The Equity Premium and the One Percent

Authors: Alexis Toda and Kieran Walsh

Discussion: Daniel L. Greenwald (MIT Sloan)

AFA Meetings

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Summary

- Main question: how does cross-sectional inequality influence asset prices?
- Proposed mechanism: when high wealth (risk-tolerant) agents hold higher share of assets, risk premia fall.
  - Prove existence of mechanism in class of theoretical models.
- Empirical results show that component of top 1% income due to realized capital gains (`cgdiff`), forecasts lower returns.
  - Supported in international data using US 1% share.
  - Robustness check using IV from changes in top marginal tax rates.
- My take: highly plausible theoretical mechanism, novel forecasting variable, but link between the two not yet airtight.

Exciting Research Topic

- Greenwald, Lettau, Ludvigson (2016):
  - Short-horizon movements in stocks dominated by shifts in risk tolerance unrelated to macro fundamentals.
  - Modeled as time varying risk aversion for representative shareholder $\Longrightarrow$ large movements in RA needed to match data.
- Changing the allocation of assets across groups with different risk tolerances is plausible and promising alternative explanation.
- Authors provide elegant theoretical framework showing that shifting wealth toward risk tolerant agents lowers future equity returns.
  - Increases demand for risky assets, sending prices $\uparrow$, risk premia $\downarrow$.
  - In principle, changes in holdings without changes in wealth (e.g., margin requirements) should have a similar effect.

Mechanism vs. Data

- Top earners (denoted H) have the budget constraint

$$c_{H,t} + {p_t}' x_{H,t} \leq y_{H,t} + (p_t + d_t)' x_{H,t-1}$$

- Mechanism: top earner equity holdings $x^e_{H,t} \uparrow$ leads to returns $r^e_{t+1} \downarrow$.
  - Theoretical results: isolated increase in top earner income (e.g., $y_{H,t}$ or ${d_t}' x_{H,t-1}$) should increase $x^e_{H,t}$, lowering r^e_{t+1}.
- Empirical challenge: non-capital gains income $y_{H,t} + d_t' x_{H,t-1}$ appears nonstationary.
- Authors' approach: focus on realized capital gains: `cgdiff` rises when $p_t' x_{H,t-1} \uparrow$ or top earners sell more assets (decomposition?).
  - Not an arbitrary choice, `cgdiff` highly correlated with other measures of transitory component of top income share.

cgdiff

- Clear from empirical results that `cgdiff` effective as a forecasting variable, independent information from log P/D ratio, *cay*.
  - But what is it picking up?
- Direct effect of capital gains on wealth doesn't make sense: higher asset prices don't expand top earners' ability to buy those assets.
  - Instead, indirect path: top earners' wealth $\uparrow$ from other sources increases demand for risky assets, pushing up p^e_t, causing $\texttt{cgdiff}_t \uparrow$.
- Challenge: any *other* transitory force pushing risk tolerance $\uparrow$ or discount rates $\downarrow$ would also imply both $\texttt{cgdiff}_t \uparrow$ and $r^e_{t+1} \downarrow$.
  - Danger of omitted variable bias.
- IV estimates help to show that proposed pathway works, but not that it is the main source of variation in `cgdiff`.

Source of Forecasting Power

- `cgdiff` works well as a forecasting variable, even when paired with workhorses like $\log P/D$ and *cay*.
- Where does additional forecasting power come from?
  - Aggregate correlations or inequality-specific component?
- GLL: predictability comes from "e_a" shocks.
  - Shocks to total wealth unrelated to macro fundamentals (risk tolerance).
  - Estimated on aggregate data only.
- Show e_a drives forecasting power of $\log P/D$, *cay* using two-stage regressions

$$z_t = \text{const} + \underbrace{\gamma(L) e_{a,t}}_{\widehat{z}_t} + z_t^{\perp}$$

$$r_{t+1}^{ex} = \text{const} + \beta_1 \widehat{z}_t + \beta_2 z_t^{\perp} + \omega_{t+1}.$$

for $z \in \{\log P/D, cay\}$.

Orthogonalized Regression

- What about `cgdiff`? Use this approach to split `cgdiff` into portion explained by e_a shocks ($\widehat{\texttt{cgdiff}}$) and residual ($\texttt{cgdiff}^{\perp}$) in first stage.

Regression: $r^{ex}_{t+1} = \text{const} + \beta' x_t + \varepsilon_{t+1}$.

Constant	$\widehat{\texttt{cgdiff}}$	$\texttt{cgdiff}^{\perp}$	$\log P/D$	cay	$\bar{R}^2$
23.481***	-7.093**	-1.759			0.067
(6.654)	(2.997)	(2.113)			
48.045**	-6.307**	-0.081	-7.488		0.074
(19.117)	(3.038)	(1.997)	(5.149)		
21.462***	-6.024**	-2.613		1.823**	0.107
(6.560)	(2.918)	(2.012)		(0.881)	

Notes: Newey-West Standard Errors ($k = 4$) in parentheses. *, **, *** indicate significance at 10%, 5%, 1% level, respectively. First stage regression contains contemperaneous $e_{a,t}$ and three lags at annual frequency.

Orthogonalized Regression

- Result: $\widehat{\texttt{cgdiff}}$ (portion explained by e_a) drives ability of `cgdiff` to predict excess returns.

Regression: $r^{ex}_{t+1} = \text{const} + \beta' x_t + \varepsilon_{t+1}$.

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Orthogonalized Regression

- Conclusion: same fundamental (aggregate) source of predictability, although different (and intruiging) explanation.

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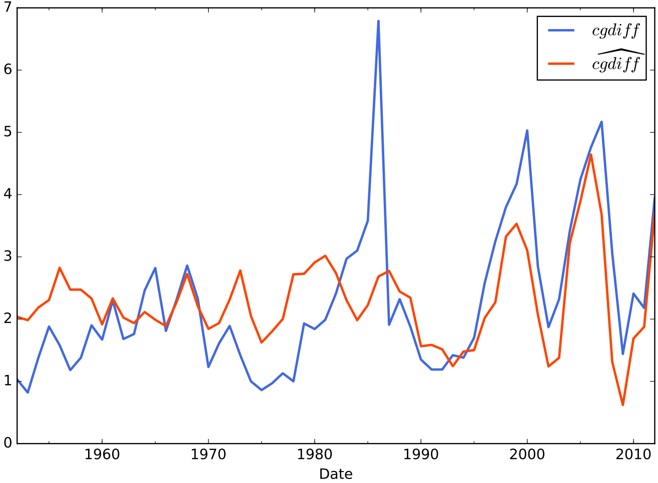
Orthogonalized Regression

- First stage $\bar{R}^2$ of 31%. Tracks `cgdiff` well, esp. in recent sample, with major exception of 1986 spike.



Conclusion

- Overall impression:
  - Interesting and highly plausible mechanism.
  - Novel and effective forecasting variable `cgdiff`.
  - But link between the two not completely clear.
- Possible steps forward:
  - More direct connection to portfolio x_t or non-CG income $(y_t, d_t' x_t)$.
  - Separating role of change in wealth vs. decision to realize gains.
  - Implications for risk-free rate or price of other assets held by risk averse?