## Stock Returns and Expected Business Conditions: A Half-Century of Direct Evidence

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#### Tension at the Equity Market Macro-Finance Interface

"... [if] cyclical variation in the market risk premium is present, ...we would expect to find evidence of it from forecasting regressions of excess returns on macroeconomic variables over business cycle horizons. Yet the most widely investigated predictive variables have not been macroeconomic variables, but financial indicators."

> (Lettau and Ludvigson, 2005, *Handbook of Financial Econometrics*)

#### Questions

# Do financial variables proxy for expected business conditions?

Do financial variables have predictive content after controlling directly for expected business conditions?

What of *non*-financial predictors?

#### Plan

Data, and survey-based business conditions expectations

Financial predictors and expected business conditions

Expected business conditions and expected excess returns - With vs. without CAY - Short vs. long horizon

Conclusions

#### Data: Excess Stock Returns, 1952:1-2003:2

CRSP value-weighted portfolio, 90-day U.S. Treasury Bill

#### Data: Financial Variables, 1952:1-2003:2

#### Dividend Yield, *DP* CRSP value-weighted portfolio

Default premium, *DEF* Broad corporate bond portfolio yield, Aaa yield

Term premium, *TERM* Ten-year U.S. Treasury yield, one-month Bill yield

#### Data: The Livingston Forecasts

#### Bi-annual surveys, conducted in June and December

#### Nominal GDP and CPI level expectations (median)

#### Final result:

Two-step-ahead real GDP growth forecasts,  $E_t g_{t+1,t+2}$ 

#### **Summary Statistics**

Livingston Business Conditions Expectations, and Financial Predictors							
	R <sub>t</sub>	$\underline{E}_t g_{t+1, t+2}$	$DP_t$	$DEF_t$	TERM <sub>t</sub>		
Mean	6.35	2.54	3.32	0.96	0.79		
Median	9.35	2.54	3.32	0.80	0.80		
Std. Deviation	22.30	1.51	1.11	0.44	1.03		
Skewness	-0.35	-0.64	-0.06	1.27	0.02		
Kurtosis	3.40	4.97	2.57	4.26	3.08		
Т	105	105	105	105	105		

 Table 1

 Summary Statistics for Excess Stock Returns,

 Livingston Business Conditions Expectations, and Financial Predictors

Notes: In the first column, we report summary statistics for excess returns  $(R_t)$  on the valueweighted CRSP index relative to 90-day U.S. Treasuries. In the second column, we report summary statistics for the median two-step-ahead bi-annual growth rate forecasts from the Livingston Survey of Professional Forecasters  $(E_t g_{t+1,t+2})$ . In the remaining columns, we report summary statistics for the dividend yield  $(DP_t)$ , default premium  $(DEF_t)$ , and the term premium  $(TERM_t)$ . The sample period is t = 1952:1-2003:2. We report all variables as annualized percentages.

#### Expected Business Conditions and Financial Predictors of Excess Returns

$$E_t g_{t+1,t+2} = \beta_0 + \beta_1 D P_t + \beta_2 T E R M_t + \beta_3 D E F_t + \varepsilon_{t+1,t+2}$$

Regressions of Business Conditions Expectations on Excess Stock Return Predictors							
Simple Regressions							
	$DP_t$	$DEF_t$	TERM <sub>t</sub>	$CAY_t$	<i>R</i> <sup>2</sup>		
Levels							
	-0.28 (0.26)				4.2%		
		0.40 (0.13)			16.2%		
			0.20 (0.09)		4.1%		
				-0.10 (0.10)	0.9%		
First Differences							
	-0.80 (0.15)				14.3%		
		0.14 (0.13)			1.00%		
			0.26 (0.07)		8.11%		
				-0.20 (0.10)	4.19%		
Multiple Regressions							
Levels	-0.34 (0.21)	0.50 (0.14)	0.09 (0.11)	-0.06 (0.13)	29.32%		
	-0.36 (0.19)	0.50 (0.14)	0.06 (0.09)		29.04%		
First Differences	-0.88 (0.22)	0.23 (0.12)	0.23 (0.05)	-0.07 (0.11)	25.94%		
	-0.95 (0.16)	0.23 (0.12)	0.23 (0.05)		25.61%		

Table 2

Notes: We report OLS estimates of regressions of real GDP growth expectations  $(E_t g_{t+1, t+2})$  on several predictors, 1952:1-2003:2, with Newey-West standard errors in parentheses.  $DP_t$ ,  $DEF_t$ ,  $TERM_t$  are as defined earlier, and  $CAY_t$  is the Lettau-Ludvigson (2001a, b) generalized consumption-wealth ratio. We standardize all variables. See text for details.

#### Expected Excess Returns and Expected Business Conditions

Fama-French (1989):  $R_{t+1,t+2} = \beta_0 + \beta_1 DP_t + \beta_2 TERM_t + \beta_3 DEF_t + \varepsilon_{t+1,t+2}$ 

> Generalization:  $R_{t+1,t+2} = \beta_0 + \beta_1 E_t g_{t+1,t+2}$   $+ \beta_2 DP_t + \beta_3 TERM_t + \beta_4 DEF_t + \varepsilon_{t+1,t+2}$

#### Basic Results

Table 3Regressions of Excess Stock Returns onBusiness Conditions Expectations and Various Additional Predictors

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$E_t g_{t+1,t+2}$	$DP_t$	DEF <sub>t</sub>	TERM <sub>t</sub>	CAY <sub>t</sub>	$R^2$		
-0.22 (0.08)					4.74%		
	0.19 (0.10)				3.62%		
		-0.02 (0.08)			0.00%		
			0.10 (0.08)		0.95%		
				0.24 (0.07)	5.89%		
Multiple Regressions							
-0.21 (0.09)	0.17 (0.10)	-0.01 (0.09)	0.17 (0.07)		9.41%		
	0.25 (0.10)	-0.11 (0.07)	0.15 (0.07)		6.28%		
-0.20 (0.08)				0.22 (0.08)	9.70%		
	0.18 (0.11)	-0.10 (0.07)	-0.09 (0.09)	0.17 (0.10)	8.56%		
-0.20 (0.10)	0.12 (0.10)	0.00 (0.09)	0.11 (0.09)	0.16 (0.10)	11.35%		

Simple Regressions

Notes: We report OLS estimates of regressions of excess returns  $(R_{t+1,t+2})$  on various predictors, 1952:1-2003:2, with Newey-West standard errors in parentheses. We standardize all variables, which facilitates comparison of coefficients across different predictors. See text for details.

#### Including the Consumption/Wealth Ratio

Lettau-Ludvigson Generalized consumption/wealth ratio,  $CAY_{t}$ 

$$R_{t+1,t+2} = \beta_0 + \beta_1 E_t g_{t+1,t+2}$$
$$+ \beta_2 DP_t + \beta_3 TERM_t + \beta_4 DEF_t$$
$$+ \beta_5 CAY_t$$
$$+ \varepsilon_{t+1,t+2}$$

#### Concluding Remarks

#### Two key excess return predictors:

## Livingston $E_t g_{t+1, t+2}$

#### Lettau-Ludvigson $CAY_t$

#### **Concluding Remarks**

#### Two key excess return predictors:

Livingston  $E_t g_{t+1, t+2}$ (RISK)

Lettau-Ludvigson  $CAY_t$ 

#### Concluding Remarks

Two key excess return predictors:

Livingston  $E_t g_{t+1, t+2}$ (RISK)

Lettau-Ludvigson CAY<sub>t</sub> (RISK AVERSION)

#### In Particular...

#### $CAY_t$ is *not* a complete predictor killer

### $E_t g_{t+1, t+2}$ is a clear empirical predictor, *linked to risk*