Impulse Response Functions from alternative specifications for “Consumer Credit, Liquidity, and the Transmission Mechanism of Monetary Policy”

August 2008

Abstract

This file contains figures for impulse response functions calculated from alternative specifications than those reported in the paper, “Consumer Credit, Liquidity, and the Transmission Mechanism of Monetary Policy.” The baseline specification takes the form of a five-variable VAR the with monetary policy variable, the federal funds rate, ordered last. The figures for the alternative specifications in this file display variations to the baseline specification that include a time trend, different lag lengths of the VAR, the federal funds ordered first, and with alternative real variables including real disposable income and non-farm payroll employment. Included also are figures displaying the comparison of the credit data to both monetary and non-monetary shocks. This file reports the results for monthly and quarterly data discussed in the paper and support the robustness of the results.
List of Figures

Figure A1: VAR Impulse Response Functions in response to a shock to the Federal funds rate: Base Case

Figure A2: VAR Impulse Response Functions on Bank and Non-Bank consumer credit to a shock to the Federal funds rate

Figure A3a and A3b: VAR Impulse Response Functions in response to a shock to the Federal funds rate: One Percent Shock for each time period

Figure A4: VAR Impulse Response Functions in response to a shock to the Federal funds rate: Federal Funds Rate ordered First

Figure A5: VAR Impulse Response Functions in response to a shock to the Federal funds rate: With Real Disposable Income

Figure A6: VAR Impulse Response Functions in response to a shock to the Federal funds rate: With Employment

Figure A7: VAR Impulse Response Functions in response to a shock to the Federal funds rate: With Consumption and Employment

Figure A8: VAR Impulse Response Functions in response to a shock to the Federal funds rate: Longer Lag Structure

Figure A9: VAR Impulse Response Functions in response to a shock to the Federal funds rate: With Time Trend

Figure A10: VAR Impulse Response Functions in response to a shock to the Federal funds rate: Quarterly with one Lag

Figure A11: VAR Impulse Response Functions in response to a shock to the Federal funds rate: Quarterly with real GDP

Figure A12: VAR Impulse Response Functions in response to a shock to the Federal funds rate: 1990 to 2007 (Quarterly) Credit Card Balances and Unused Portions: with real GDP

Figure A13: VAR Impulse Response Functions in response to a shock to the Federal funds rate: 1990 to 2007 (Quarterly) all Consumer loans and unused portions of Credit Card lines: with real GDP

Figure A14: VAR Impulse Response Functions in response to a shock to the Federal funds rate and to a Non-Monetary Shock to Consumption Expenditures

Figure A15: VAR Impulse Response Functions in response to a shock to the Federal funds rate and to a Non-Monetary Shock to Real Disposable Income
Figure A16: VAR Impulse Response Functions in response to a shock to the Federal funds rate and to a Non-Monetary Shock to Consumption Expenditures (Quarterly)

Figure A17: Detrended Bank and Non-Bank Consumer Credit and Consumption Relative to the Federal Funds Rate
Figure A1: VAR Impulse Response Functions in response to a shock to the Federal funds rate: Base Case

Notes: Five-variable VARs estimated with 2 lags (as determined by the AIC); shock is a one-standard deviation shock. See Figures A2 through A8 for alternative specifications.
Figure A2: VAR Impulse Response Functions on Bank and Non-Bank consumer credit to a shock to the Federal funds rate

Commercial Bank Credit 1984 through 2006

Nonrevolving Bank Credit

Revolving Bank Credit

Non-Bank Credit 1984 through 2006

Nonrevolving Non-Bank Credit

Revolving Non-Bank Credit

Notes: See notes to Figures A1 and Figure 5.
Figure A3a: Impulse Response Functions in response to a shock to the Federal funds rate: Monthly Consumer Bank Credit to a one percent shock

**Commercial Bank Nonrevolving Credit**

- 1968 through 2006
- 1968 through 1983
- 1984 through 2006

**Commercial Bank Revolving Credit**

- 1968 through 2006
- 1968 through 1983
- 1984 through 2006

**Notes:** See notes to Table 3. Impulse response functions calculated for a one percent shock to the federal funds rate for each time period. Note that the axis for each figure are different than in Figure 3.
Figure A3b: Impulse Response Functions in response to a shock to the Federal funds rate: Additional Regressors to a one percent shock

### Consumption

1968 through 2006

1968 through 1983

1984 through 2006

### PCE Price Deflator

1968 through 2006

1968 through 1983

1984 through 2006

### Federal Funds Rate

1968 through 2006

1968 through 1983

1984 through 2006

forecast horizon (months)

Notes: See notes to Figure 3a and B1. Please note that the vertical axis for each figure are different in some cases than in Figure 3.
Figure A4: VAR Impulse Response Functions in response to a shock to the Federal funds rate: Federal Funds Rate ordered First

Notes: See notes to Figure A1 and text for details.
Figure A5: VAR Impulse Response Functions in response to a shock to the Federal funds rate: With Real Disposable Income

Notes: See notes to Figure A1 and text for VAR details. Real Disposable income expressed in seasonally adjusted 2000 dollars (Bureau of Economic Analysis).
Figure A6: VAR Impulse Response Functions in response to a shock to the Federal funds rate: With Employment

Notes: See notes to Figure A1 for VAR details. Employment is defined as total employees from nonfarm payrolls (from the Bureau of Labor Statistics).
Figure A7: VAR Impulse Response Functions in response to a shock to the Federal funds rate: With Consumption and Employment

Notes: See notes to Figure A1 for VAR details. Employment is defined as total employees from nonfarm payrolls (from the Bureau of Labor Statistics).
Figure A8: VAR Impulse Response Functions in response to a shock to the Federal funds rate: Longer Lag Structure

Notes: See notes to Figure A1. The figures displayed are from VARs calculated with 12 lags. Lags of 2, 6 and 8 months were also tested; the results are similar so those figures are not displayed.
Figure A9: VAR Impulse Response Functions in response to a shock to the Federal funds rate: With Time Trend

Notes: See notes to Figure A1. The figures displayed are from VARs including a time trend.
Figure A10: Impulse Response Functions in response to a shock to the Federal funds rate: 1972 to 2007 (Quarterly) with one lag

Notes: See notes to Figure 3. Quarterly data collected from the FDIC. The data are seasonally adjusted and expressed in constant 2000 dollars. Each model is estimated with one lag.

1972 through 2007

1972 through 1983

1984 through 2007

1994 through 2007
Figure A11: Impulse Response Functions in response to a shock to the Federal funds rate: Quarterly data with real GDP

1973 through 2007

1972 through 1982

1984 through 2007

Nonrevolving (Installment) Consumer Loans

Credit Card Loans

PCE Deflator

Federal Funds Rate

Notes: See notes to Figure 1. Quarterly data collected from the FDIC. The data are seasonally adjusted and expressed in constant 2000 dollars. The model is estimated with real GDP instead of real consumption expenditures. Each model is estimated with two lags.
Figure A12: Impulse Response Functions in response to a shock to the Federal funds rate: 1990 to 2007 (Quarterly) Credit Card Balances and Unused Portions: with real GDP

Notes: See notes to Figure 3. Data on the unused portions of credit card lines and credit card balances were collected from the FDIC, the latter series being first reported in the Call Reports in 1990. The data are seasonally adjusted and expressed in constant 2000 dollars. The model is estimated with real GDP instead of consumption expenditures.
Figure A13: Impulse Response Functions in response to a shock to the Federal funds rate: 1990 to 2007 (Quarterly) all Consumer loans and unused portions of Credit Card lines: with real GDP

Notes: See notes to previous Figures. The results displayed are for a quarterly seven-variable specification estimated with both the non-revolving and revovling components and the unused portions.
Notes: The figures display impulse response functions of consumer credit to a monetary shock and to a non-monetary shock to consumption expenditures. As defined in Den Haan, Sumner and Yamashiro (2007), the response to the non-monetary shock is calculated controlling for the real variable’s response to a monetary shock (holding a change in the monetary policy variable constant). The responses are calculated from a five-variable VAR including a price deflator and the federal funds in addition to consumption and the two credit series. Following Den Haan, Sumner and Yamashiro (2007), the portion of each response with open squares indicates a significant response at the 5 percent level. See the text for explanation of data sources. I thank Steven W. Sumner for providing the code and explanation in executing the calculations.
Figure A15: Impulse Response Functions in response to a shock to the Federal funds rate and to a Non-Monetary Shock to Real Disposable Income

Notes: See notes to Figure A14. Instead of real consumption expenditures, the non-monetary shock is a shock to real disposable income.
Notes: See notes to Figure A16. Data are quarterly.
Figure A17: Detrended Bank and Non-Bank Consumer Credit and Consumption Relative to the Federal Funds Rate

Notes: Data detrended using the HP Filter. The right vertical axis shows the Federal Funds rate percent, the left vertical axis shows the detrended component in billions of dollars.