Technical Appendix to

THE INS AND OUTS OF UNEMPLOYMENT: AN ANALYSIS CONDITIONAL ON TECHNOLOGY SHOCKS

Fabio Canova, David Lopez-Salido and Claudio Michelacci


Appendix S1

This appendix contains additional empirical results. It is provided for backing up statements made in the paper and it is not intended for publication.

Neutral Shock

Finding Rate

Separation Rate

Hours Per Employee

Output

(a) Neutral Technology Shock

Fig. A1. The Sample Period is 1973: I–1997: I. The VAR has Eight Lags and Contains: the Rate of Growth of the Relative Price of Investment, the Rate of Growth of Labour Productivity, the (Logged) Job-Finding Rate, the (Logged) Job-Separation Rate, the (Logged), Unemployment Rate (Logged), and the (Logged) Aggregate Number of Hours Worked Per Capita. Dotted Lines Represent the 5% and 95% Quantiles of the Distribution of the Responses Simulated by Bootstrapping 500 times the Residuals of the VAR. The Continuous Line Corresponds to Median Estimate from Bootstrap Replications
Investment Specific Shock

(b) Investment Specific Technology Shock

Fig. A1. (Continued)
Fig. A2. The Sample Period is 1967:II–1997:I. The VAR has Eight Lags and Contains: the Rate of Growth of the Relative Price of Investment, the Rate of Growth of Labour Productivity, the (Logged) Job-Finding Rate, the (Logged) Job-Separation Rate, the (Logged) Unemployment Rate (Logged), and the (Logged) Aggregate Number of Hours Worked Per Capita. Dotted Lines Represent the 5% and 95% Quantiles of the Distribution of the Responses Simulated by Bootstrapping 500 times the Residuals of the VAR. The Continuous Line Corresponds to Median Estimate from Bootstrap Replications.
Investment Specific Shock

Relative Price of Investment

Finding Rate

Labor Productivity

Separation Rate

Unemployment

Hours Per Employee

Hours

Output

(b) Investment Specific Technology Shock

Fig. A2. (Continued)
Fig. A3. The Sample Period is 1967:II–2007:I. The VAR has Eight Lags and Contains: the Rate of Growth of the Relative Price of Investment, the Rate of Growth of Labour Productivity, the (Logged) Unemployment Rate, and the (Logged) Aggregate Number of Hours Worked Per Capita, the Log of Separation and Finding Rates. Dotted Lines Represent the 5% and 95% Quantiles of the Distribution of the Responses Simulated by Bootstrapping 500 Times the Residuals of the VAR. The Continuous Line Corresponds to Median Estimate from Bootstrap Replications.
Investment Specific Shock

(b) Investment Specific Technology Shock

Fig. A3. (Continued)
Neutral Technology Shock

67:I-10:I (Continuous), 97:II-10:I (Dotted), 75:II-97:I (Dash-dotted)

![Graphs showing responses to a one-standard deviation shocks in the samples: 1967:II–2010:I, 1975:II–1997:I and 1997:II–2010:I. Each line corresponds to a six variable VAR(8) with the rate of growth of the relative price of investment, the rate of growth of labour productivity, the (logged) unemployment rate, and the (logged) aggregate number of hours worked per capita, the log of separation and finding rates.](image-url)
Investment Specific Shock

67:1-10:1 (Continuous), 97:II-10:1 (Dotted), 75:II-97:1 (Dash-dotted)

Relative Price of Investment

Finding Rate

Labor Productivity

Separation Rate

Unemployment

Hours Per Employee

Hours

Output

(b) Investment Specific Technology Shock

Fig. A4. (Continued)
(a) Neutral Technology Shock

Fig. A5. Response to a Neutral or an Investment-Specific Technology Shock in a Six Variables VAR(8), 1967:II–2010:I Sample with Intercept Deterministically Broken at 1973:I and 1997:I. Dotted Lines Represent the 5% and 95% Quantiles of the Distribution of the Responses Simulated by Bootstrapping 500 times the Residuals of the VAR. The Continuous Line Corresponds to Median Estimate.
Investment Specific Shock

Relative Price of Investment

Finding Rate

Labor Productivity

Separation Rate

Unemployment

Hours Per Employee

Hours

Output

(b) Investment Specific Technology Shock

Fig. A5. (Continued)
Neutral Shock

Dummy (Continuous), Polynomial (Dotted), HP (Dashed)

Relative Price of Investment

Finding Rate

Labor Productivity

Separation Rate

Unemployment

Hours Per Employee

Hours

Output

Fig. A6. Six Variable VAR with Eight Lags, Sample 1967:II–2010:I with Intercept Deterministically Broken at 1973:I and 1997:I. The Continuous Line has Responses for the Dummy Specification, the Dotted Line Responses where the Intercept is a Third-Order Polynomial in Time, the Dashed Lines are Responses after Filtering with an Hodrick Prescott Filter and Smoothing Parameter $\lambda = 12,800$.

Investment Specific Shock

Dummy (Continuous), Polynomial (Dotted), HP (Dashed)

(b) Investment Specific Technology Shock

Fig. A6. (Continued)
Fig. A7. Six Variable VAR with Four Lags, Sample 1967:II–2010:I with Intercept Deterministically Broken at 1973:1 and 1997:I. Dotted Lines Represent the 5% and 95% Quantiles of the Distribution of the Responses Simulated by Bootstrapping 500 times the Residuals of the VAR; the Solid Line is the Median of the Distribution.
Investment Specific Shock

(b) Investment Specific Technology Shock

Fig. A7. (Continued)
Fig. A8. Six Variable VAR with Eight Lags, Sample 1967:II–2010:I with Intercept Deterministically Broken at 1973:1 and 1997:I, Identification Restrictions Imposed at Medium Horizon (12 Quarters). Dotted Lines Represent the 5% and 95% Quantiles of the Distribution of the Responses Simulated by Bootstrapping 500 times the Residuals of the VAR; the Continuous Line is the Median of the Distribution.
Investment Specific Shock

(b) Investment Specific Technology Shock

Fig. A8. (Continued)
(a) Neutral Technology Shock

Fig. A9. Six Variable VAR with Eight Lags, Sample 1967:II–2010:I with Intercept Deterministically Broken at 1973:1 and 1997:I. The Variables in VAR are Deflated with a Consumer Price Index. Dotted Lines Represent the 5% and 95% Quantiles of the Distribution of the Responses Simulated by Bootstrapping 500 times the Residuals of the VAR; the Continuous Line is the Median of the Distribution.
Investment Specific Shock

Relative Price of Investment

Finding Rate

Labor Productivity

Separation Rate

Unemployment

Hours Per Employee

Hours

Output

(b) Investment Specific Technology Shock

Fig. A9. (Continued)
USING e-ANNOTATION TOOLS FOR ELECTRONIC PROOF CORRECTION

Required software to e-Annotate PDFs: Adobe Acrobat Professional or Adobe Reader (version 8.0 or above). (Note that this document uses screenshots from Adobe Reader X)

The latest version of Acrobat Reader can be downloaded for free at: http://get.adobe.com/reader/

Once you have Acrobat Reader open on your computer, click on the Comment tab at the right of the toolbar:

This will open up a panel down the right side of the document. The majority of tools you will use for annotating your proof will be in the Annotations section, pictured opposite. We’ve picked out some of these tools below:

1. **Replace (Ins) Tool** – for replacing text.
   - Strikethrough (Del) Tool – for deleting text.

   **How to use it**
   - Highlight a word or sentence.
   - Click on the Replace (Ins) icon in the Annotations section.
   - Type the replacement text into the blue box that appears.

   **How to use it**
   - Highlight a word or sentence.
   - Click on the Strikethrough (Del) icon in the Annotations section.

2. **Add note to text** Tool – for highlighting a section to be changed to bold or italic.

   **How to use it**
   - Highlight the relevant section of text.
   - Click on the Add note to text icon in the Annotations section.
   - Type instruction on what should be changed regarding the text into the yellow box that appears.

3. **Add sticky note** Tool – for making notes at specific points in the text.

   **How to use it**
   - Click on the Add sticky note icon in the Annotations section.
   - Click at the point in the proof where the comment should be inserted.
   - Type the comment into the yellow box that appears.
5. **Attach File Tool** – for inserting large amounts of text or replacement figures.

   Inserts an icon linking to the attached file in the appropriate place in the text.

**How to use it**
- Click on the Attach File icon in the Annotations section.
- Click on the proof to where you’d like the attached file to be linked.
- Select the file to be attached from your computer or network.
- Select the colour and type of icon that will appear in the proof. Click OK.

6. **Add stamp Tool** – for approving a proof if no corrections are required.

   Inserts a selected stamp onto an appropriate place in the proof.

**How to use it**
- Click on the Add stamp icon in the Annotations section.
- Select the stamp you want to use. (The Approved stamp is usually available directly in the menu that appears). Click on the proof where you’d like the stamp to appear. (Where a proof is to be approved as it is, this would normally be on the first page).

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7. **Drawing Markups Tools** – for drawing shapes, lines and freeform annotations on proofs and commenting on these marks.

   Allows shapes, lines and freeform annotations to be drawn on proofs and for comment to be made on these marks.

**How to use it**
- Click on one of the shapes in the Drawing Markups section.
- Click on the proof at the relevant point and draw the selected shape with the cursor.
- To add a comment to the drawn shape, move the cursor over the shape until an arrowhead appears.
- Double click on the shape and type any text in the red box that appears.

For further information on how to annotate proofs, click on the Help menu to reveal a list of further options: