Appendix C: List of Equations

Private Business Sector

Labour Demand Business Equation
1. \( \text{nebd} = \exp\{\log(\text{nebd}(-1)) + \log(\text{npap/npap(-8)}/8) \)
   \( -a1\log\{\text{rwh*rtprb/pgb}\) 
   \( +a2\log\{\text{nh/nh(-1)}\) 
   \( +a3\log\{\text{gba/gba(-1)}\) 
   \( +a4\log\{\text{gba(-1)}\) 
   \( +a5\log\{\text{gba(-2)}\) 
   \( -a0\log\{\text{nebd}(-1)} \plus \log(\text{nh(-1)}\)
   \( -\log\{\text{gba(-1)}\) 
   \( +a2\log\{\text{gba/-2)}\) 
   \( +a5\log\{\text{gba(-3)}\) 
   \( -a0\log\{\text{nebd}(-1)} \plus \log(\text{nh(-1)}\)
   \( -\log\{\text{gba(-1)}\) 
   \( +a2\log\{\text{gba/-2)}\) 
   \( +a5\log\{\text{gba(-3)}\) 
   \( +a0\log\{\text{nebd}(-1)} \plus \log(\text{nh(-1)}\)
   \( +\text{u_nebd}); \)

Business Employment
1a. \( \text{neb=nebd-(nva-rvast*nlf/100) \)

Price of Domestic Output
2. \( \text{pgb} = \exp\{\log(\text{pgb}(-1))\) 
   \( +a0pnc \)
   \( *\{\log\{\exp[[\log\{\text{rwh*rtprb}\) -(\text{eff})-\log(clab)\}\) +(1/\text{csig-1})\}[\log\{(-\text{ckap/clab}) \)
   \( *{(\text{kb(1)/gba)\}^{((\text{csig-1)/csig}) \)
   \( + 1/\text{clab}]}\)\)/gb-xc*pxc-xrpsfm*sfm*pxc\) \)
   \( -\log\{\text{gb-xc-sfm}\) 
   \( +a0pnc-a2pnc-a3pnc-a4pnc-a5pnc \)

Price of Non-commodities
3. \( \text{pnc} = \exp\{log(\text{pnc}(-1))\) 
   \( +a0pnc \)
   \( *\{\log\{\exp[[\log\{\text{rwh*rtprb}\) -(\text{eff})-\log(clab)\}\) +(1/\text{csig-1})\}[\log\{(-\text{ckap/clab}) \)
   \( *{(\text{kb(1)/gba)\}^{((\text{csig-1)/csig}) \)
   \( + 1/\text{clab}]}\)\)/gb-xc*pxc-xrpsfm*sfm*pxc\) \)
   \( -\log\{\text{gb-xc-sfm}\) 
   \( +a0pnc-a2pnc-a3pnc-a4pnc-a5pnc \)

\[ 10.1 \]
Labour Demand

Inputs

- Labour Demand previous quarter
- Average population growth
- Growth in hourly business wage (from previous quarter)\(^1\)
- Growth in hours worked per employee from previous quarter
- Growth in output (current)\(^2\)
- Growth in output (previous quarter)\(^2\)
- Growth in output (two quarters ago)\(^2\)
- Error term

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\(^1\) Adjusted for payroll tax, FBT and price of domestic output and productivity growth.
\(^2\) Rain adjusted private output adjusted for productivity and population growth.
Labour Market

Labour Supply Equation
61. \[ nlf = \exp \left\{ \log(npad) + \log(nlf(-1)/npad(-1)) \right\} \]
   \[ - \log(nhlr/nhlr(-1)) \]
   \[ + a0ls \left[ \log \left\{ (1-rtn(-3))*rwt(-3)/pcon(-3) \right\} \right] \]
   \[ - \log \left\{ (1-rtn(-4))*rwt(-4)/pcon(-4) \right\} + \frac{\text{clam}}{4} \]
   \[ + a1ls \left[ \log \left\{ \text{net}/npad(-1) - \log(\text{net}/npad(-1)) \right\} \right] \]
   \[ - a2ls \left[ \log \left\{ nlf(-1)/npad(-1) \right\} + (1-c1ls)\log(nhlr(-1)) \right] \]
   \[ + c0ls - c1ls \log(\text{net}/npad(-1)) \]
   \[ + a2ls*q801(-1) \left( q_{414}(-1) + 10.125 \right) \]
   \[ + u_{nlf}; \]

Total Employment Identity
62. \[ \text{net} = \text{neb} + \text{nege} + \text{negg}; \]

Unemployment Rate
63. \[ \text{mu} = 100 \times \frac{nlf - \left\{ \text{neb} + \text{nege} + \text{negg} \right\}}{nlf}; \]

Wage Equation
64. \[ \text{rwt} = \text{nh} \times \exp \left\{ \log(\text{rwt}/\text{nh}(-1)) + \frac{\text{clam}}{4} \right\} \]
   \[ + \left( \frac{1}{(1+c1rwt+c1rwt**2+c1rwt**3)} \right) \times \log(pcon(-1)/pcon(-2)) \]
   \[ + \left( \frac{c1rwt(1+c1rwt+c1rwt**2+c1rwt**3)}{(1+c1rwt+c1rwt**2+c1rwt**3)} \right) \times \log(pcon(-2)/pcon(-3)) \]
   \[ + \left( \frac{c1rwt**2}{(1+c1rwt+c1rwt**2+c1rwt**3)} \right) \times \log(pcon(-3)/pcon(-4)) \]
   \[ + \left( \frac{c1rwt**3}{(1+c1rwt+c1rwt**2+c1rwt**3)} \right) \times \log(pcon(-4)/pcon(-5)) \]
   \[ + (c2rwt*\text{rum})*(\text{mu}(-1)-\text{mu}(-2)) \]
   \[ + c3rwt*(qcc-qcc(-4)) \]
   \[ + c4rwt*(\text{rmut}+ws)*(1-q741)+(\text{rmut}+ws0)*q741-mu)/\mu \]
   \[ + c5rwt*q743 \]
   \[ + u_{rwt}; \]

Beveridge Curve Equation
64a. \[ \text{nva} = \exp \left\{ \log(nlf/100) + \log(nva(-1)/nlf(-1)*100) \right\} \]
   \[ + (1/a1bc) \times \log(\text{rmut}/\text{mu}(-1)) \]
   \[ - a2bc * (b1bc/(1+exp((-qtimf-b2bc)/b3bc)) \]
AENA

Inputs

- Hours worked per employee

- AENA (previous quarter) divided by hours worked per employee (previous quarter)

- Growth in price of private consumption (previous quarter)

- Growth in price of private consumption (two quarters ago)

- Growth in price of private consumption (three quarters ago)

- Growth in price of private consumption (a year ago)

- Proportion of union members by change in unemployment rate (previous quarter)

- Change in degree of centralisation of wage fixation (from a year ago)

- Non-Accelerating Inflation Rate of Unemployment (NARIU)

- Current unemployment rate

- Dummy variable

- Error term