	Downturn, abolished bank credit constraints
MPR	2009:Q2	2	-2	Improve credit structure, prevent risks
MPR	2010:Q2	2	-1	Balanced credit provision, targeted lending
MPC	2010:Q3	0	-1	Recovery, but problems and risks remain
MPC	2011:Q1	-1	-1	Environment complex, improve credit structure
MPC	2011:Q2	-2	-1	Inflationary pressure, control credit
MPC	2011:Q3	-1	-1	Inflationary pressure, need for structural change
MPC	2012:Q1	0	-1	Economy generally in line with macro measures
MPC	2012:Q2	1	-1	Economy stable, global shocks and uncertainty
MPR	2012:Q3	1	0	Strengthen window guidance, support real economy
MPC	2012:Q4	0	0	Economy stable, but uncertainties remain
MPC	2014:Q2	1	0	Realize rational credit growth and financing
MPR	2014:Q3	1	1	Encourage innovation, support for various policies
Notes: Abbreviations: <i>ci</i> = credit indicator, <i>wgi</i> = window guidance indicator, MPC = Monetary Policy Committee meeting notes, MPR = Monetary Policy Report. Assigned values: 2 = strongly encouraging credit growth, 1 = weakly encouraging credit growth, 0 = neutral/no information, -1 = weakly discouraging credit growth, -2 = strongly discouraging credit growth.				

A.5 Impulse Responses for Japan

Figure A.3. Japan Baseline Model

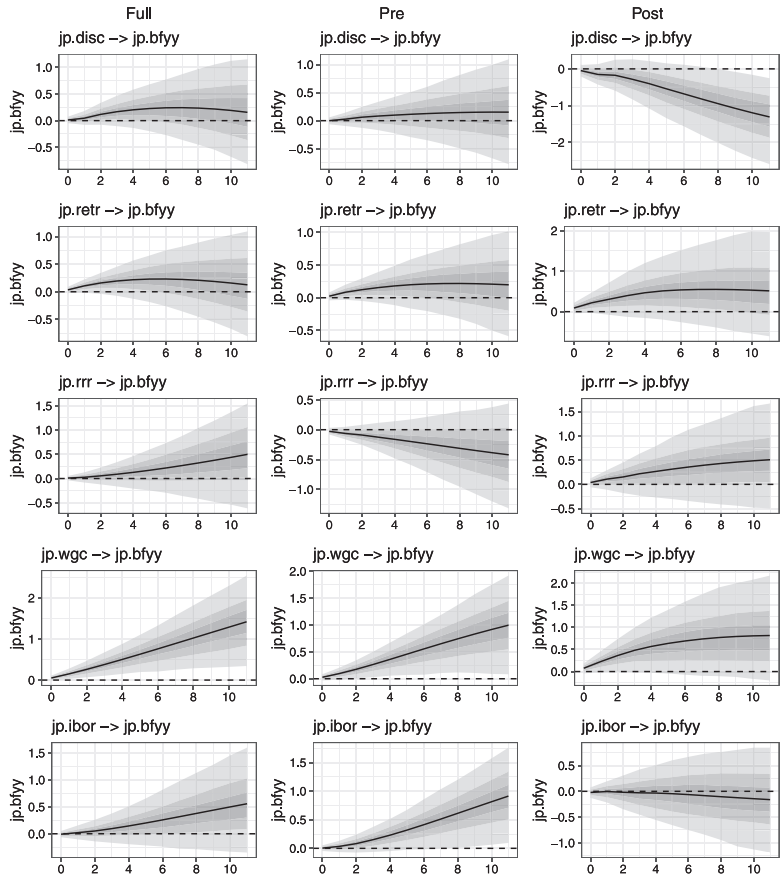


Figure A.4. Japan Model without Exogenous Variables

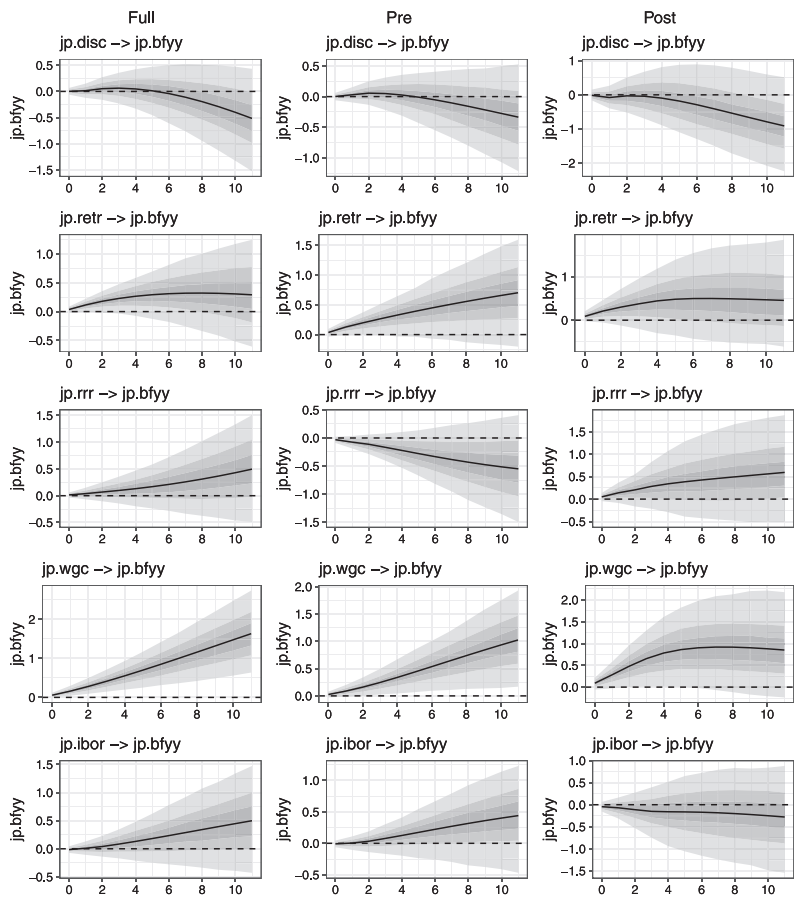


Figure A.5. Japan Model with Variables Reordered

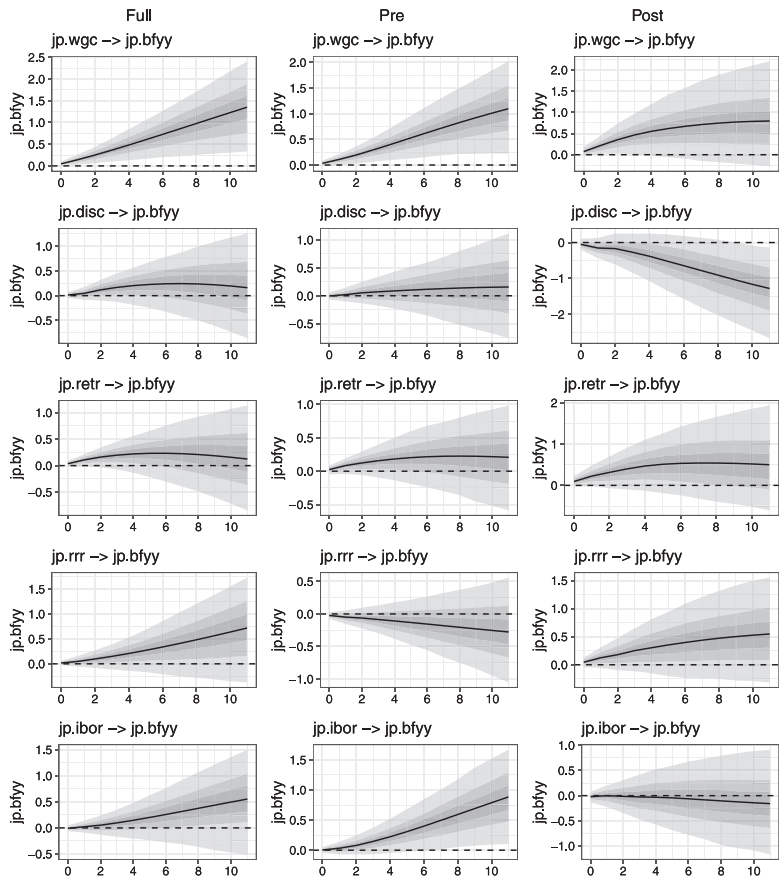


Figure A.6. Japan Model without Exogenous Variables and with Variables Reordered

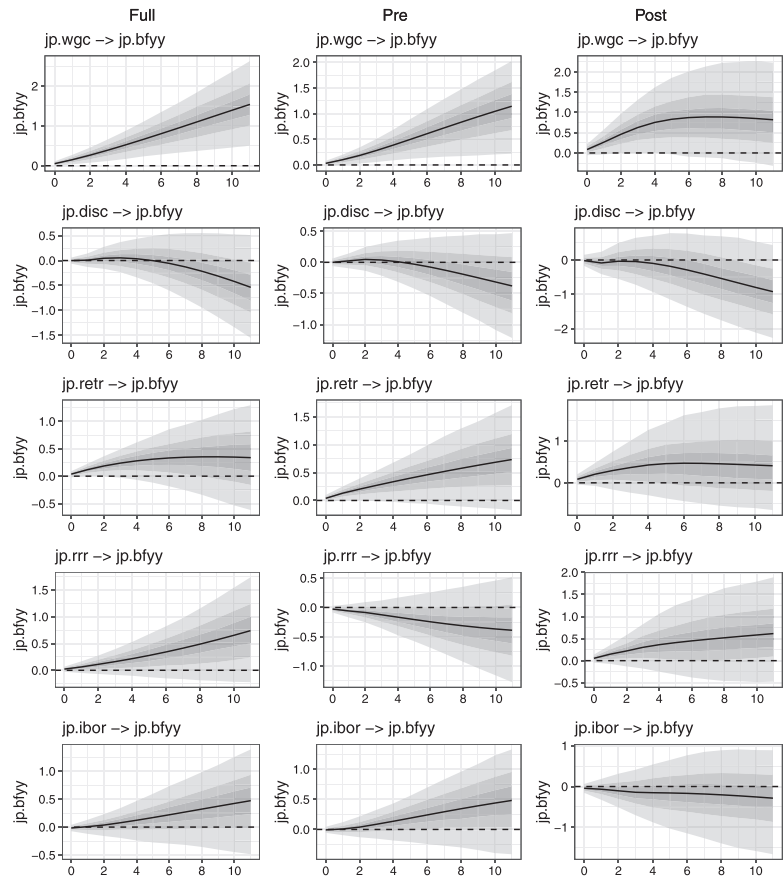


Figure A.7. Japan Model with Higher Lag Order

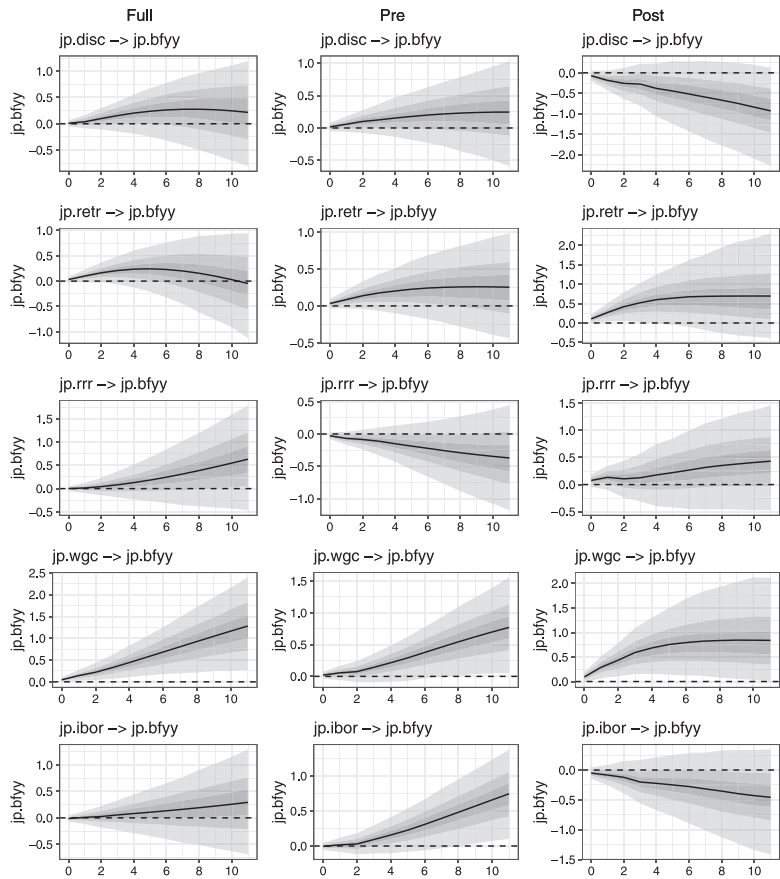


Figure A.8. Japan Model Based on Cholesky Decomposition

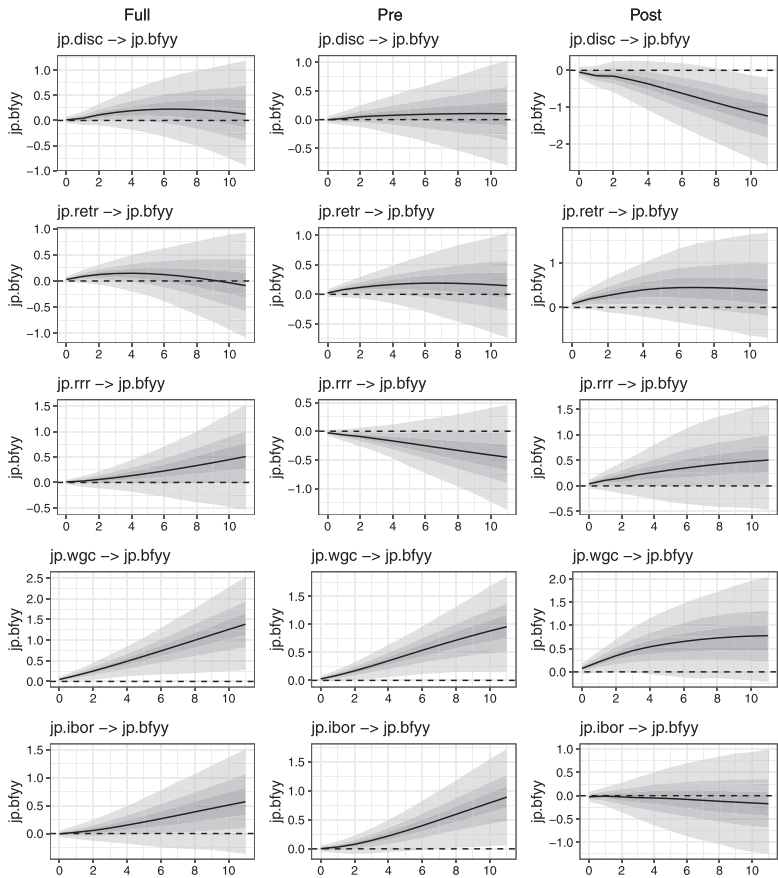
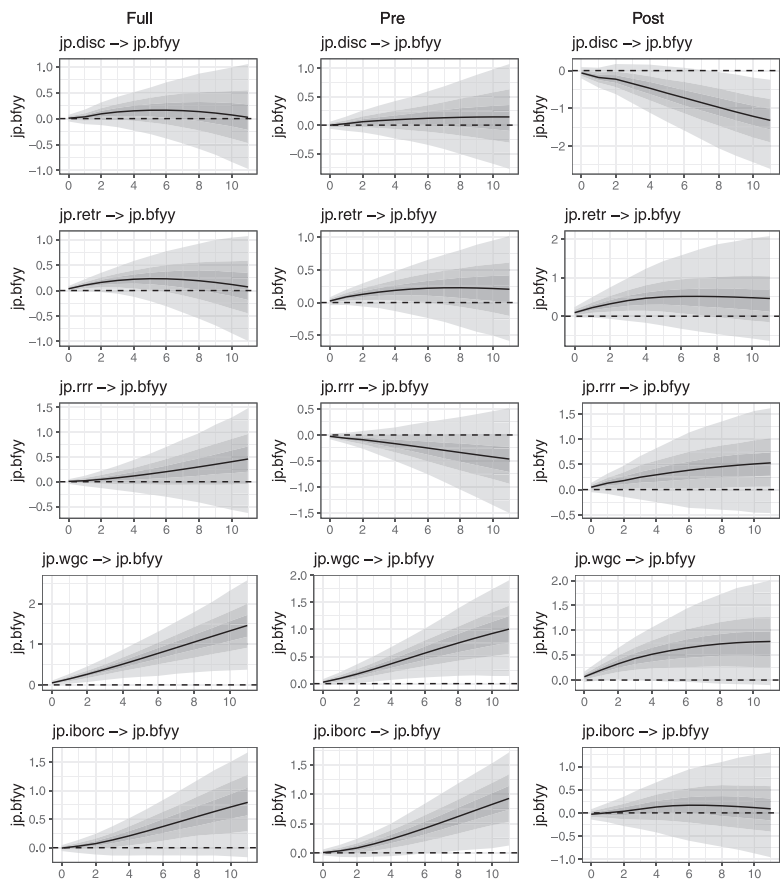


Figure A.9. Japan Model with Collateralized Overnight Call Rate



A.6 Impulse Responses for China

Figure A.10. China Narrative Credit Indicator (Broad) Baseline Model

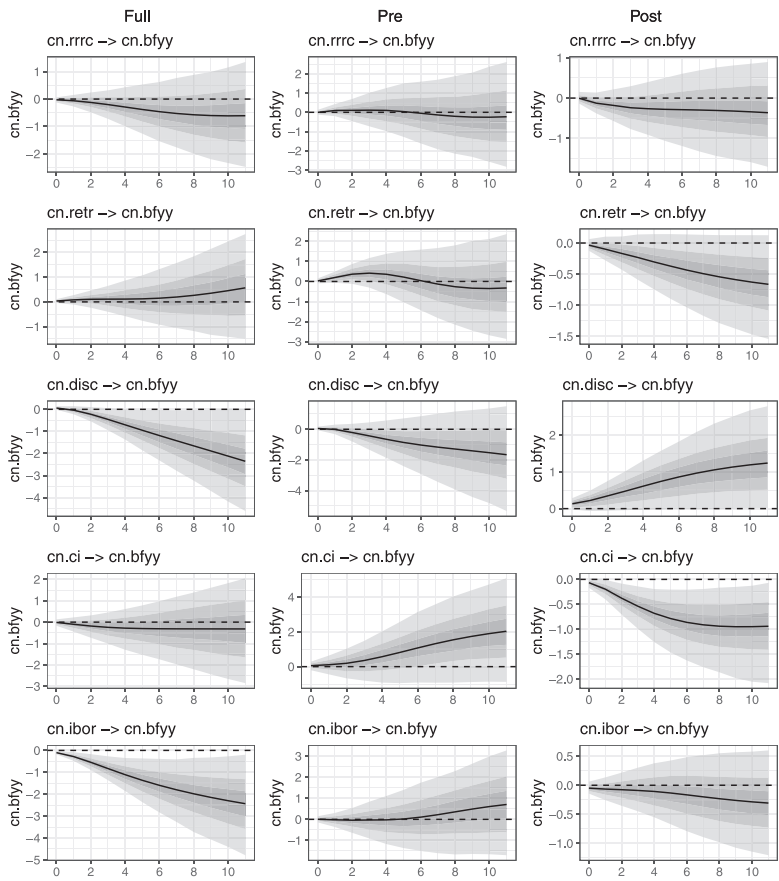


Figure A.11. China Sentiment Credit Indicator (Broad)
Baseline Model

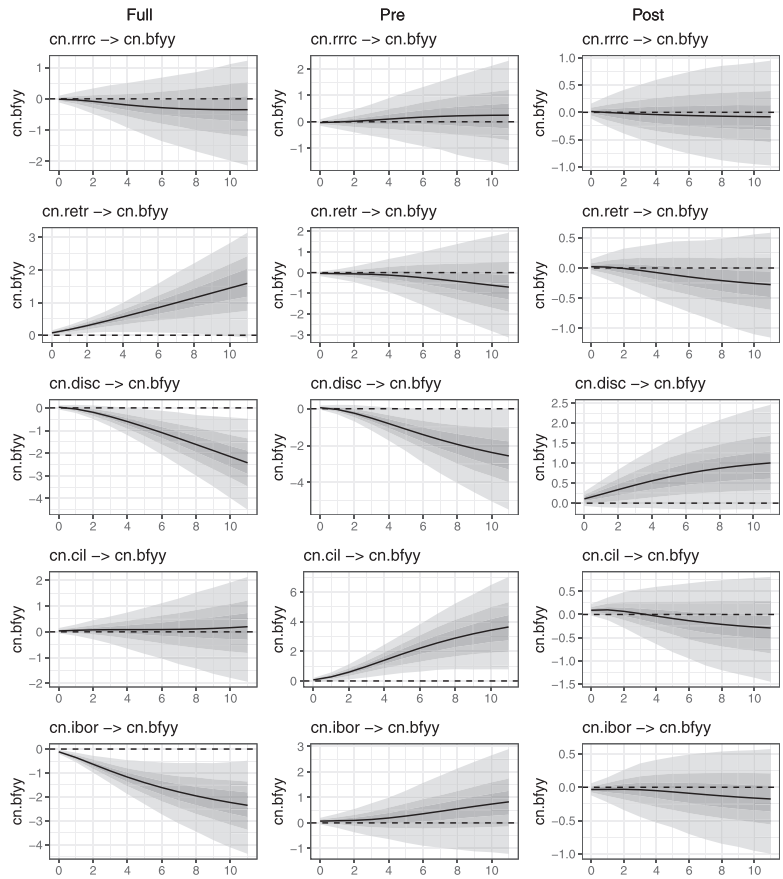


Figure A.12. China Narrative Window Guidance Indicator (Narrow) Model

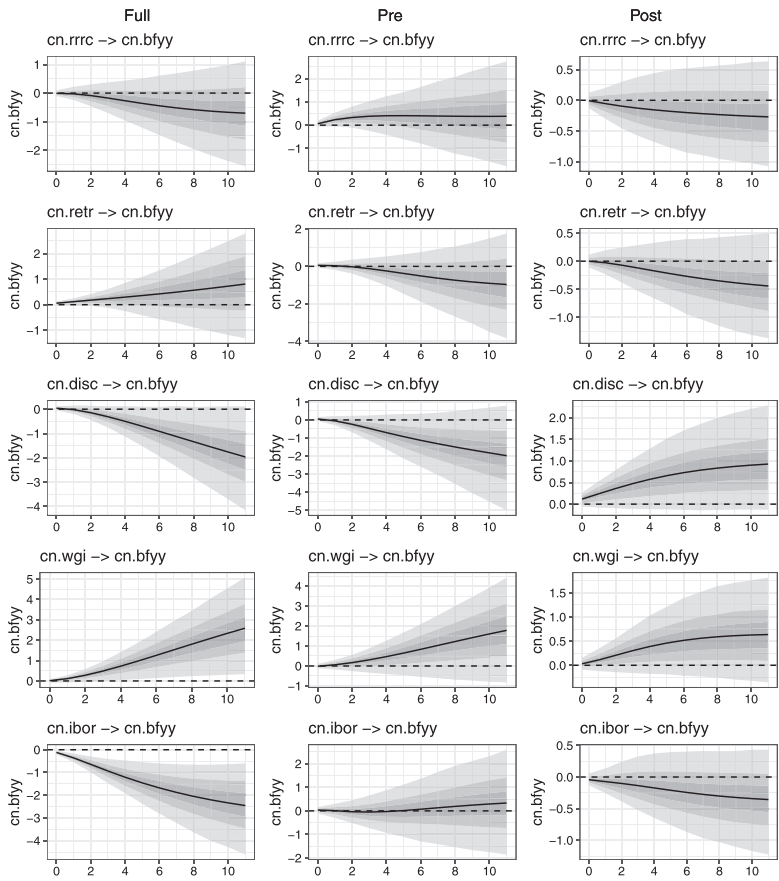
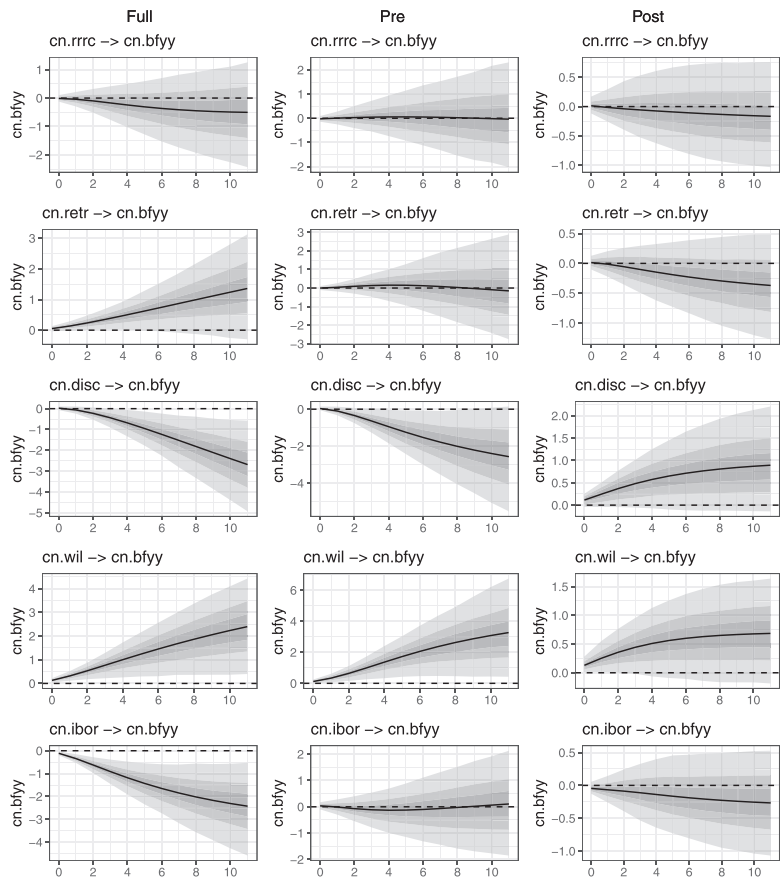


Figure A.13. China Sentiment Window Guidance Indicator (Narrow) Model



**Figure A.14. China Narrative Credit Indicator (Broad)
Model without Exogenous Variables**

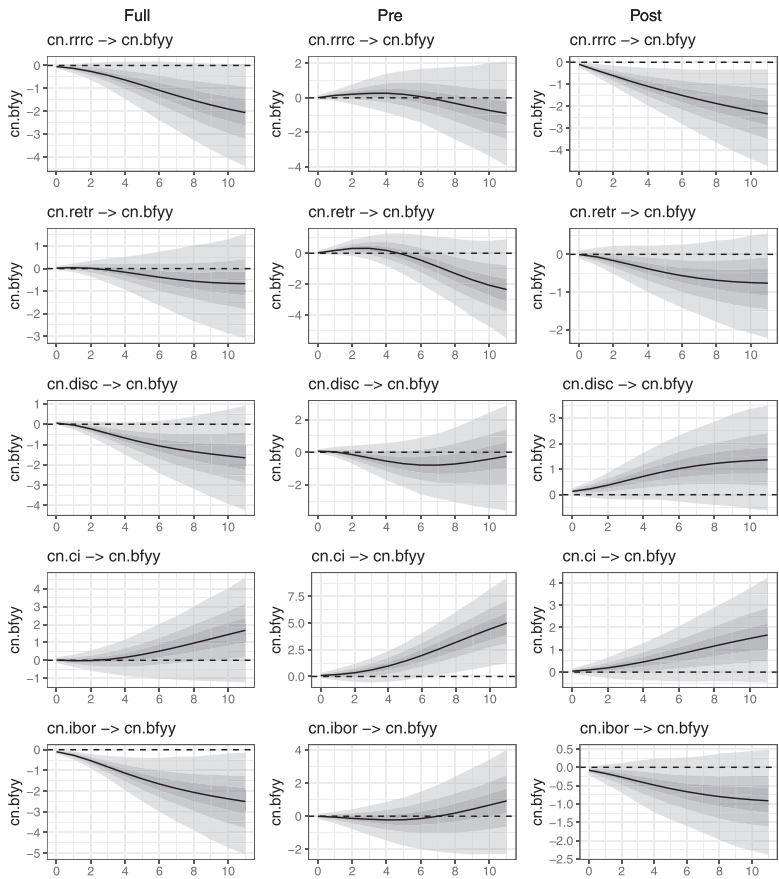


Figure A.15. China Sentiment Credit Indicator (Broad)
Model without Exogenous Variables

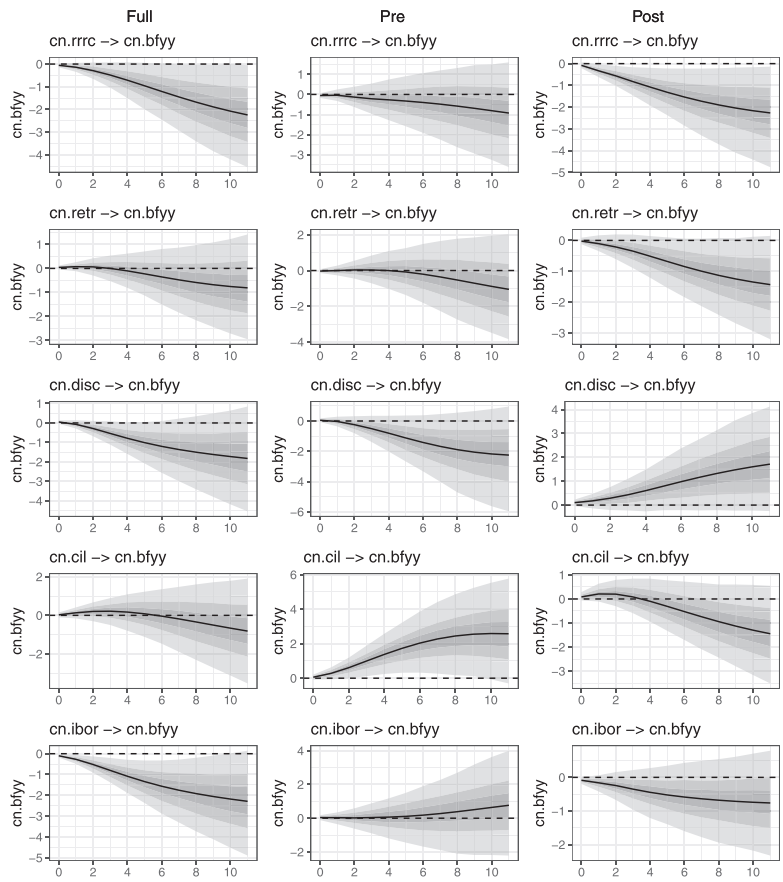
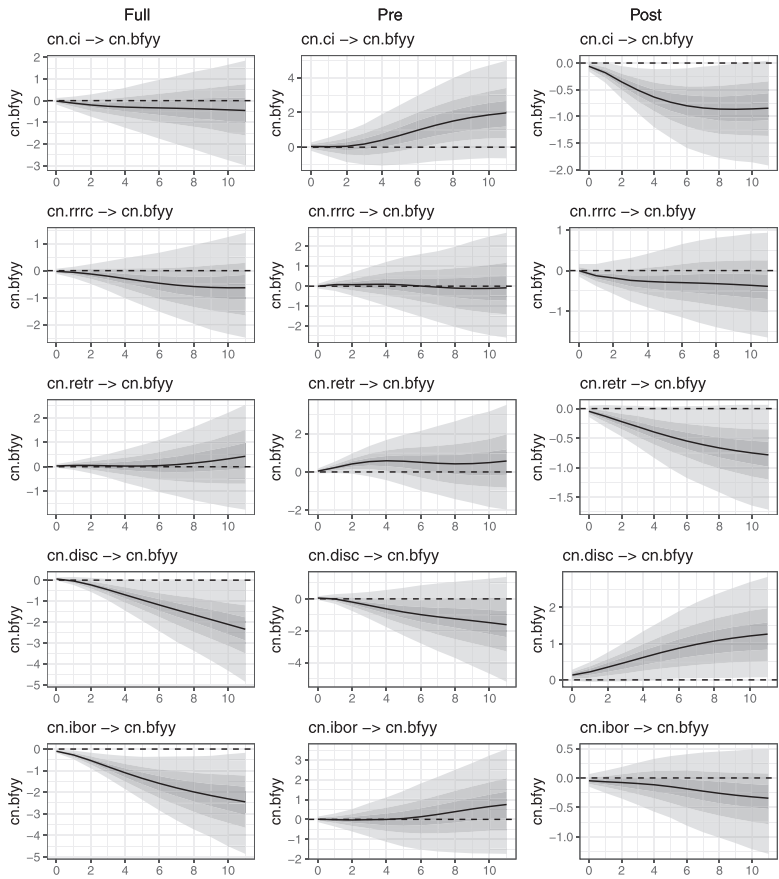


Figure A.16. China Narrative Credit Indicator (Broad)
Model with Variables Reordered



**Figure A.17. China Sentiment Credit Indicator (Broad)
Model with Variables Reordered**

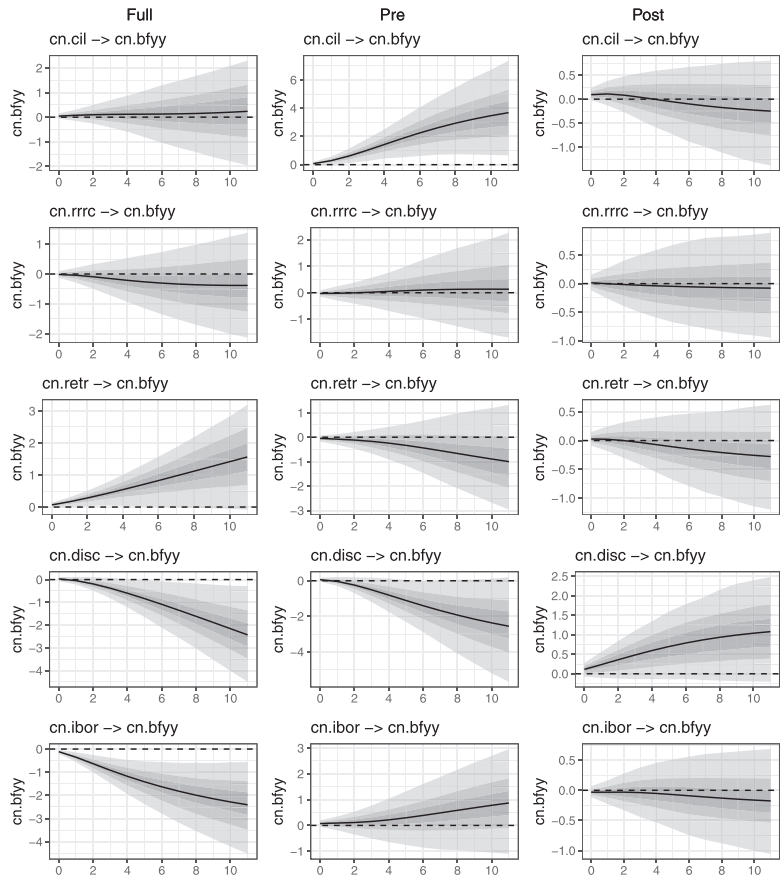


Figure A.18. China Narrative Credit Indicator (Broad) Model without Exogenous Variables and with Variables Reordered

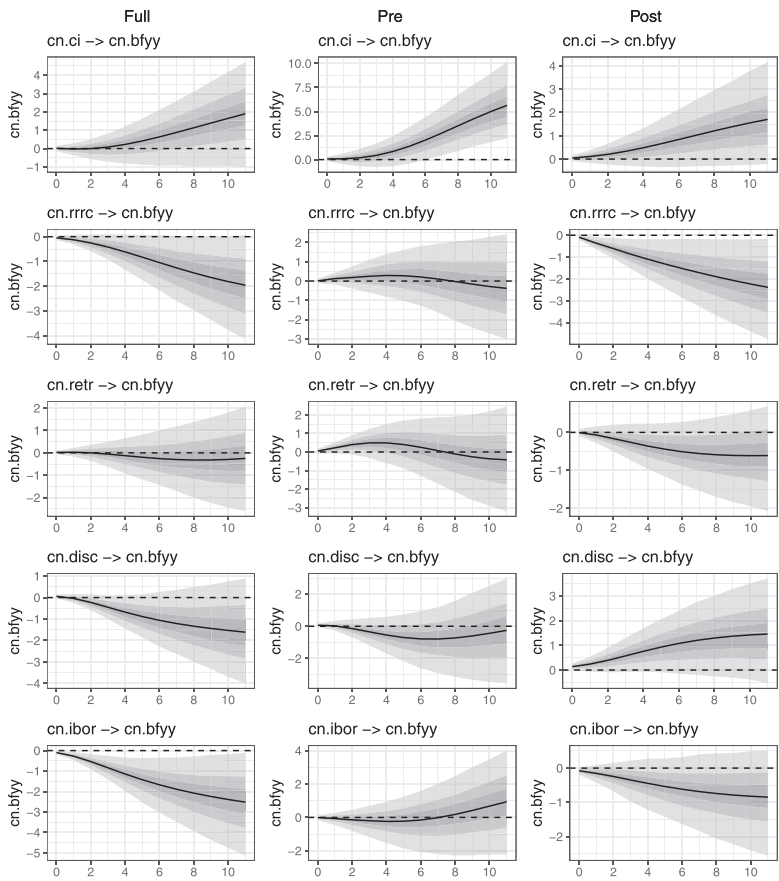
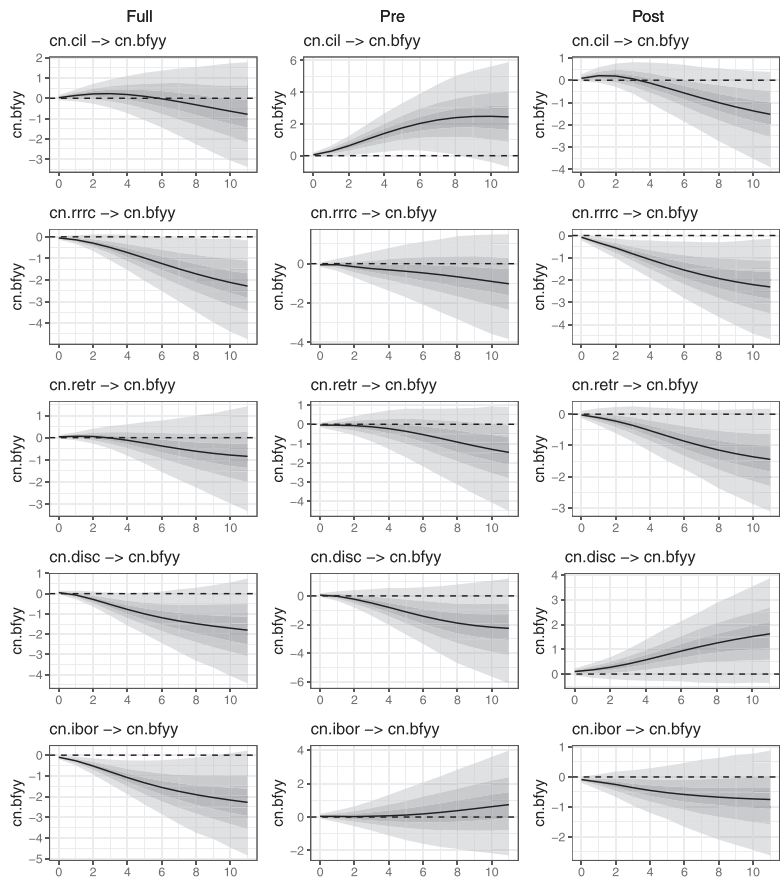
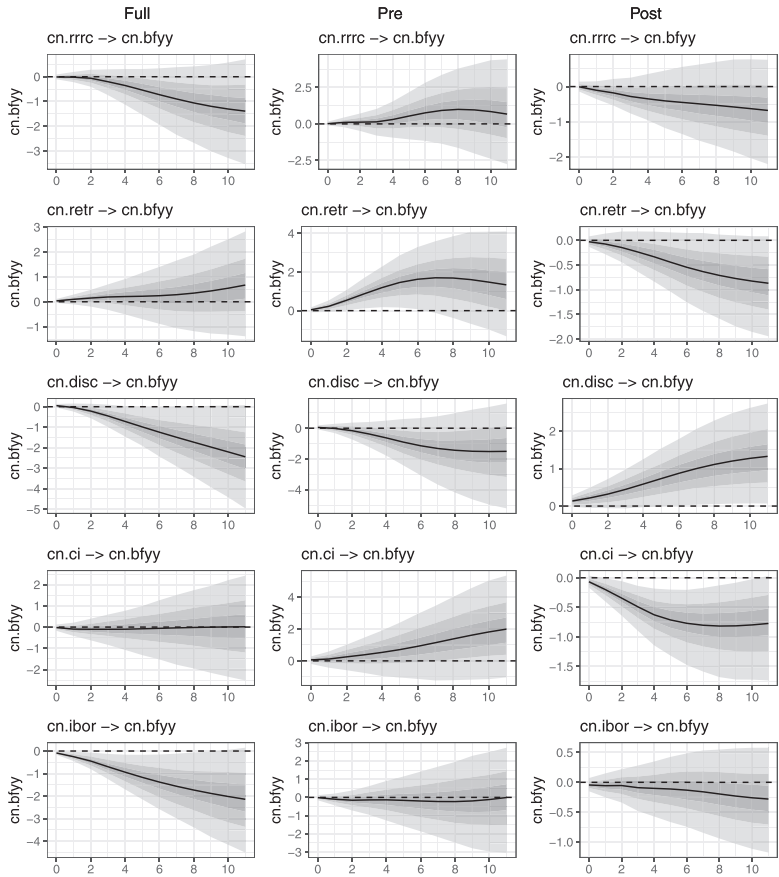


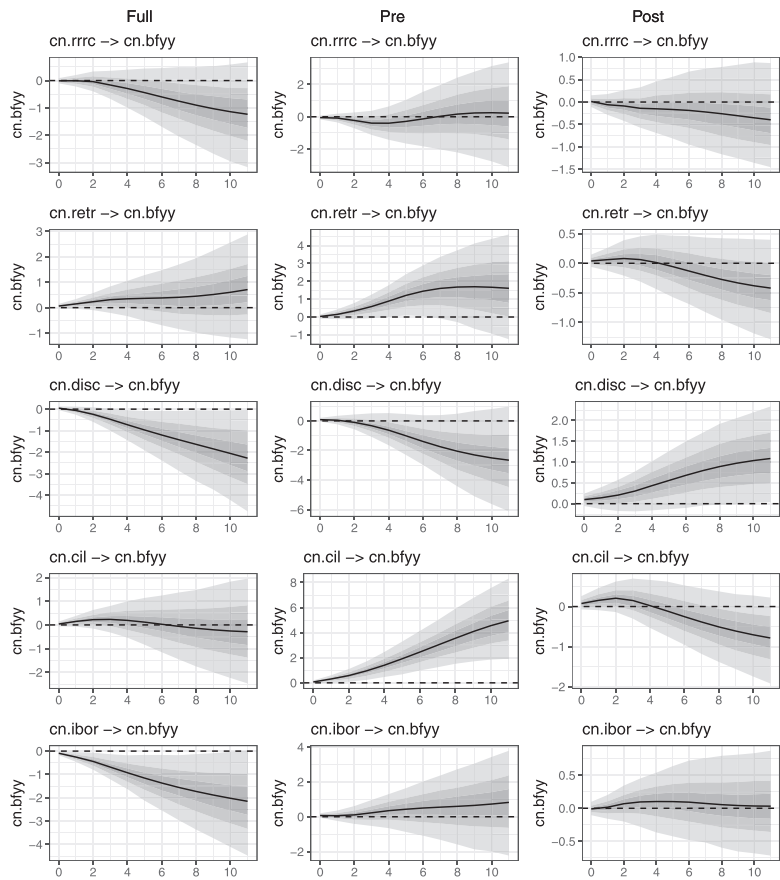
Figure A.19. China Sentiment Credit Indicator (Broad) Model without Exogenous Variables and with Variables Reordered



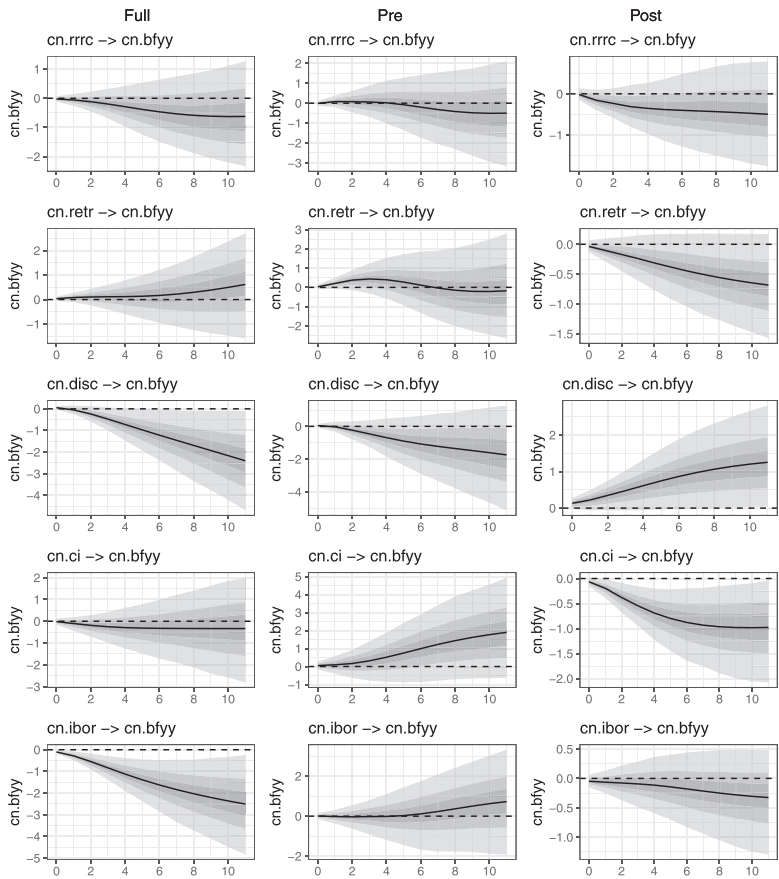
**Figure A.20. China Narrative Credit Indicator (Broad)
Model with Higher Lag Order**



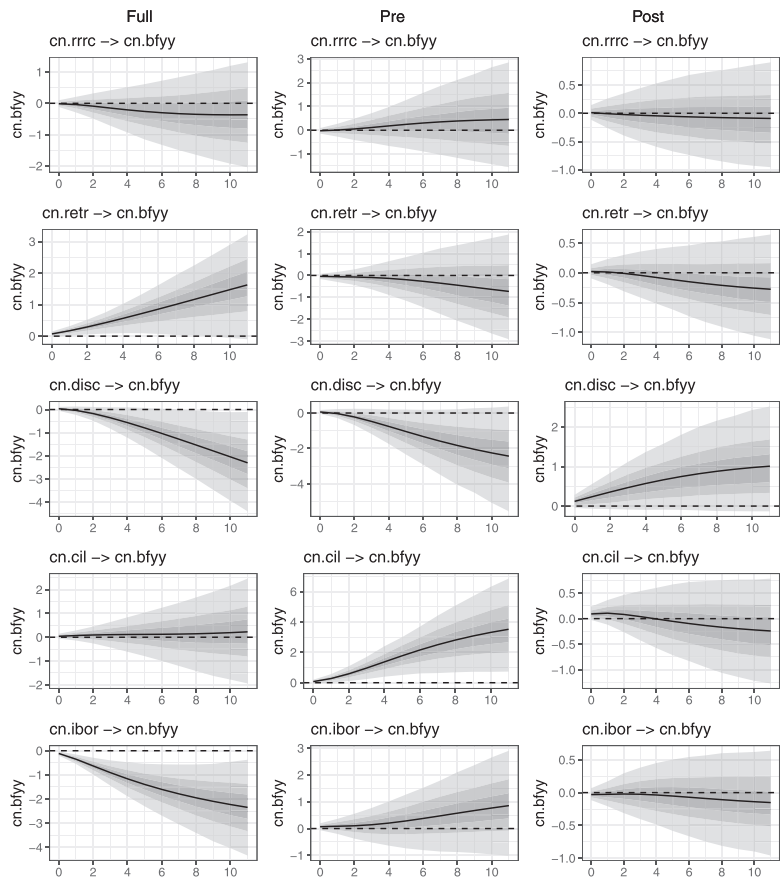
**Figure A.21. China Sentiment Credit Indicator (Broad)
Model with Higher Lag Order**



**Figure A.22. China Narrative Credit Indicator (Broad)
Model Based on Cholesky Decomposition**



**Figure A.23. China Sentiment Credit Indicator (Broad)
Model Based on Cholesky Decomposition**



**Figure A.24. China Narrative Credit Indicator (Broad)
Model with Reserve Requirement Ratio for Large
Institutions**

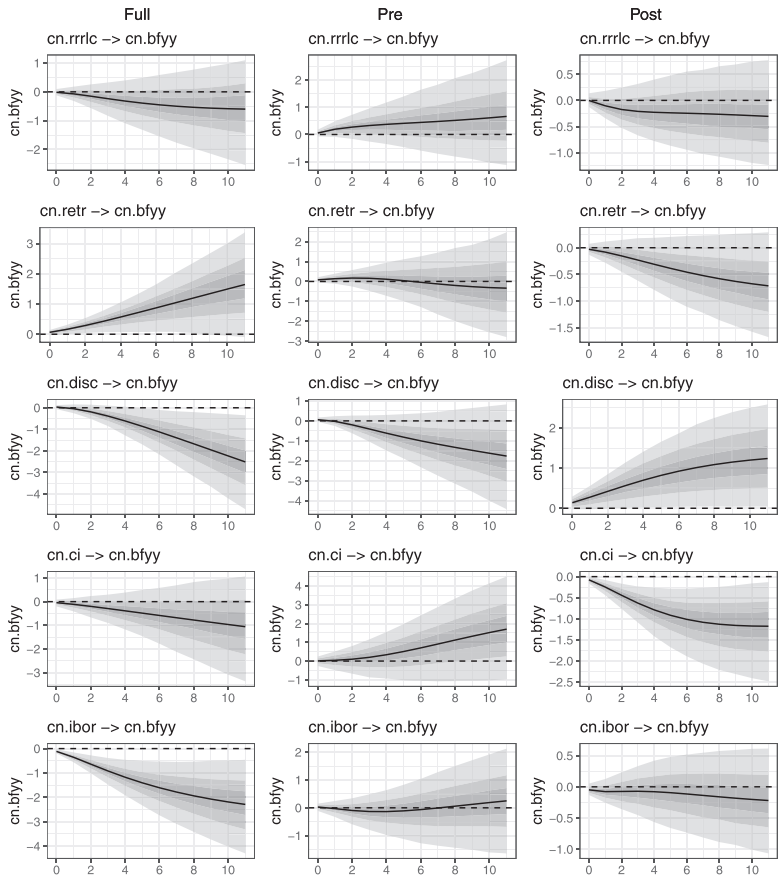
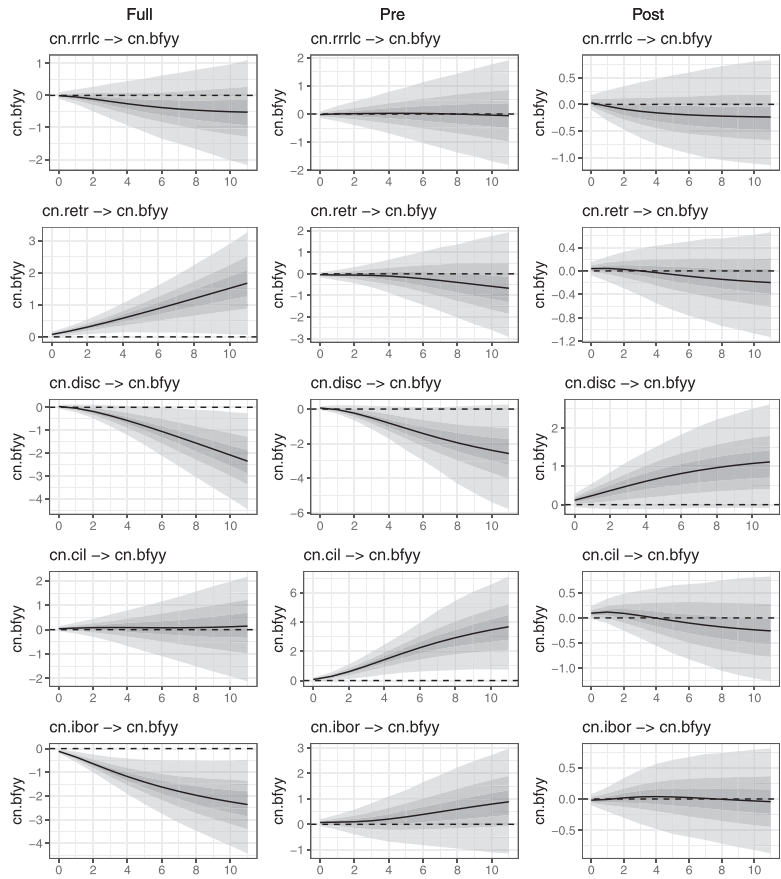


Figure A.25. China Sentiment Credit Indicator (Broad)
Model with Reserve Requirement Ratio for Large
Institutions



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