Discussion of "The Factor Competition Channel of Interest Rate Transmission"

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Summary of the Paper

- ▷ Interest cuts will generally increase a firm's growth.
- ▷ This paper shows that this effect is weakened because such the cut will also increase the price of production factors
- ▷ Specifically, this paper finds that when cash flow duration of firms in the region is high:
  - Real estate prices increase relatively more
  - Employment grows less

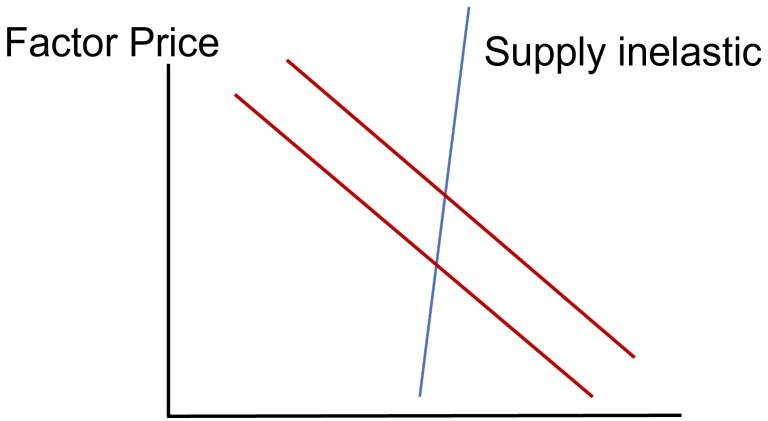
Cash flow duration

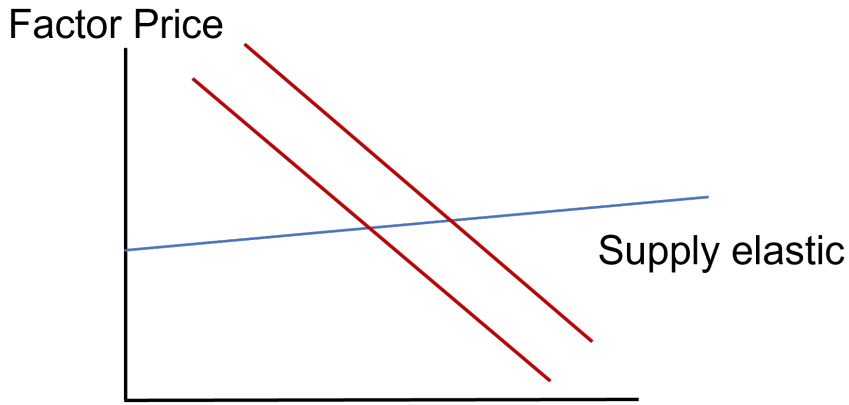
- Duration measures interest rate sensitivity of bonds and is a measure of risk for fixed income securities
- For bonds, a higher duration could imply that they have
  - longer maturity
  - low coupon rate (or zero-coupon bonds)
- Understanding what duration measures is tricky because
  - there is no maturity
  - future dividend is more or less uncertain
- Zip-code variation within counties

Cash flow duration

- Dechow, Sloan, and Soliman (2004) suggest measuring equity duration by ROE and growth in equity value
- The measure implies high duration firms tend to have
  - lower earnings to price ratio
  - low book to market
- This makes sense as their cash flows are expected to be realized at a later date.
- Their firm value will to decrease less (or increase in relative terms) in response to a positive interest rate shock.

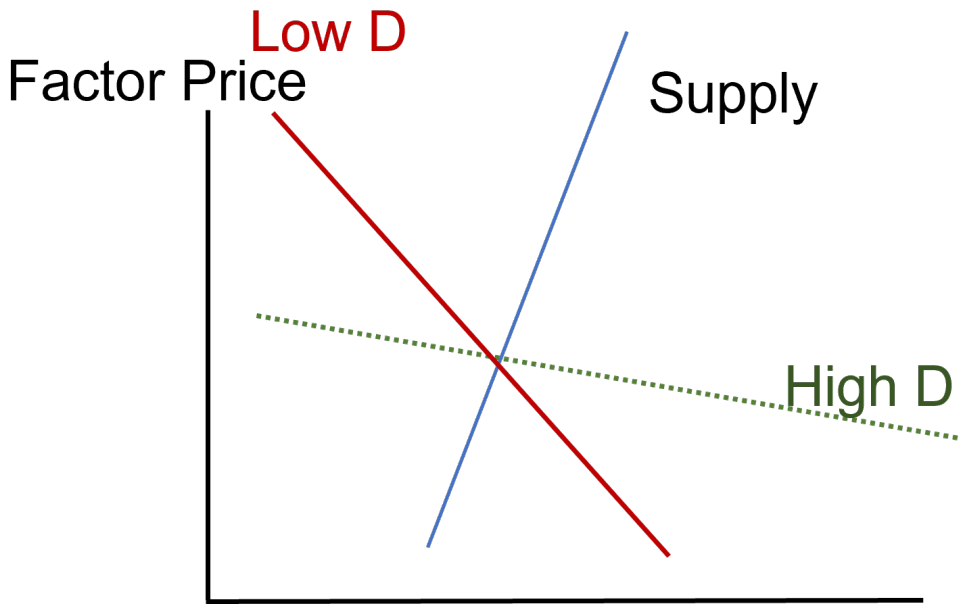
Supply and Demand





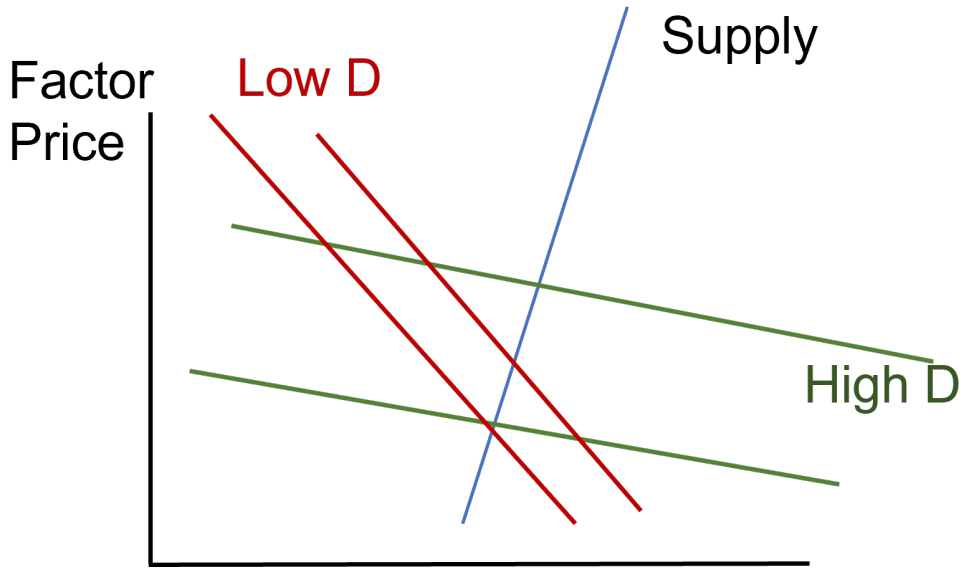
- Interest rate cut $\rightarrow$ increase in firm investment $\rightarrow$ increase in demand for factors
- Factor price will increase more if factor is inelastic (i.e., land)

Cash flow duration



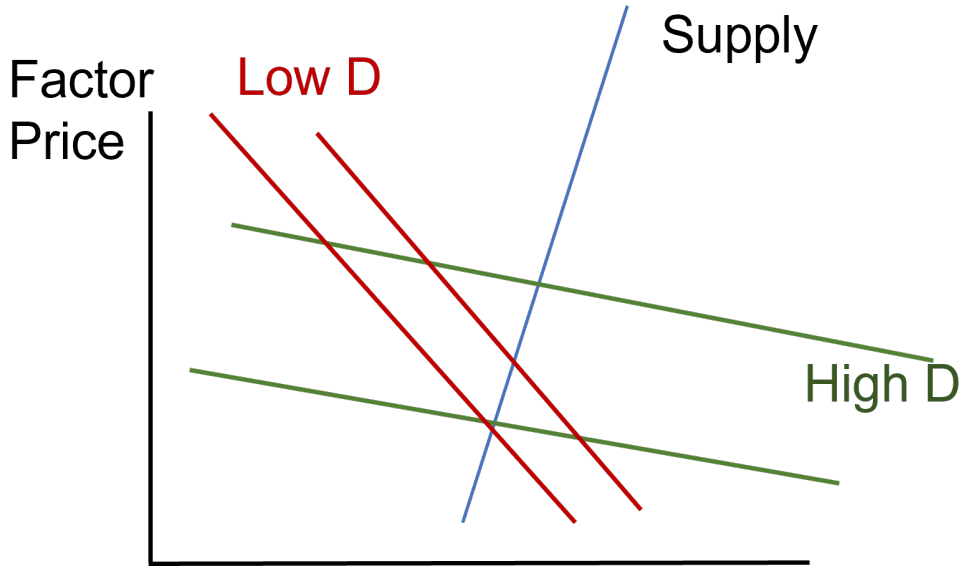
- Interest rate cut $\rightarrow$ increase in firm investment $\rightarrow$ increase in demand for factors
- The Demand curve is steeper if duration is low. A decrease in price leads to higher demand if duration is high

Shift in demand curve



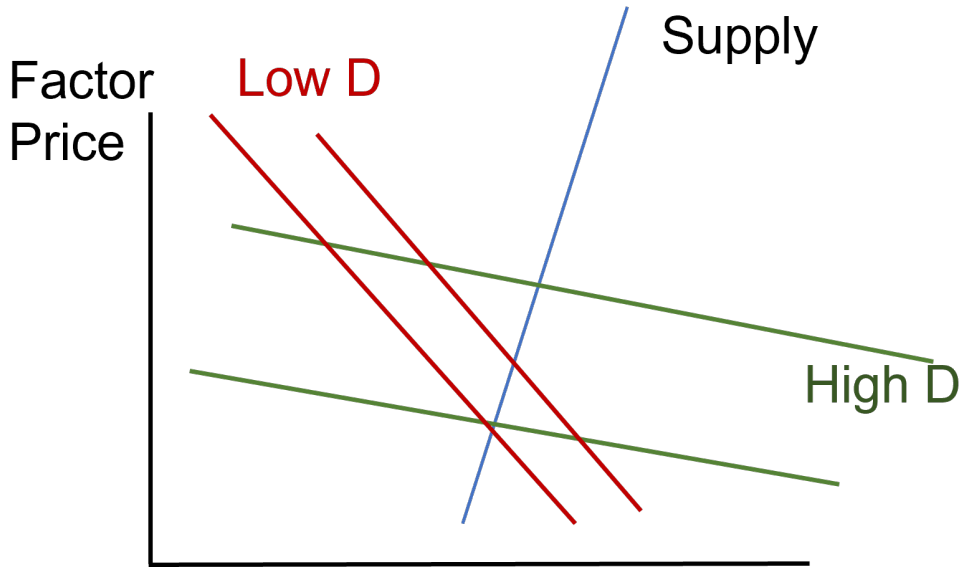
- Interest rate cut → increase in firm investment → increase in demand for factors
- If the economy has a high duration, the demand curve will shift more, because the firm value is more sensitive to interest rate.
- Factor prices will be more sensitive to interest rate if duration of the economy is high (Prediction 1)

Shift in demand curve



- Interest rate cut → increase in firm investment → increase in demand for factors
- Since the factor prices increase more if duration of the economy is high, individual firms within the area will invest less in response to the rate cut (Prediction 2).
- This is the factor competition channel.

Independence Assumption



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Independence Assumption

- This logic requires that D_i to be independent of average duration of the economy $E[D_i]$. I think this is problematic.
- In the model, Equation (4) implies

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

- Assuming D_i is independent from $E[D_i]$, Equation (10) is derived

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

- When $D_i = E[D_i] + \epsilon_i$,
  $D_i \perp E[D_i]$ is different from $\epsilon_i \perp E[D_i]$
- One would require that D_i is negatively related to $E[D_i]$

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= country, t=year, $D_{z,t}$ zip code duration, county-year-month-category and property fixed effect

Table 2

The factor competition channel: factor price

Dependent Variable: Factor (Property) Price

	(1)	(2)	(3)	(4)
r =	Cum. Shock FFR		10Y	
r×Zip dur.	−0.018**		−0.009**	
	(0.009)		(0.004)	
r×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

Empirical Results

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

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

z = zip code, c= country, t=year, $D_{z,t}$ zip code duration, county-year-industry and zip-code fixed effect

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

Empirical Issues

1) Why no control for each of the variables? If the following holds, you will get what you report:
   - ▷ Does higher r imply lower real estate price?
   - ▷ Do economies with a higher duration have more employment?

   If just not reported in the table, please report them.
2) Why is the first regression in levels and second regression in changes?

Relatively minor comments

- Figure 1 includes a graphical presentation of cash flow duration in the US. It is difficult to read. Can you provide concrete examples to show that there is substantial variation in duration, where one would imagine that there would not be a variation?
  - Sonoma country? Clark county (NV)?
- Sample period is 1998-2019. These are times when firm value 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), D_i seems to be in log terms. If so, what would happens if the log Duration is negative? 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
- A further clean-up might be necessary!