Discussion of

Discount Rates and Employment Fluctuations

by Jaroslav Borovička and Katarína Borovičková

Mathieu Taschereau-Dumouchel

The Wharton School of the University of Pennsylvania

Cowles Macro and Labor Conference 2016

Summary

This paper

- Can we explain unemployment fluctuations with shocks to the way cash-flows from jobs are valued?
- Quantify this channel using asset pricing model (Hall, 2014)

This discussion

- Brief overview and some comments

Summary

This paper

- Can we explain unemployment fluctuations with shocks to the way cash-flows from jobs are valued?
- Quantify this channel using asset pricing model (Hall, 2014)

This discussion

- Brief overview and some comments

Summary

This paper

- Can we explain unemployment fluctuations with shocks to the way cash-flows from jobs are valued?
- Quantify this channel using asset pricing model (Hall, 2014)

This discussion

- Brief overview and some comments

DMP Model

- Average cost of hiring a worker

$$\frac{\kappa}{q(\theta_t)}$$

- Expected value of a job

$$J_t = \sum_{j=1}^{\infty} E_t \left[\beta^j (1-\delta)^j (z_{t+j} - w_{t+j}) \right]$$

- Free-entry

$$\frac{\kappa}{q(\theta_t)} = J_t$$

- Changes in $J_t \rightarrow$ changes in $\theta_t \rightarrow$ changes in u_t

DMP Model

- Average cost of hiring a worker

$$\frac{\kappa}{q(\theta_t)}$$

- Expected value of a job

$$J_t = \sum_{j=1}^{\infty} E_t \left[\frac{S_{t+j}}{S_t} (1-\delta)^j (z_{t+j} - w_{t+j}) \right]$$

- Free-entry

$$\frac{\kappa}{q(\theta_t)} = J_t$$

- Changes in $J_t \rightarrow$ changes in $\theta_t \rightarrow$ changes in u_t

DMP Model

- Average cost of hiring a worker

$$\frac{\kappa}{q(\theta_t)}$$

- Expected value of a job

$$J_t = \sum_{j=1}^{\infty} E_t \left[\frac{S_{t+j}}{S_t} (1-\delta)^j (z_{t+j} - w_{t+j}) \right]$$

- Free-entry

$$\frac{\kappa}{q(\theta_t)} = J_t$$

- Changes in $J_t \rightarrow$ changes in $\theta_t \rightarrow$ changes in u_t

DMP Model

- Average cost of hiring a worker

$$\frac{\kappa}{q(\theta_t)}$$

- Expected value of a job

$$J_t = \sum_{j=1}^{\infty} E_t \left[\frac{S_{t+j}}{S_t} (1-\delta)^j (z_{t+j} - w_{t+j}) \right]$$

- Free-entry

$$\frac{\kappa}{q(\theta_t)} = J_t$$

- Changes in $J_t \rightarrow$ changes in $\theta_t \rightarrow$ changes in u_t

DMP Model

- What moves J_t?

$$J_t = \sum_{j=1}^{\infty} E_t \left[\frac{S_{t+j}}{S_t} (1-\delta)^j (z_{t+j} - w_{t+j}) \right]$$

  - Most of the literature shocks z
  - Here, focus on S

- Note
  - The real risk-free rate does not move much in the data
  - Variation must come from the dispersion of S (risk premium)

DMP Model

- What moves J_t?

$$J_t = \sum_{j=1}^{\infty} E_t \left[\frac{S_{t+j}}{S_t} (1-\delta)^j \left(z_{t+j} - w_{t+j} \right) \right]$$

  - Most of the literature shocks z
  - Here, focus on S

- Note
  - The real risk-free rate does not move much in the data
  - Variation must come from the dispersion of S (risk premium)

DMP Model

- What moves J_t?

$$J_t = \sum_{j=1}^{\infty} E_t \left[\frac{S_{t+j}}{S_t} (1-\delta)^j (z_{t+j} - w_{t+j}) \right]$$

  - Most of the literature shocks z
  - Here, focus on S

- Note
  - The real risk-free rate does not move much in the data
  - Variation must come from the dispersion of S (risk premium)

DMP Model

- What moves J_t?

$$J_t = \sum_{j=1}^{\infty} E_t \left[\frac{S_{t+j}}{S_t} (1-\delta)^j \left(z_{t+j} - w_{t+j} \right) \right]$$

  - Most of the literature shocks z
  - Here, focus on S

- Note
  - The real risk-free rate does not move much in the data
  - Variation must come from the dispersion of S (risk premium)

DMP Model

- What moves J_t?

$$J_t = \sum_{j=1}^{\infty} E_t \left[\frac{S_{t+j}}{S_t} (1-\delta)^j \left(z_{t+j} - w_{t+j} \right) \right]$$

  - Most of the literature shocks z
  - Here, focus on S

- Note
  - The real risk-free rate does not move much in the data
  - Variation must come from the dispersion of S (risk premium)

Statistical model of S

- Epstein-Zin preferences

$$U_t = (1-\beta)\log C_t - \frac{\beta}{\theta_t}\log E_t\left[\exp\left(-\theta_t U_{t+1}\right)\right]$$

  where $1+\theta_t$ is time-varying risk-aversion parameter.

- Need stochastic process for C_t and all components of cash-flows
  - VAR on

$$X_t = \left(1, \Delta c_t, rx_t^m, \Delta y_t, pd_t, r_t^f, \log\left(1-\delta_t\right)\right)$$

    to get statistical model
- SDF from data
  - Given θ_t use C_t from data to compute SDF S_t
  - Pick θ_t to exactly match excess return on stock market
- Use the estimated VAR to figure out J_t
- Plug J_t into free-entry to figure out u_t

Statistical model of S

- Epstein-Zin preferences

$$U_t = (1-\beta)\log C_t - \frac{\beta}{\theta_t}\log E_t\left[\exp\left(-\theta_t U_{t+1}\right)\right]$$

  where $1+\theta_t$ is time-varying risk-aversion parameter.

- Need stochastic process for C_t and all components of cash-flows
  - VAR on

$$X_t = \left(1, \Delta c_t, rx_t^m, \Delta y_t, pd_t, r_t^f, \log\left(1-\delta_t\right)\right)$$

    to get statistical model

- SDF from data
  - Given θ_t use C_t from data to compute SDF S_t
  - Pick θ_t to exactly match excess return on stock market
- Use the estimated VAR to figure out J_t
- Plug J_t into free-entry to figure out u_t

Statistical model of S

- Epstein-Zin preferences

$$U_t = (1-\beta)\log C_t - \frac{\beta}{\theta_t}\log E_t\left[\exp\left(-\theta_t U_{t+1}\right)\right]$$

  where $1+\theta_t$ is time-varying risk-aversion parameter.

- Need stochastic process for C_t and all components of cash-flows
  - VAR on

$$X_t = \left(1, \Delta c_t, rx_t^m, \Delta y_t, pd_t, r_t^f, \log\left(1-\delta_t\right)\right)$$

    to get statistical model

- SDF from data
  - Given θ_t use C_t from data to compute SDF S_t
  - Pick θ_t to exactly match excess return on stock market
- Use the estimated VAR to figure out J_t
- Plug J_t into free-entry to figure out u_t

Statistical model of S

- Epstein-Zin preferences

$$U_t = (1-\beta)\log C_t - \frac{\beta}{\theta_t}\log E_t\left[\exp\left(-\theta_t U_{t+1}\right)\right]$$

  where $1+\theta_t$ is time-varying risk-aversion parameter.

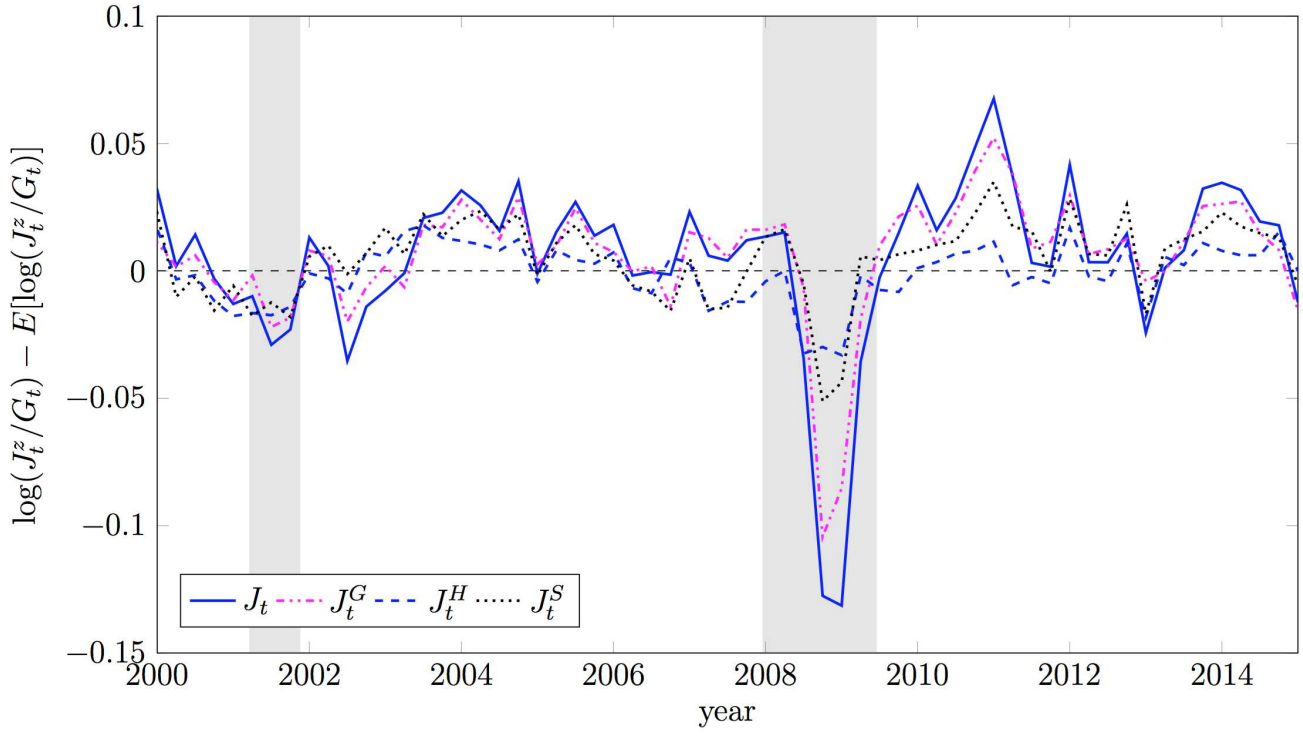
- Need stochastic process for C_t and all components of cash-flows
  - VAR on

$$X_t = \left(1, \Delta c_t, rx_t^m, \Delta y_t, pd_t, r_t^f, \log\left(1-\delta_t\right)\right)$$

    to get statistical model

- SDF from data
  - Given θ_t use C_t from data to compute SDF S_t
  - Pick θ_t to exactly match excess return on stock market
- Use the estimated VAR to figure out J_t
- Plug J_t into free-entry to figure out u_t

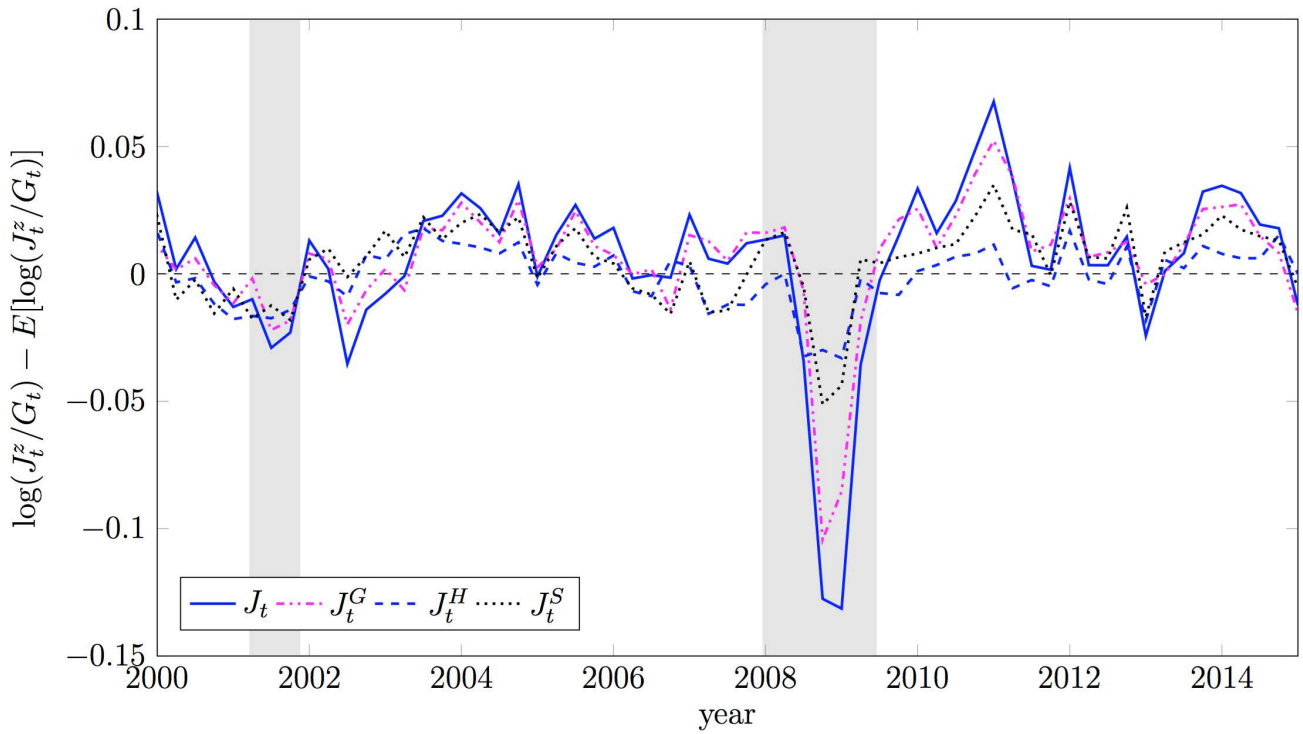
Results



Standard deviation of (detrended) unemployment rate

- Data: 0.129
- Model: 0.0845

Results



Standard deviation of (detrended) unemployment rate

- Data: 0.129
- Model: 0.0845

Comments

- Huge swings in risk-aversion $\theta_t \in [-10, 25]$
  - Do we have the right model of the SDF?
  - Is the estimation loading on risk-aversion features of the cashflows?
- Many alternative specifications
  - Long-run risk (Bansal & Yaron 2004)
  - Habit formation (Campbell & Cochrane 1999)
  - Disaster risk (Barro 2006)
- These models explain excess returns with various combinations of SDF vs cashflows structure
  - Fitting them to the data would give us different SDFs
  - Using these SDFs to value cashflow from a job should give us different results

Comments

- Huge swings in risk-aversion $\theta_t \in [-10, 25]$
  - Do we have the right model of the SDF?
  - Is the estimation loading on risk-aversion features of the cashflows?
- Many alternative specifications
  - Long-run risk (Bansal & Yaron 2004)
  - Habit formation (Campbell & Cochrane 1999)
  - Disaster risk (Barro 2006)
- These models explain excess returns with various combinations of SDF vs cashflows structure
  - Fitting them to the data would give us different SDFs
  - Using these SDFs to value cashflow from a job should give us different results

Comments

- Huge swings in risk-aversion $\theta_t \in [-10, 25]$
  - Do we have the right model of the SDF?
  - Is the estimation loading on risk-aversion features of the cashflows?
- Many alternative specifications
  - Long-run risk (Bansal & Yaron 2004)
  - Habit formation (Campbell & Cochrane 1999)
  - Disaster risk (Barro 2006)
- These models explain excess returns with various combinations of SDF vs cashflows structure
  - Fitting them to the data would give us different SDFs
  - Using these SDFs to value cashflow from a job should give us different results

Comments

- Huge swings in risk-aversion $\theta_t \in [-10, 25]$
  - Do we have the right model of the SDF?
  - Is the estimation loading on risk-aversion features of the cashflows?
- Many alternative specifications
  - Long-run risk (Bansal & Yaron 2004)
  - Habit formation (Campbell & Cochrane 1999)
  - Disaster risk (Barro 2006)
- These models explain excess returns with various combinations of SDF vs cashflows structure
  - Fitting them to the data would give us different SDFs
  - Using these SDFs to value cashflow from a job should give us different results

Comments

- Huge swings in risk-aversion $\theta_t \in [-10, 25]$
  - Do we have the right model of the SDF?
  - Is the estimation loading on risk-aversion features of the cashflows?
- Many alternative specifications
  - Long-run risk (Bansal & Yaron 2004)
  - Habit formation (Campbell & Cochrane 1999)
  - Disaster risk (Barro 2006)
- These models explain excess returns with various combinations of SDF vs cashflows structure
  - Fitting them to the data would give us different SDFs
  - Using these SDFs to value cashflow from a job should give us different results

Comments

- Huge swings in risk-aversion $\theta_t \in [-10, 25]$
  - Do we have the right model of the SDF?
  - Is the estimation loading on risk-aversion features of the cashflows?
- Many alternative specifications
  - Long-run risk (Bansal & Yaron 2004)
  - Habit formation (Campbell & Cochrane 1999)
  - Disaster risk (Barro 2006)
- These models explain excess returns with various combinations of SDF vs cashflows structure
  - Fitting them to the data would give us different SDFs
  - Using these SDFs to value cashflow from a job should give us different results

Comments

- Asset side of the model assumes endowment economy, labor side assumes production economy
  - Fine as first pass
  - Interesting interaction between the two (Petrosky-Nadeau, Zhang & Kuehn 2016; Kilic & Wachter 2016)
    - What drives the changes in the SDF?

Comments

- Asset side of the model assumes endowment economy, labor side assumes production economy
  - Fine as first pass
  - Interesting interaction between the two (Petrosky-Nadeau, Zhang & Kuehn 2016; Kilic & Wachter 2016)
    - What drives the changes in the SDF?

Comments

- Asset side of the model assumes endowment economy, labor side assumes production economy
  - Fine as first pass
  - Interesting interaction between the two (Petrosky-Nadeau, Zhang & Kuehn 2016; Kilic & Wachter 2016)
    - What drives the changes in the SDF?

Comments

- Cost of a vacancy is

$$\underbrace{\kappa_0}_{6} + \underbrace{\kappa_1}_{-102} \times \frac{v_t}{1 - u_t}$$

  $\rightarrow$ There is built-in amplification of shocks here.

- Would be interesting to see counterfactual u_t when terms in payoffs are held constant
- Hiring decisions have no impact on wages
- Using return on the market instead of return on wealth
- How does the household interpret risk-aversion θ_t?

Comments

- Cost of a vacancy is

$$\underbrace{\kappa_0}_{6} + \underbrace{\kappa_1}_{-102} \times \frac{v_t}{1 - u_t}$$

  $\rightarrow$ There is built-in amplification of shocks here.
- Would be interesting to see counterfactual u_t when terms in payoffs are held constant
- Hiring decisions have no impact on wages
- Using return on the market instead of return on wealth
- How does the household interpret risk-aversion θ_t?

Comments

- Cost of a vacancy is

$$\underbrace{\kappa_0}_{6} + \underbrace{\kappa_1}_{-102} \times \frac{v_t}{1 - u_t}$$

  $\rightarrow$ There is built-in amplification of shocks here.
- Would be interesting to see counterfactual u_t when terms in payoffs are held constant
- Hiring decisions have no impact on wages
- Using return on the market instead of return on wealth
- How does the household interpret risk-aversion θ_t?

Comments

- Cost of a vacancy is

$$\underbrace{\kappa_0}_{6} + \underbrace{\kappa_1}_{-102} \times \frac{v_t}{1 - u_t}$$

  $\rightarrow$ There is built-in amplification of shocks here.
- Would be interesting to see counterfactual u_t when terms in payoffs are held constant
- Hiring decisions have no impact on wages
- Using return on the market instead of return on wealth
- How does the household interpret risk-aversion θ_t?

Comments

- Cost of a vacancy is

$$\underbrace{\kappa_0}_{6} + \underbrace{\kappa_1}_{-102} \times \frac{v_t}{1 - u_t}$$

  $\rightarrow$ There is built-in amplification of shocks here.
- Would be interesting to see counterfactual u_t when terms in payoffs are held constant
- Hiring decisions have no impact on wages
- Using return on the market instead of return on wealth
- How does the household interpret risk-aversion θ_t?

Conclusion

- Interesting first attempt at carefully measuring importance of SDF for unemployment fluctuations
- Look forward to see the cross-sectional results