Accounting Data and Stock Market Prediction

Discussant: Andrei S. Gonçalves[1]

[1]Finance Department
The Ohio State University

May 2017

Outline

The Paper

The Predictors

The Predictability Evidence

The Investors' Inattention Evidence

Final Remarks

The Predictors in a Nutshell...

- Aggregate 28 accounting variables
- Separate them into 8 groups (1 variable per group)
  - Assets, Equity, Liabilities, Income, Revenue, Taxes, Extraordinary Items, and Dividends.
- Detrend the aggregates
- Create indexes (EW, PCA and PLS)
- Study the predictability of such indexes on future returns

The Predictors in a Nutshell...

- Aggregate 28 accounting variables
- Separate them into 8 groups (1 variable per group)
  - Assets, Equity, Liabilities, Income, Revenue, Taxes, Extraordinary Items, and Dividends.
- Detrend the aggregates
- Create indexes (EW, PCA and PLS)
- Study the predictability of such indexes on future returns

The Predictors in a Nutshell...

- Aggregate 28 accounting variables
- Separate them into 8 groups (1 variable per group)
  - Assets, Equity, Liabilities, Income, Revenue, Taxes, Extraordinary Items, and Dividends.
- Detrend the aggregates
- Create indexes (EW, PCA and PLS)
- Study the predictability of such indexes on future returns

The Predictors in a Nutshell...

- Aggregate 28 accounting variables
- Separate them into 8 groups (1 variable per group)
  - Assets, Equity, Liabilities, Income, Revenue, Taxes, Extraordinary Items, and Dividends.
- Detrend the aggregates
- Create indexes (EW, PCA and PLS)
- Study the predictability of such indexes on future returns

The Predictors in a Nutshell...

- Aggregate 28 accounting variables
- Separate them into 8 groups (1 variable per group)
  - Assets, Equity, Liabilities, Income, Revenue, Taxes, Extraordinary Items, and Dividends.
- Detrend the aggregates
- Create indexes (EW, PCA and PLS)
- Study the predictability of such indexes on future returns

The Empirical Evidence in a Nutshell...

1. There is (out of sample) predictability:
   (a) PCA or PLS (R^2 up to 3.62%)
   (b) Indexes are crucial
   (c) Predictability is higher than with standard variables
   (d) It is really about the short-term (less than 1 year)
   (e) Large economic significance
2. The predictability is related to investors' inattention

The Empirical Evidence in a Nutshell...

1. There is (out of sample) predictability:
   (a) PCA or PLS (R^2 up to 3.62%)
   (b) Indexes are crucial
   (c) Predictability is higher than with standard variables
   (d) It is really about the short-term (less than 1 year)
   (e) Large economic significance
2. The predictability is related to investors' inattention

The Empirical Evidence in a Nutshell...

1. There is (out of sample) predictability:
   (a) PCA or PLS (R^2 up to 3.62%)
   (b) Indexes are crucial
   (c) Predictability is higher than with standard variables
   (d) It is really about the short-term (less than 1 year)
   (e) Large economic significance
2. The predictability is related to investors' inattention

The Empirical Evidence in a Nutshell...

1. There is (out of sample) predictability:
   (a) PCA or PLS (R^2 up to 3.62%)
   (b) Indexes are crucial
   (c) Predictability is higher than with standard variables
   (d) It is really about the short-term (less than 1 year)
   (e) Large economic significance
2. The predictability is related to investors' inattention

The Empirical Evidence in a Nutshell...

1. There is (out of sample) predictability:

   (a) PCA or PLS (R^2 up to 3.62%)

   (b) Indexes are crucial

   (c) Predictability is higher than with standard variables

   (d) It is really about the short-term (less than 1 year)

   (e) Large economic significance

2. The predictability is related to investors' inattention

The Empirical Evidence in a Nutshell...

1. There is (out of sample) predictability:
   (a) PCA or PLS (R^2 up to 3.62%)
   (b) Indexes are crucial
   (c) Predictability is higher than with standard variables
   (d) It is really about the short-term (less than 1 year)
   (e) Large economic significance
2. The predictability is related to investors' inattention

The Empirical Evidence in a Nutshell...

1. There is (out of sample) predictability:
   (a) PCA or PLS (R^2 up to 3.62%)
   (b) Indexes are crucial
   (c) Predictability is higher than with standard variables
   (d) It is really about the short-term (less than 1 year)
   (e) Large economic significance
2. The predictability is related to investors' inattention
   (a) Higher for "low attention" stocks (Google searches)
   (b) Inattention predicts "forecasting accuracy"

The Empirical Evidence in a Nutshell...

1. There is (out of sample) predictability:
   (a) PCA or PLS (R^2 up to 3.62%)
   (b) Indexes are crucial
   (c) Predictability is higher than with standard variables
   (d) It is really about the short-term (less than 1 year)
   (e) Large economic significance
2. The predictability is related to investors' inattention
   (a) Higher for "low attention" stocks (Google searches)
   (b) Inattention predicts "forecasting accuracy"

The Empirical Evidence in a Nutshell...

1. There is (out of sample) predictability:
   (a) PCA or PLS (R^2 up to 3.62%)
   (b) Indexes are crucial
   (c) Predictability is higher than with standard variables
   (d) It is really about the short-term (less than 1 year)
   (e) Large economic significance
2. The predictability is related to investors' inattention
   (a) Higher for "low attention" stocks (Google searches)
   (b) Inattention predicts "forecasting accuracy"

The Contribution in a Nutshell...

1. Add to the out of sample predictability evidence after Welch and Goyal (2008)
   - Rapach et al. (2010); Ferreira and Santa-Clara (2011); Kelly and Pruitt (2013); Huang et al. (2015); Rapach et al. (2016)
2. Add to the literature linking slow information diffusion to predictability
   - Hong and Stein (1999); Peng and Xiong (2006); Cohen and Franzzini (2008); Dellavigna and Pollet (2009); Hirshleifer et al. (2009); Hong et al. (2007); Loh (2010); Hirshleifer et al. (2011); Li and Yu (2012).

The Contribution in a Nutshell...

1. Add to the out of sample predictability evidence after Welch and Goyal (2008)
   - Rapach et al. (2010); Ferreira and Santa-Clara (2011); Kelly and Pruitt (2013); Huang et al. (2015); Rapach et al. (2016)
2. Add to the literature linking slow information diffusion to predictability
   - Hong and Stein (1999); Peng and Xiong (2006); Cohen and Franzzini (2008); Dellavigna and Pollet (2009); Hirshleifer et al. (2009); Hong et al. (2007); Loh (2010); Hirshleifer et al. (2011); Li and Yu (2012).

Outline

The Accounting Variables

- Motivation?
- Should we be looking at detrended variables or ratios? (some theories suggest ratios)
- (If) Imperfect detrend $\Rightarrow$ all variables capture the same thing (correlation matrix?)
- Cross-sectionally summing can change the interpretation of predictors:

The Accounting Variables

- Motivation?
- Should we be looking at detrended variables or ratios? (some theories suggest ratios)
- (If) Imperfect detrend $\Rightarrow$ all variables capture the same thing (correlation matrix?)
- Cross-sectionally summing can change the interpretation of predictors:

The Accounting Variables

- Motivation?
- Should we be looking at detrended variables or ratios? (some theories suggest ratios)
- (If) Imperfect detrend $\Rightarrow$ all variables capture the same thing (correlation matrix?)
- Cross-sectionally summing can change the interpretation of predictors:

The Accounting Variables

- Motivation?
- Should we be looking at detrended variables or ratios? (some theories suggest ratios)
- (If) Imperfect detrend $\Rightarrow$ all variables capture the same thing (correlation matrix?)
- Cross-sectionally summing can change the interpretation of predictors:
    - There are trends on listings/delistings (Doidge, Karolyi, and Stulz, 2017)
    - Might be capturing something different from what is intended
    - Could calculate $\sum F / \sum ME$ and use $\sum ME_t / \sum ME_{t-1}$ (for firms available at $t-1$ and t) to get aggregate F

The Accounting Variables

- Motivation?
- Should we be looking at detrended variables or ratios? (some theories suggest ratios)
- (If) Imperfect detrend $\Rightarrow$ all variables capture the same thing (correlation matrix?)
- Cross-sectionally summing can change the interpretation of predictors:
  - There are trends on listings/delistings (Doidge, Karolyi, and Stulz, 2017)
  - Might be capturing something different from what is intended
  - Could calculate $\sum F / \sum ME$ and use $\sum ME_t / \sum ME_{t-1}$ (for firms available at $t-1$ and t) to get aggregate F

The Accounting Variables

- Motivation?
- Should we be looking at detrended variables or ratios? (some theories suggest ratios)
- (If) Imperfect detrend $\Rightarrow$ all variables capture the same thing (correlation matrix?)
- Cross-sectionally summing can change the interpretation of predictors:
    - There are trends on listings/delistings (Doidge, Karolyi, and Stulz, 2017)
    - Might be capturing something different from what is intended
    - Could calculate $\sum F / \sum ME$ and use $\sum ME_t / \sum ME_{t-1}$ (for firms available at $t-1$ and t) to get aggregate F

The Accounting Variables

- Motivation?
- Should we be looking at detrended variables or ratios? (some theories suggest ratios)
- (If) Imperfect detrend $\Rightarrow$ all variables capture the same thing (correlation matrix?)
- Cross-sectionally summing can change the interpretation of predictors:
  - There are trends on listings/delistings (Doidge, Karolyi, and Stulz, 2017)
  - Might be capturing something different from what is intended
  - Could calculate $\sum F / \sum ME$ and use $\sum ME_t / \sum ME_{t-1}$ (for firms available at $t-1$ and t) to get aggregate F

Outline

The Paper

The Predictors

The Predictability Evidence

The Investors' Inattention Evidence

Final Remarks

The Empirical Evidence

1. There is (out of sample) predictability:
   (a) PCA or PLS (R^2 up to 3.62%)
   (b) Indexes are crucial
   (c) Predictability is higher than with standard variables
   (d) It is really about the short-term (less than 1 year)
   (e) Large economic significance
2. The predictability is related to investors' inattention
   (a) Higher for "low attention" stocks (Google searches)
   (b) Inattention predicts "forecasting accuracy"

Could Improve the Comparison to Recent Evidence

	This Paper					Rapach et al. (2010)			
	Trend	1990	1995	2000	2005		Period 1	Period 2	Period 3
EW	Linear	-0.1%	-0.0%	-0.0%	2.3%	Mean	3.6%	1.2%	3.0%
	Stochastic	-1.3%	-1.1%	-0.9%	3.1%	Median	3.0%	1.5%	1.6%
PCA	Linear	0.8%	1.1%	1.7%	2.6%	Trimmed	3.5%	1.2%	3.0%
	Stochastic	0.7%	1.3%	1.4%	3.6%	DMSPE(1)	3.5%	1.1%	2.6%
PLS	Linear	1.2%	2.6%	3.0%	2.5%	DMSPE(0.9)	3.5%	1.0%	2.7%
	Stochastic	-1.3%	2.3%	2.0%	0.3%	Mean, CT	3.2%	1.2%	2.4%
Average	Linear	1.4%	1.9%	1.9%	1.3%	Average	3.4%	1.2%	2.5%
	Stochastic	1.0%	1.7%	1.4%	2.2%				

- Could combine predictors following Rapach et al. (2010)
- Do these accounting variables add to standard variables?

Could Improve the Comparison to Recent Evidence

	This Paper					Rapach et al. (2010)			
	Trend	1990	1995	2000	2005		Period 1	Period 2	Period 3
EW	Linear	-0.1%	-0.0%	-0.0%	2.3%	Mean	3.6%	1.2%	3.0%
	Stochastic	-1.3%	-1.1%	-0.9%	3.1%	Median	3.0%	1.5%	1.6%
PCA	Linear	0.8%	1.1%	1.7%	2.6%	Trimmed	3.5%	1.2%	3.0%
	Stochastic	0.7%	1.3%	1.4%	3.6%	DMSPE(1)	3.5%	1.1%	2.6%
PLS	Linear	1.2%	2.6%	3.0%	2.5%	DMSPE(0.9)	3.5%	1.0%	2.7%
	Stochastic	-1.3%	2.3%	2.0%	0.3%	Mean, CT	3.2%	1.2%	2.4%
Average	Linear	1.4%	1.9%	1.9%	1.3%	Average	3.4%	1.2%	2.5%
	Stochastic	1.0%	1.7%	1.4%	2.2%				

- Could combine predictors following Rapach et al. (2010)
- Do these accounting variables add to standard variables?

Could Improve the Comparison to Recent Evidence

	This Paper					Rapach et al. (2010)			
	Trend	1990	1995	2000	2005		Period 1	Period 2	Period 3
EW	Linear	-0.1%	-0.0%	-0.0%	2.3%	Mean	3.6%	1.2%	3.0%
	Stochastic	-1.3%	-1.1%	-0.9%	3.1%	Median	3.0%	1.5%	1.6%
PCA	Linear	0.8%	1.1%	1.7%	2.6%	Trimmed	3.5%	1.2%	3.0%
	Stochastic	0.7%	1.3%	1.4%	3.6%	DMSPE(1)	3.5%	1.1%	2.6%
PLS	Linear	1.2%	2.6%	3.0%	2.5%	DMSPE(0.9)	3.5%	1.0%	2.7%
	Stochastic	-1.3%	2.3%	2.0%	0.3%	Mean, CT	3.2%	1.2%	2.4%
Average	Linear	1.4%	1.9%	1.9%	1.3%	Average	3.4%	1.2%	2.5%
	Stochastic	1.0%	1.7%	1.4%	2.2%				

- Could combine predictors following Rapach et al. (2010)
- Do these accounting variables add to standard variables?
  - Rapach et al. (2010) combinations are better than any of the variables in Welch and Goyal (2008)
  - Should compare with combinations
  - Do your indexes help when adding both in regressions?

Could Improve the Comparison to Recent Evidence

	This Paper					Rapach et al. (2010)			
	Trend	1990	1995	2000	2005		Period 1	Period 2	Period 3
EW	Linear	-0.1%	-0.0%	-0.0%	2.3%	Mean	3.6%	1.2%	3.0%
	Stochastic	-1.3%	-1.1%	-0.9%	3.1%	Median	3.0%	1.5%	1.6%
PCA	Linear	0.8%	1.1%	1.7%	2.6%	Trimmed	3.5%	1.2%	3.0%
	Stochastic	0.7%	1.3%	1.4%	3.6%	DMSPE(1)	3.5%	1.1%	2.6%
PLS	Linear	1.2%	2.6%	3.0%	2.5%	DMSPE(0.9)	3.5%	1.0%	2.7%
	Stochastic	-1.3%	2.3%	2.0%	0.3%	Mean, CT	3.2%	1.2%	2.4%
Average	Linear	1.4%	1.9%	1.9%	1.3%	Average	3.4%	1.2%	2.5%
	Stochastic	1.0%	1.7%	1.4%	2.2%				

- Could combine predictors following Rapach et al. (2010)
- Do these accounting variables add to standard variables?
  - Rapach et al. (2010) combinations are better than any of the variables in Welch and Goyal (2008)
  - Should compare with combinations
  - Do your indexes help when adding both in regressions?

Could Improve the Comparison to Recent Evidence

	This Paper					Rapach et al. (2010)			
	Trend	1990	1995	2000	2005		Period 1	Period 2	Period 3
EW	Linear	-0.1%	-0.0%	-0.0%	2.3%	Mean	3.6%	1.2%	3.0%
	Stochastic	-1.3%	-1.1%	-0.9%	3.1%	Median	3.0%	1.5%	1.6%
PCA	Linear	0.8%	1.1%	1.7%	2.6%	Trimmed	3.5%	1.2%	3.0%
	Stochastic	0.7%	1.3%	1.4%	3.6%	DMSPE(1)	3.5%	1.1%	2.6%
PLS	Linear	1.2%	2.6%	3.0%	2.5%	DMSPE(0.9)	3.5%	1.0%	2.7%
	Stochastic	-1.3%	2.3%	2.0%	0.3%	Mean, CT	3.2%	1.2%	2.4%
Average	Linear	1.4%	1.9%	1.9%	1.3%	Average	3.4%	1.2%	2.5%
	Stochastic	1.0%	1.7%	1.4%	2.2%				

- Could combine predictors following Rapach et al. (2010)
- Do these accounting variables add to standard variables?
  - Rapach et al. (2010) combinations are better than any of the variables in Welch and Goyal (2008)
  - Should compare with combinations
  - Do your indexes help when adding both in regressions?

Could Improve the Comparison to Recent Evidence

	This Paper					Rapach et al. (2010)			
	Trend	1990	1995	2000	2005		Period 1	Period 2	Period 3
EW	Linear	-0.1%	-0.0%	-0.0%	2.3%	Mean	3.6%	1.2%	3.0%
	Stochastic	-1.3%	-1.1%	-0.9%	3.1%	Median	3.0%	1.5%	1.6%
PCA	Linear	0.8%	1.1%	1.7%	2.6%	Trimmed	3.5%	1.2%	3.0%
	Stochastic	0.7%	1.3%	1.4%	3.6%	DMSPE(1)	3.5%	1.1%	2.6%
PLS	Linear	1.2%	2.6%	3.0%	2.5%	DMSPE(0.9)	3.5%	1.0%	2.7%
	Stochastic	-1.3%	2.3%	2.0%	0.3%	Mean, CT	3.2%	1.2%	2.4%
Average	Linear	1.4%	1.9%	1.9%	1.3%	Average	3.4%	1.2%	2.5%
	Stochastic	1.0%	1.7%	1.4%	2.2%				

- Could combine predictors following Rapach et al. (2010)
- Do these accounting variables add to standard variables?
  - Rapach et al. (2010) combinations are better than any of the variables in Welch and Goyal (2008)
  - Should compare with combinations
  - Do your indexes help when adding both in regressions?

Outline

The Empirical Evidence

1. There is (out of sample) predictability:
   (a) PCA or PLS (R^2 up to 3.62%)
   (b) Indexes are crucial
   (c) Predictability is higher than with standard variables
   (d) It is really about the short-term (less than 1 year)
   (e) Large economic significance
2. The predictability is related to investors' inattention
   (a) Higher for "low attention" stocks (Google searches)
   (b) Inattention predicts "forecasting accuracy"

Volatility Impacts Forecasting Accuracy

	Low Attention	(3)	(5)	(7)	High Attention	Average
Small	4.7%	1.3%	3.4%	4.6%	3.25%	3.8%
(5)	4.7%	8.6%	4.5%	5.9%	5.3%	5.9%
Large	15.3%	5.2%	6.3%	3.0%	5.3%	6.3%
	6.6%	5.1%	4.4%	5.0%	4.8%	

- Control = size within firm. Should sort on $ME_{it} - \overline{ME}_i$
- Volatility impacts forecasting accuracy
- If $\rho\,(\text{Attention, Volatility}) > 0$
- Same logic applies to firm level analysis

Volatility Impacts Forecasting Accuracy

	Low Attention	(3)	(5)	(7)	High Attention	Average
Small	4.7%	1.3%	3.4%	4.6%	3.25%	3.8%
(5)	4.7%	8.6%	4.5%	5.9%	5.3%	5.9%
Large	15.3%	5.2%	6.3%	3.0%	5.3%	6.3%
	6.6%	5.1%	4.4%	5.0%	4.8%	

- Control = size within firm. Should sort on $ME_{it} - \overline{ME}_i$
- Volatility impacts forecasting accuracy
- If $\rho\,(\text{Attention, Volatility}) > 0$
- Same logic applies to firm level analysis

Volatility Impacts Forecasting Accuracy

	Low Attention	(3)	(5)	(7)	High Attention	Average
Small	4.7%	1.3%	3.4%	4.6%	3.25%	3.8%
(5)	4.7%	8.6%	4.5%	5.9%	5.3%	5.9%
Large	15.3%	5.2%	6.3%	3.0%	5.3%	6.3%
	6.6%	5.1%	4.4%	5.0%	4.8%	

- Control = size within firm. Should sort on $ME_{it} - \overline{ME}_i$
- Volatility impacts forecasting accuracy
  - $R^2 = \sigma^2(\mathbb{E}[R]) / \sigma^2(R)$
- If $\rho\,(\text{Attention, Volatility}) > 0$
- Same logic applies to firm level analysis

Volatility Impacts Forecasting Accuracy

	Low Attention	(3)	(5)	(7)	High Attention	Average
Small	4.7%	1.3%	3.4%	4.6%	3.25%	3.8%
(5)	4.7%	8.6%	4.5%	5.9%	5.3%	5.9%
Large	15.3%	5.2%	6.3%	3.0%	5.3%	6.3%
	6.6%	5.1%	4.4%	5.0%	4.8%	

- Control = size within firm. Should sort on $ME_{it} - \overline{ME}_i$
- Volatility impacts forecasting accuracy
  - $R^2 = \sigma^2 \left(\mathbb{E}\left[R\right]\right) / \sigma^2 \left(R\right)$
- If $\rho\left(\text{Attention, Volatility}\right) > 0$
- Same logic applies to firm level analysis

Volatility Impacts Forecasting Accuracy

	Low Attention	(3)	(5)	(7)	High Attention	Average
Small	4.7%	1.3%	3.4%	4.6%	3.25%	3.8%
(5)	4.7%	8.6%	4.5%	5.9%	5.3%	5.9%
Large	15.3%	5.2%	6.3%	3.0%	5.3%	6.3%
	6.6%	5.1%	4.4%	5.0%	4.8%	

- Control = size within firm. Should sort on $ME_{it} - \overline{ME}_i$
- Volatility impacts forecasting accuracy
  - $R^2 = \sigma^2(\mathbb{E}[R]) / \sigma^2(R)$
- If $\rho(\text{Attention}, \text{Volatility}) > 0$
  - R^2 lower for high attention stocks ($\neq$ mechanism)
- Same logic applies to firm level analysis

Volatility Impacts Forecasting Accuracy

	Low Attention	(3)	(5)	(7)	High Attention	Average
Small	4.7%	1.3%	3.4%	4.6%	3.25%	3.8%
(5)	4.7%	8.6%	4.5%	5.9%	5.3%	5.9%
Large	15.3%	5.2%	6.3%	3.0%	5.3%	6.3%
	6.6%	5.1%	4.4%	5.0%	4.8%	

- Control = size within firm. Should sort on $ME_{it} - \overline{ME}_i$
- Volatility impacts forecasting accuracy
  - $R^2 = \sigma^2 (\mathbb{E}[R]) / \sigma^2 (R)$
- If $\rho (\mathrm{Attention}, \mathrm{Volatility}) > 0$
  - R^2 lower for high attention stocks ($\neq$ mechanism)
- Same logic applies to firm level analysis

Volatility Impacts Forecasting Accuracy

	Low Attention	(3)	(5)	(7)	High Attention	Average
Small	4.7%	1.3%	3.4%	4.6%	3.25%	3.8%
(5)	4.7%	8.6%	4.5%	5.9%	5.3%	5.9%
Large	15.3%	5.2%	6.3%	3.0%	5.3%	6.3%
	6.6%	5.1%	4.4%	5.0%	4.8%	

- Control = size within firm. Should sort on $ME_{it} - \overline{ME}_i$
- Volatility impacts forecasting accuracy
  - $R^2 = \sigma^2 \left(\mathbb{E}\left[R\right]\right) / \sigma^2 \left(R\right)$
- If $\rho\left(\text{Attention}, \text{Volatility}\right) > 0$
  - R^2 lower for high attention stocks ($\neq$ mechanism)
- Same logic applies to firm level analysis
  - $\sigma^2 = \mathbb{E}\left[\left(R - \mathbb{E}\left[R\right]\right)^2\right]$, but $y = \log$ of $\left(R - \mathbb{E}\left[R\right]\right)^2$

Volatility Impacts Forecasting Accuracy

	Low Attention	(3)	(5)	(7)	High Attention	Average
Small	4.7%	1.3%	3.4%	4.6%	3.25%	3.8%
(5)	4.7%	8.6%	4.5%	5.9%	5.3%	5.9%
Large	15.3%	5.2%	6.3%	3.0%	5.3%	6.3%
	6.6%	5.1%	4.4%	5.0%	4.8%	

- Control = size within firm. Should sort on $ME_{it} - \overline{ME}_i$
- Volatility impacts forecasting accuracy
  - $R^2 = \sigma^2(\mathbb{E}[R])/\sigma^2(R)$
- If $\rho(\text{Attention}, \text{Volatility}) > 0$
  - R^2 lower for high attention stocks ($\neq$ mechanism)
- Same logic applies to firm level analysis
  - $\sigma^2 = \mathbb{E}\left[(R - \mathbb{E}[R])^2\right]$, but $y = \log \text{ of } (R - \mathbb{E}[R])^2$

Investor's Inattention has a Second Implication

This paper: "If investors quickly process and trade on new information, then publicly available data such as accounting numbers should not be able to predict asset returns"

Investor's Inattention has a Second Implication

This paper: "If investors quickly process and trade on new information, then publicly available data such as accounting numbers ~~should not be able to predict asset returns~~ predict returns only to the extent that they predict risk prices/quantities"

- Accounting numbers correlate with economic quantities

- Investor Inattention $\Rightarrow$ no predictive power over risk prices/quantities

Investor's Inattention has a Second Implication

This paper: "If investors quickly process and trade on new information, then publicly available data such as accounting numbers ~~should not be able to predict asset returns~~ predict returns only to the extent that they predict risk prices/quantities"

- Accounting numbers correlate with economic quantities
  - Can they predict risk prices and/or risk quantities? Yes!
  - Q-theory (Cochrane (1991), Liu, Whited, and Zhang (2009))
- Investor Inattention $\Rightarrow$ no predictive power over risk prices/quantities

Investor's Inattention has a Second Implication

This paper: "If investors quickly process and trade on new information, then publicly available data such as accounting numbers ~~should not be able to predict asset returns~~ predict returns only to the extent that they predict risk prices/quantities"

- Accounting numbers correlate with economic quantities
  - Can they predict risk prices and/or risk quantities? Yes!
  - Q-theory (Cochrane (1991), Liu, Whited, and Zhang (2009))
- Investor Inattention ⇒ no predictive power over risk prices/quantities

Investor's Inattention has a Second Implication

This paper: "If investors quickly process and trade on new information, then publicly available data such as accounting numbers ~~should not be able to predict asset returns~~ predict returns only to the extent that they predict risk prices/quantities"

- Accounting numbers correlate with economic quantities
  - Can they predict risk prices and/or risk quantities? Yes!
  - Q-theory (Cochrane (1991), Liu, Whited, and Zhang (2009))
- Investor Inattention ⇒ no predictive power over risk prices/quantities

Investor's Inattention has a Second Implication

This paper: "If investors quickly process and trade on new information, then publicly available data such as accounting numbers ~~should not be able to predict asset returns~~ predict returns only to the extent that they predict risk prices/quantities"

- Accounting numbers correlate with economic quantities
  - Can they predict risk prices and/or risk quantities? Yes!
  - Q-theory (Cochrane (1991), Liu, Whited, and Zhang (2009))
- Investor Inattention ⇒ no predictive power over risk prices/quantities
  - The approach in Rapach et al. (2010) can be useful
  - However, they show the opposite (their variables predict economic fundamentals)

Investor's Inattention has a Second Implication

This paper: "If investors quickly process and trade on new information, then publicly available data such as accounting numbers ~~should not be able to predict asset returns~~ predict returns only to the extent that they predict risk prices/quantities"

- Accounting numbers correlate with economic quantities
  - Can they predict risk prices and/or risk quantities? Yes!
  - Q-theory (Cochrane (1991), Liu, Whited, and Zhang (2009))
- Investor Inattention ⇒ no predictive power over risk prices/quantities
  - The approach in Rapach et al. (2010) can be useful
  - However, they show the opposite (their variables predict economic fundamentals)

Investor's Inattention has a Second Implication

This paper: "If investors quickly process and trade on new information, then publicly available data such as accounting numbers ~~should not be able to predict asset returns~~ predict returns only to the extent that they predict risk prices/quantities"

- Accounting numbers correlate with economic quantities
  - Can they predict risk prices and/or risk quantities? Yes!
  - Q-theory (Cochrane (1991), Liu, Whited, and Zhang (2009))
- Investor Inattention ⇒ no predictive power over risk prices/quantities
  - The approach in Rapach et al. (2010) can be useful
  - However, they show the opposite (their variables predict economic fundamentals)

Outline

The Paper

The Predictors

The Predictability Evidence

The Investors' Inattention Evidence

Final Remarks

Final Remarks

- Paper is very interesting: important topic!
- It would be useful to:
- Good luck!

Final Remarks

- Paper is very interesting: important topic!
- It would be useful to:
  - Improve the measurement of the predictive variables
  - Demonstrate that new variables/approach add to the recent predictability evidence (Rapach et al. (2010))
  - Improve the tests for the investors' inattention hypothesis
- Good luck!

Final Remarks

- Paper is very interesting: important topic!
- It would be useful to:
  - Improve the measurement of the predictive variables
  - Demonstrate that new variables/approach add to the recent predictability evidence (Rapach et al. (2010))
  - Improve the tests for the investors' inattention hypothesis
- Good luck!

Final Remarks

- Paper is very interesting: important topic!
- It would be useful to:
  - Improve the measurement of the predictive variables
  - Demonstrate that new variables/approach add to the recent predictability evidence (Rapach et al. (2010))
  - Improve the tests for the investors' inattention hypothesis
- Good luck!

Final Remarks

- Paper is very interesting: important topic!
- It would be useful to:
    - Improve the measurement of the predictive variables
    - Demonstrate that new variables/approach add to the recent predictability evidence (Rapach et al. (2010))
    - Improve the tests for the investors' inattention hypothesis
- Good luck!

Final Remarks

- Paper is very interesting: important topic!
- It would be useful to:
  - Improve the measurement of the predictive variables
  - Demonstrate that new variables/approach add to the recent predictability evidence (Rapach et al. (2010))
  - Improve the tests for the investors' inattention hypothesis
- Good luck!

The Empirical Evidence

1. There is (out of sample) predictability:
   (a) PCA or PLS (R^2 up to 3.62%)
   (b) Indexes are crucial
   (c) Predictability is higher than with standard variables
   (d) It is really about the short-term (less than 1 year)
   (e) Large economic significance
2. The predictability is related to investors' inattention
   (a) Higher for "low attention" stocks (Google searches)
   (b) Inattention predicts "forecasting accuracy"

Autocorrelation is Typical of Long-Run Predictors Back

	This Paper			Welch and Goyal (2008)					
	EW	PCA	PLS	dp	ep	bm	dfy	ntis	svar
$\rho(-1)$	0.96	0.98	0.91	0.98	0.99	0.99	0.98	0.98	0.63

- Some of these variables tend to have predictive over longer horizons (higher than 1 year)
- The indexes in this paper tend to predict up to 6 months
- It is interesting that the autocorrelations are similar
- Can we learn anything from this?

Autocorrelation is Typical of Long-Run Predictors ‣ Back

	This Paper			Welch and Goyal (2008)					
	EW	PCA	PLS	dp	ep	bm	dfy	ntis	svar
$\rho(-1)$	0.96	0.98	0.91	0.98	0.99	0.99	0.98	0.98	0.63

- Some of these variables tend to have predictive over longer horizons (higher than 1 year)
- The indexes in this paper tend to predict up to 6 months
- It is interesting that the autocorrelations are similar
- Can we learn anything from this?

Autocorrelation is Typical of Long-Run Predictors ▸ Back

	This Paper			Welch and Goyal (2008)					
	EW	PCA	PLS	dp	ep	bm	dfy	ntis	svar
$\rho(-1)$	0.96	0.98	0.91	0.98	0.99	0.99	0.98	0.98	0.63

- Some of these variables tend to have predictive over longer horizons (higher than 1 year)
- The indexes in this paper tend to predict up to 6 months
- It is interesting that the autocorrelations are similar
- Can we learn anything from this?

Autocorrelation is Typical of Long-Run Predictors ▸ Back

	This Paper			Welch and Goyal (2008)					
	EW	PCA	PLS	dp	ep	bm	dfy	ntis	svar
$\rho(-1)$	0.96	0.98	0.91	0.98	0.99	0.99	0.98	0.98	0.63

- Some of these variables tend to have predictive over longer horizons (higher than 1 year)
- The indexes in this paper tend to predict up to 6 months
- It is interesting that the autocorrelations are similar
- Can we learn anything from this?

Autocorrelation is Typical of Long-Run Predictors Back

	This Paper			Welch and Goyal (2008)					
	EW	PCA	PLS	dp	ep	bm	dfy	ntis	svar
$\rho(-1)$	0.96	0.98	0.91	0.98	0.99	0.99	0.98	0.98	0.63

- Some of these variables tend to have predictive over longer horizons (higher than 1 year)
- The indexes in this paper tend to predict up to 6 months
- It is interesting that the autocorrelations are similar
- Can we learn anything from this?