Hedging Risk Factors

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Introduction/Discussion by Greg Duffee, Johns Hopkins

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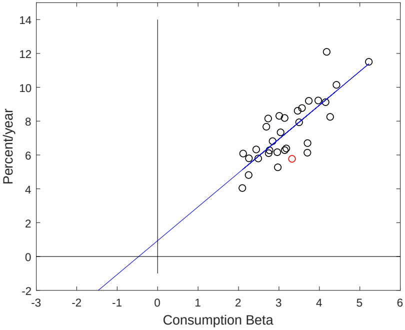
Are Macro Risks Priced in the Cross Section of Stocks?

- Two-pass regressions (or Fama-MacBeth) is common method
- An old and recent literature

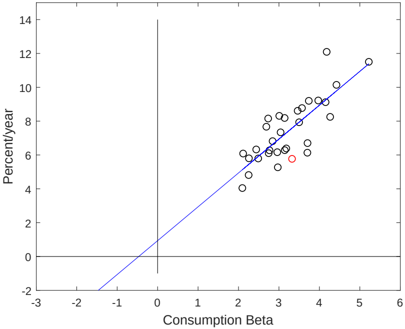
Chen, Roll, and Ross (1986)	IP, inflation, ...
Parker and Julliard (2005) Jagannathan and Wang (2007) Savov (2011) Kroencke (2017)	Aggregate consumption

Q4 to Q4 Consumption Growth



- Annual excess returns, 1960–2014, ME, BE/ME, investment deciles + market (data from Kroencke's web site)
- Consumption risk explains cross-section of mean returns?

Q4 to Q4 Consumption Growth



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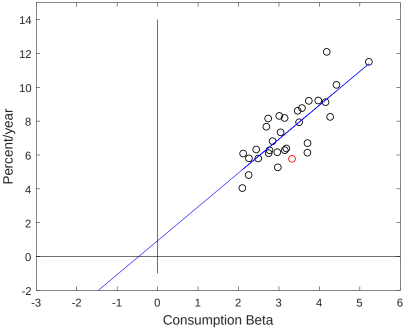

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Kroencke (2020 WP): You're wrong.

Solution: Get Better Betas!

- Bigger T for lower SEs (need higher frequency macro innovations)
- Bigger spread in macro betas
  - Sort on past macro betas, rather than ME, BE/ME, investment, ...
  - Even better: sort on predicted values of future betas rather than current betas (Pástor and Stambaugh 2003)
- This paper: Long histories of changes in monthly macro time series, portfolios created by an improvement in a beta sort

Hedge Portfolios

- GRS technology produces “best hedged” portfolio: zero factor exposure, max Sharpe
- Not commonly produced with 2-pass or F-M methods (but can)
- This paper: “good enough” hedged portfolio with construction you can explain to anyone

Can answer the question: what are the properties of returns to a well-diversified portfolio with minimal macro risk?

Changing the Terms of the Debate

- Success, as defined in previous literature

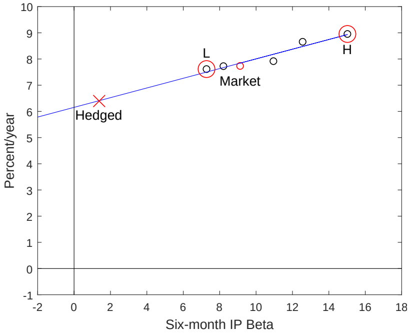
  Explaining cross sectional variation in mean returns to assets with variation across assets in exposures to fundamental economic risks

- Success, as defined in this paper

  Not explaining it

  Success hinges on whether the identified macro risks account for significant part of return to the stock market (otherwise haven't hedged much)

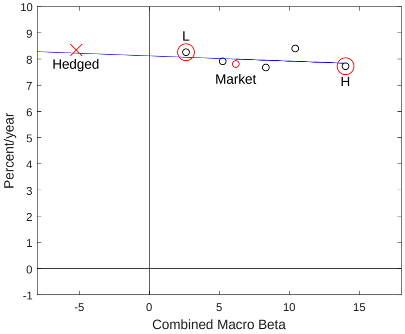
Hedging exposure to six-month change in IP, 1937:1–2020:1



- Black circles are $(\hat{\beta}, \overline{R^{ex}})$ for beta-sorted quintiles
- Small red circle is the market
- Blue line is OLS fit
- "Hedged" = market $+$ ("L" - "H")

Portfolio	1	2	3	4	5	Market
R^2	0.016	0.019	0.027	0.026	0.025	0.020

Hedging exposure to combined macro risks, 1936:8–2020:6



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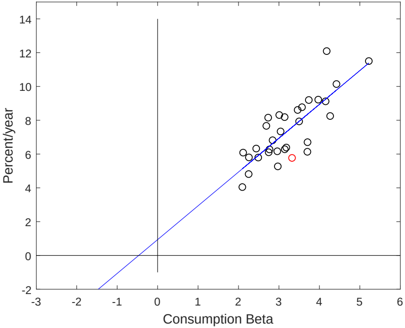
Portfolio	1	2	3	4	5	Market
R^2	0.003	0.010	0.019	0.023	0.028	0.013

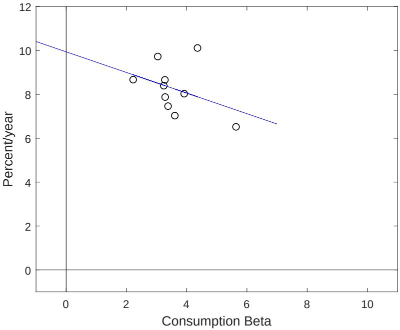
Q4 to Q4 Consumption Growth, Again



- A previous figure: testing whether exposure to Q4–Q4 consumption growth explains cross section of stock returns
- Portfolios are Fama-French type decile sorts

Criticism of Kleibergen and Zhan (2020) is there isn't enough evidence of differentiation in the consumption betas

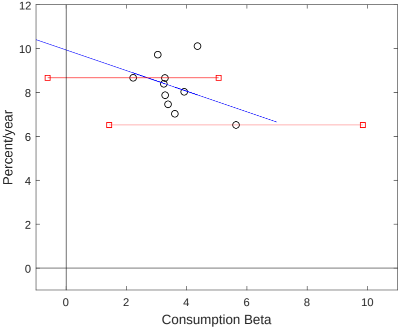
Q4 to Q4 Consumption Growth with Macro Risk Portfolios



- Annual returns to portfolios constructed by sorting on monthly exposure to combined macro risk
- Annual data 1949 through 2018
- Blue line is OLS fit

Contrast with tests using Fama-French type portfolios; price of risk changes sign

Q4 to Q4 Consumption Growth with Macro Risk Portfolios



- $+/-$ two SEs on smallest, largest fitted betas
- χ^2 test of equality of all betas not rejected at 10% level

Back to Kleibergen and Zhan (2020); no less accurate than betas with Fama-French portfolios, but risk premium cannot be identified

Recommendations

- Extend literature on statistical reliability of two-pass tests to your hedging (and hedged) porfolios – is this a simple, statistically robust method to produce (market return $-$ macro risk)?
- Get (even) better betas!

  Build model of predicted betas to generate even more dispersion