Asset Pricing with Free Entry and Exit of Firms

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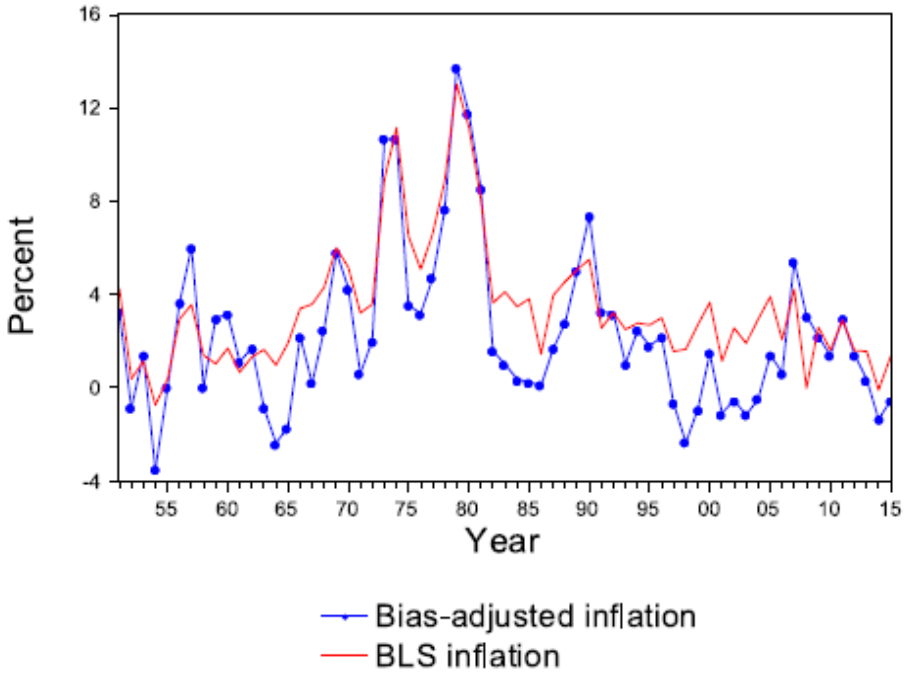
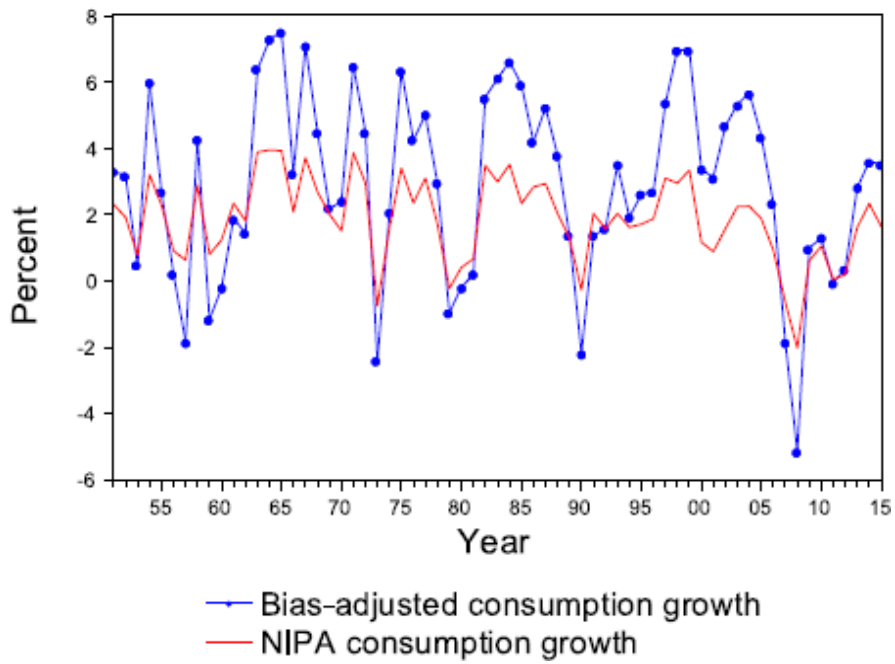
Motivation

New products drive a wedge between CPI inflation and bias adjusted inflation, see fig 3 of Scanlon (2019), 1951-2015 US data.





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- ii) equity premium higher due to endogenous change in technology.

Variety growth in the pricing kernel

- Standard Euler equation (S_t^C is the price of consumption claim):

$$1 = E_t \left[M_{t,t+1} \frac{S_{t+1}^C}{S_t^C - C_t} \right]$$
$$= E_t \left[M_{t,t+1} R_{C,t+1} \right]$$

where $R_{C,t+1} \equiv \frac{S_{t+1}^C}{S_t^C - C_t}$ is the return on the consumption claim.

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- Next we transform variables to data-consistent format:

$$1 = E_t\left[\beta\left(\frac{C_{t+1}/\rho_{t+1}}{C_t/\rho_t}\right)^{-\sigma}\left(\frac{\rho_{t+1}}{\rho_t}\right)^{1-\sigma}\frac{S_{t+1}^C/\rho_{t+1}}{S_t^C/\rho_t - C_t/\rho_t}\right]$$
$$= E_t\left[\beta\left(\frac{C_{t+1}^R}{C_t^R}\right)^{-\sigma}\left(\frac{N_{t+1}}{N_t}\right)^{\frac{1-\sigma}{\theta-1}}\frac{S_{t+1}^{C,R}}{S_t^{C,R} - C_t^R}\right]$$

where $C_t^R \equiv P_t C_t/p_t = C_t/\rho_t$ and $S_t^{C,R} \equiv S_t^C/\rho_t$ are data-consistent variables.

Endowment economy with variety growth

The levered excess return is given by (σ=risk-aversion; high net markup $1/(\theta-1)$=strong variety effect):

$$EQPR_t \equiv \phi_{lev}\left[E_t(r_{c,t+1}) - r_{f,t} + \frac{1}{2}var_t(r_{c,t+1})\right] = -\phi_{lev}cov_t(m_{t+1}, r_{c,t+1})$$

$$= \phi_{lev}\left[\sigma cov_t(\Delta c_{t+1}, r_{c,t+1}) + \underbrace{\frac{\sigma-1}{\theta-1}cov_t(\Delta n_{t+1}, r_{c,t+1})}_{\text{new term due to variety effect}}\right]$$

$$= \underbrace{\phi_{lev}}_{1.67}\underbrace{\sigma}_{3}\underbrace{corr_t(\Delta c_{t+1}, r_{c,t+1})}_{0.4} * \underbrace{std_t(\Delta c_{t+1})}_{0.022} * \underbrace{std_t(r_{c,t+1})}_{0.2} * 100$$

$$+ \underbrace{\phi_{lev}}_{1.67}\underbrace{\frac{\sigma-1}{\theta-1}}_{0.7143}\underbrace{corr_t(\Delta n_{t+1}, r_{c,t+1})}_{0.5} * \underbrace{std_t(\Delta n_{t+1})}_{0.022} * \underbrace{std_t(r_{c,t+1})}_{0.2} * 100$$

$$= 0.89\% + 0.27\% = 1.16\%$$

Data and Simulated Model Moments

		baseline		zero Frisch	
	Data	Noentry	Entry	Noentry	Entry
Finance Moments					
mean(Equity Premium)	4.89	0.98	2.60	0.56	1.09
std(Equity Premium)	17.92	15.88	26.02	11.98	16.66
Sharpe ratio	0.27	0.06	0.10	0.05	0.07
mean(Risk-free rate)	2.90	3.92	3.68	3.98	3.90
std(Risk-free rate)	3.00	0.33	0.54	0.25	0.35
Macro Moments					
std(Output)	1.81	1.27	1.38	0.99	0.89
std(Consumption)	1.35	1.28	1.41	0.99	0.90
std(Labour)	1.79	0.33	0.60	–	–
std(Consumption)/std(Output)	0.74	1.00	1.00	1.00	1.00
std(Labour)/std(Output)	0.99	0.26	0.43	–	–
corr(Output, Consumption)	0.88	1.00	0.99	1.00	1.00
corr(Output, Labour)	0.88	1.00	1.00	–	–

Conclusion

- Free entry model with production with fixed costs considered.
- firm entry leads to endogenous changes in productivity and
- endogenous comovement between firm growth and asset return
- leading to higher and more volatile equity premia relative to endowment models.