MARKET POWER IN PRODUCT AND LABOR MARKETS AND AVERAGE STOCK RETURNS

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Introduction

Question:
- What is the implication of market power in product and labor markets on average stock returns?

Methodology:
- First, construct a Real Business cycle (RBC) model with firms that possess oligopoly power in product markets and oligopsony power in labor markets.
- Second, provide empirical support using univariate and multivariate portfolio analysis.

Preview of Results:
- In the RBC setup, the presence of market power in either market associated with a *lower* equity premium.
- Empirical results suggest that investors demand a premium for holding stocks that are in low labor and product market concentration industries

Theoretical Model Summary

Augment the standard RBC setup with
- Oligopolistic competition in product markets (Jaimovich and Floetotto, 2008; Corhay et al., 2020)
- Firm-specific labor supply, and oligopsonistic competition among firms in labor markets (Berger et al., 2019; Alpanda and Zubairy, 2020)
- Epstein-Zin preferences for households
- Stochastic growth and capital adjustment costs

Results from Theoretical Model

- No significant effect of market power on output volatility, $\sigma(\Delta \log y)$, or average risk-free rate, $E(r^f)$.
- Baseline model with wage markdowns ($\mu_w < 1$) and price markups ($\mu_p > 1$) generate a lower average equity risk premium, $E(r^e\text{-}r^f)$, relative to alternatives.

Table 2: Macro and asset pricing moments: model vs. data (in %)

	Data	Baseline Model	Shutting off market power		
		$\mu_w < 1$	$\mu_w = 1$	$\mu_w < 1$	$\mu_w = 1$
		$\mu_p > 1$	$\mu_p > 1$	$\mu_p = 1$	$\mu_p = 1$
$\sigma(\Delta \log y)$	0.96	0.93	0.93	0.92	0.92
$E(r^e\text{-}r^f)$	6.61	4.69	5.01	5.26	6.03
$E(r^f)$	0.94	3.69	3.68	3.64	3.64

Product and Labor Market Concentration Measures (PMC and LMC) based on sales and employment HHI indexes

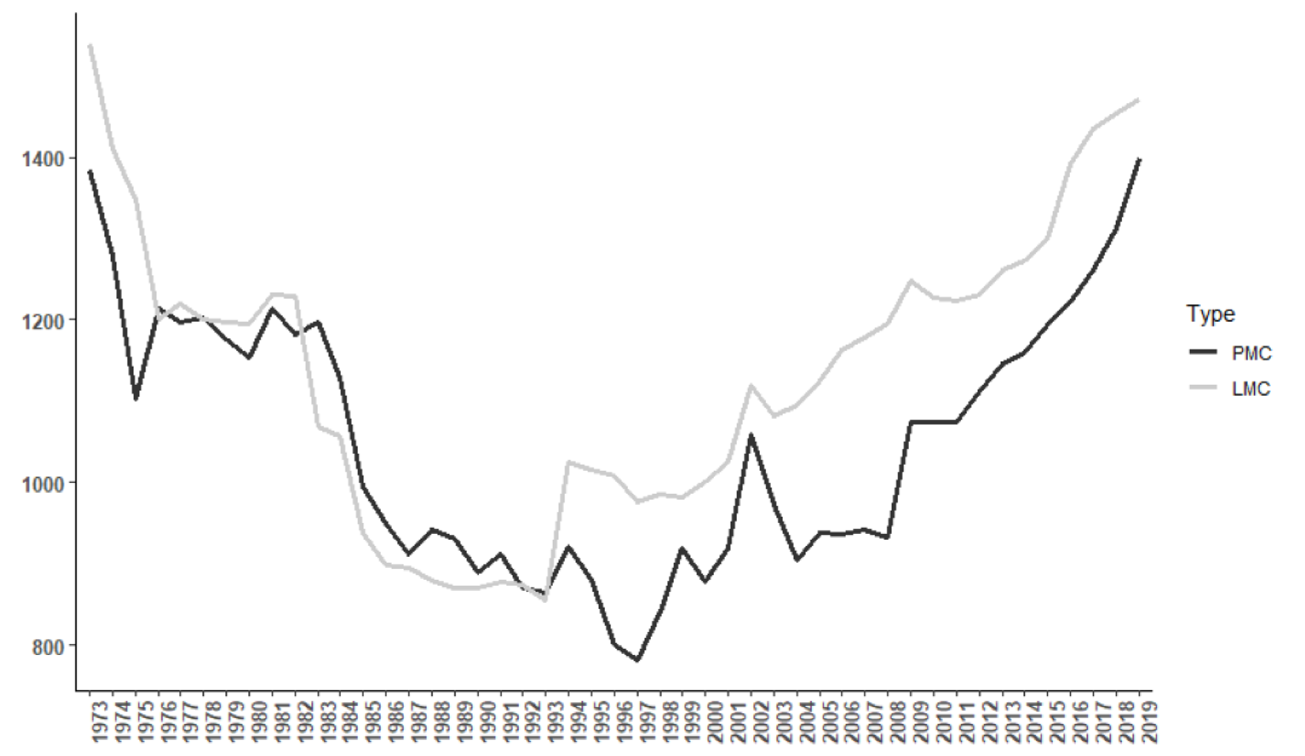

Figure 1: Time series variation in product and labor market concentration: This table presents the time-series variation in average product and labor market concentrations for all stocks traded in U.S. markets between 1972-2019. To construct the product market concentration (PMC) index, we sum up the squared ratios of firm sales to the total industry sales within each NAICS three-digit industry year. Similarly, to construct the labor market concentration (LMC) index, we sum up the squared ratios of the number of employees of the firm to the total number of employees with each NAICS three-digit industry year.

Empirical Methodology

Employ portfolio analysis to test the systematic relationship between labor market concentration (LMC) and cross-section of expected returns in U.S. between 1972-2019.

- At the beginning of each year, sort 3-digit NAICS industries into quintile portfolios based on the change in LMC measure as in Grullon et al., 2019), and then follow monthly equally- and value-weighted returns on these portfolios.
  - "High – Low" LMC portfolio takes long position in the highest LMC and short position of equal size in the lowest LMC quintile portfolio.
- Test for excess returns on the zero-investment High-Low LMC portfolio, controlling for the standard "4 factors": market (R_m), size (SMB), value (HML), and momentum (UMD)

$$R = \vartheta_0 + \vartheta_1 R_m + \vartheta_2 SMB + \vartheta_3 HML + \vartheta_4 UMD + \epsilon$$

$H_0 : \vartheta_0 = 0$
$H_A : \vartheta_0 < 0$

Factor Tests for Univariate Portfolio Returns (LMC)

Panel A: Equally Weighted Portfolios

	Low	2	3	4	High	High - Low
ϑ_0	0.0110***	0.0097***	0.0088***	0.0081***	0.0084***	-0.0026**
	(0.0010)	(0.0010)	(0.0010)	(0.0008)	(0.0009)	(0.0013)
ϑ_1	1.0519***	1.0126***	1.0175***	0.9838***	1.0209***	-0.0310
	(0.0223)	(0.0223)	(0.0225)	(0.0189)	(0.0198)	(0.0293)
ϑ_2	0.9523***	0.9593***	0.8522***	0.7468***	0.7735***	-0.1788***
	(0.0318)	(0.0318)	(0.0321)	(0.0269)	(0.0282)	(0.0417)
ϑ_3	-0.2359***	-0.2036***	-0.0373	0.1894***	0.2239***	0.4597***
	(0.0338)	(0.0338)	(0.0341)	(0.0286)	(0.0300)	(0.0443)
ϑ_4	-0.1522***	-0.1287***	-0.1548***	-0.1602***	-0.1733***	-0.0211
	(0.0219)	(0.0219)	(0.0221)	(0.0185)	(0.0195)	(0.0287)
Observations	563	563	563	563	563	563
Adj. R^2	0.8960	0.8901	0.8785	0.8979	0.8958	0.2197

Multivariate Portfolio Analysis Based on both LMC and PMC (3x3)

Panel A: Four Factor Return Premiums

	Low	2	High
Low	0.011	0.011	0.009
2	0.009	0.009	0.009
High	0.008	0.008	0.008
High-Low	-0.002	-0.003	-0.001
p(High-Low)	0.083	0.054	0.345

Summary of Empirical Results

- Results suggest an equally- (value-) weighted monthly premium of 26 (27) basis points for risks associated with labor market concentration (LMC), even after controlling for standard asset pricing factors.
  - economically meaningful as the risk premium associated with LMC corresponds to ¼ of the average monthly return in our sample, which is around 1%.
- Results hold in multivariate portfolio setting where we control for variation in shocks to product market concentration (PMC).
- Similar results with univariate portfolios based on PMC only, as well as sorting portfolios based on the levels of LMC or PMC instead of their changes.

Conclusions

- Theoretical model suggests market power in product and labor markets is associated with *lower* average stock returns, as firms' cash-flows and profits become safer.
- Empirical results confirm the above, and suggest a quarter of a percentage point excess returns in zero-investment market concentration portfolios.

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