Discussion of “The Factor Competition Channel of Interest Rate Transmission”

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Summary of the Paper

- Premise: interest cuts will *increase* firms' growth rate.
- First, this paper finds that this effect is weaker *with factor competition*.

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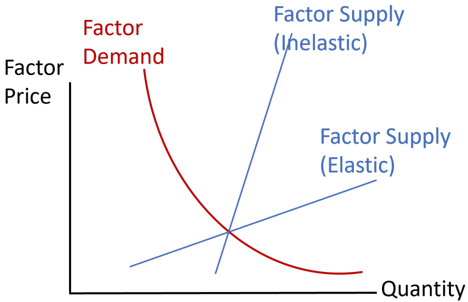
- First, this paper finds that this effect is weaker *with factor competition*.
- Additionally, this paper argues that the cash flow duration of the economy is important.

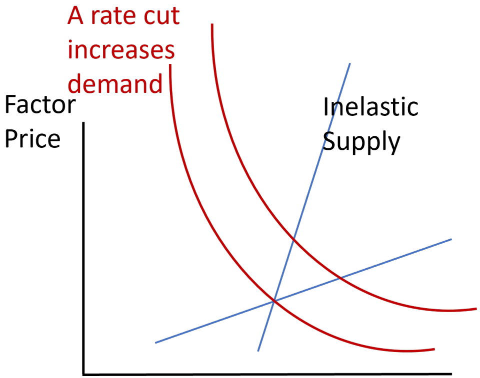
  Specifically, when the cash flow duration of the economy is high:
  - Real estate prices increase relatively more to a rate cut
  - But, the growth rate of other factors (labor) will be lower

The supply and the demand curve

- Viewing the main intuition of this paper from a supply-demand curve:

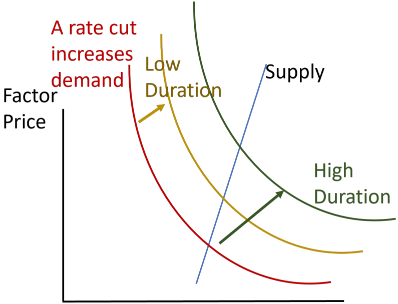


The effect of a rate cut - most baseline case



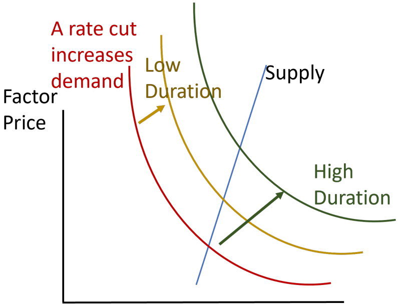
- Interest rate cut → increase in firm investment → increase in demand for input factors
- The factor price will increase more for inelastic factors (i.e., land compared to employment)

The effect of cash flow duration



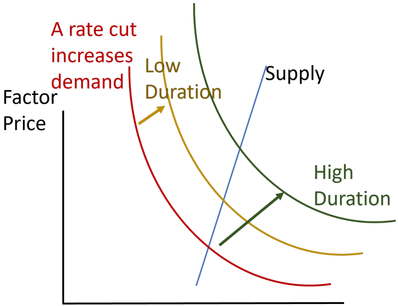
- ▷ Firm Value ≈ PV of production - Investment cost
- ▷ When duration is high:
  - "PV of production" will be more sensitive to interest rate changes
  - MB >> MC per additional unit of investment
  - The demand curve of capital will move further up

Prediction 1: Factor price and interest rate



- Prediction 1: Factor prices will be more sensitive to changes in interest rates if the duration of the economy is high.

Prediction 2: Factor cost channel



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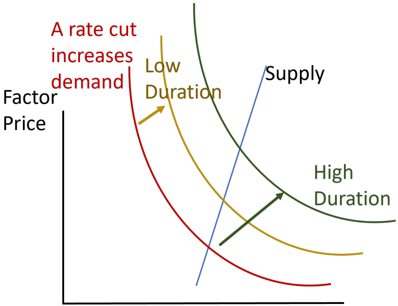
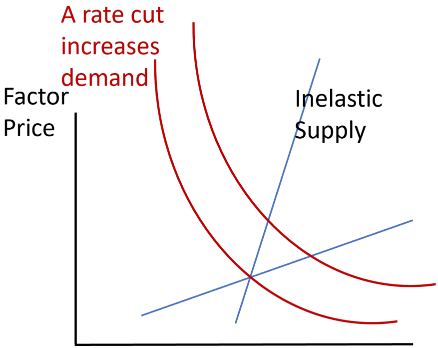


- Firm investment will respond less to interest rate changes if duration of the economy is high
- When the economy has high duration:
  - The factor price increases more to a rate cut.
  - The cost of new investment for firms in the economy will be higher
  - Therefore, the incentive to increase investment is lower with factor competition

Prediction 3: Factor cost channel and supply elasticity



- ▷ Factor cost channel is weaker if factor supply is elastic
- ▷ This is because factor price will not increase as much

Independence assumption in the model

- The last two predictions strongly relies on the assumption that D_i is independent of average duration of the region $E[D_i]$
- From the first-order condition (Prediction 1):

$$\frac{\partial \log k_i}{\partial r} = -\frac{\partial \log p}{\partial r} - D_i$$

- Assuming D_i is independent from $E[D_i]$, 'Prediction 2' is derived:

$$\frac{\partial \log k_i / \partial r}{\partial E[D_i]} = -\frac{\partial \log p / \partial r}{\partial E[D_i]} = \frac{1}{1+\eta}$$

Independence assumption

- Is D_i independent from $E[D_i]$?
- When we instead set $D_i = E[D_i] + \epsilon_i$, where $\epsilon_i \perp E[D_i]$ we would get

$$\frac{\partial \log k_i / \partial r}{\partial E[D_i]} = -\frac{\partial \log p / \partial r}{\partial E[D_i]} = \frac{1}{1+\eta} - 1 < 0$$

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- Empirically, this translates to whether the zip code duration (D_i) is independent from the county level duration ($E[D_i]$). Some evidence that supports this assumption would be helpful.

- For example, how should we think about GM factory being located next to a Biotech cluster?

Empirical Results

- Prediction 1: Factor prices will be more sensitive to interest rate if duration of the economy is high

$$\log p_{j,z,c,t} = \beta r_t \times D_{z,t} + \psi_{c,u,t} + \zeta_j + \epsilon_{j,z,c,t},$$

$z =$ zip code, $c=$ county, t=year, $D_{z,t}$ zip code duration

Table 2

The factor competition channel: factor price

Dependent Variable: Factor (Property) Price

	(1)	(2)	(3)	(4)
r =	Cum. Shock FFR		10Y	
$r\times$Zip dur.	-0.018^{**}		-0.009^{**}	
	(0.009)		(0.004)	
$r\times$Zip IR sens.		-0.046^{***}		-0.017^{***}
		(0.013)		(0.005)
Observations	1,680,778	1,680,778	1,680,778	1,680,778
Adjusted R^2	0.838	0.838	0.838	0.838

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- Should you include r_t and $D_{z,t}$ in the regression?
- Would also like to see the first order effect

Empirical Results

- Prediction 2: Firms located in high duration economy will invest less in response to the rate cut

$$\Delta E_{i,z,c,t} = \lambda \Delta r_t \times D_{z,t} + \psi_{c,i,t} + \zeta_z + \gamma \Delta E_{i,z,c,t-1} + \epsilon_{j,z,c,t},$$

Table 3
The factor competition channel: employment

	(1)	(2)	(3)	(4)
r =	Shock FFR		Shock NS	
$\Delta r \times$Zip dur.	2.407***		2.105***	
	(0.384)		(0.396)	
$\Delta r \times$Zip IR sens.		3.021***		3.140***
		(0.541)		(0.595)
Observations	9,930,680	9,930,680	9,930,680	9,930,680
Adjusted R^2	0.254	0.254	0.254	0.254

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- Why is the shock Δr_t in this table and r_t above?

Relatively minor comments

- ▷ Figure 1 includes a graphical presentation of cash flow duration in the US. It is difficult to read. A more concrete examples would be helpful.
    - Is there substantial zip code level variation within a county, where one would expect that they would not exist.
    - Sonoma county? Clark county?
- ▷ Sample period is 1998-2019. These are times when aggregate firm values tend to decrease in response to a rate cut. This paper assumes the opposite.
- ▷ There seems to be several typos in the model. In Eqn. (3), should D_i be in log terms? If so, what would happen if the log Duration is negative? (if firm is near default) The model implies a sign switch?!

Conclusion

- The model has an interesting setting, with a rich set of implications to test
- Interesting analysis at the ZIP code level
- Empirical results are consistent with model implications
- I think there is some potential, but a further clean-up of the paper would be helpful!