

Dr Pawel Bilinski

Associate Professor, Cass Business School

The Usefulness of Analyst Forecasts to Investors

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Outline of the presentation

- **When** are forecasts useful?
- **What we know** about the “usefulness” of analyst forecasts
- **Measures of “usefulness”**: accuracy, short-term price impact and long-term investment value
- **International evidence** on the three “usefulness” measures for DPS and TPs

2 of 51

Usefulness of forecasts

- Forecasts are *useful* when they tell sth **new**
- **Three** conditions:
 1. Analyst forecasts are **more accurate** than “home made” forecasts
 - If you can do it yourself, why pay someone else?
 2. Forecasts “**move markets**”
 - Forecasts that “move markets” reveal new information
 - Forecasts that reiterate what the market knows are of limited usefulness
 3. Forecasts have **investment value** (EFM?)

3 of 51

what do we know about sell-side analyst forecasts?

- There is over **1000** research papers on analyst EPS forecasts (I/B/E/S, Zacks, Value Line, First Call, etc).
 - Focus: sell-side analyst forecasts available through public sources
- **Early evidence**:
- **Accuracy** of annual forecasts by analysts from *pension funds, investment advisors, investment bank analysts* **no different** compared to **naive time-series model** (Elton and Gruber 1972)
- Analyst **five-year growth forecasts** as accurate as simple algebraic extrapolations (Cragg and Malkiel 1968)
 - **Caveat**: Very small sample sizes

4 of 51

- Then “**large**” sample research:
- Using **100 EPS forecasts** per year for 1969-1979, **Fried and Givoly (1982)** find analysts’ forecasts were more accurate than forecasts from various time-series models.
 - **Virtually every research paper uses analyst EPS to measure earnings expectations**
- **Some analysts better** at forecasting than others (i.e. more accurate ESP):
 - All-Star analysts, more experienced, analysts with access to more resources, etc.

5 of 51

Caveat when comparing accuracy of analyst forecasts to “home made” forecasts

- how you measure EPS accuracy?
- **EPS accuracy** =
$$-\frac{|\text{actual EPS} - \text{EPS forecast}|}{\text{Price}}$$
- Walkdown to beatable forecasts



8 of 51

More recent research

- in around **40%** of cases, **ARIMA** forecasts of quarterly EPS are more accurate than analyst estimates, Lorek and Pagrach (2014)
- Simple **random-walk EPS** forecasts are more accurate than analysts' forecasts over **longer horizons**, for **smaller** or **younger firms**, Bradshaw et al. (2012)
- Other issues: **investment banking** (Global Settlement, NASD 2711 and NYSE 472 rules), **catering to managers**, analysts **underreact to negative information** and **overreact to positive information** resulting in overoptimistic forecasts, **fail to differentiate** between lower persistence of accruals vs. cash flows

7 of 51

Target prices and dividend forecasts: estimates of the total shareholder return

- $return = \frac{Price_{t+1} + Dividend_{t+1} - Price_t}{Price_t}$
- $return = \underbrace{\frac{Price_{t+1}}{Price_t} - 1}_{\text{Capital gain}} + \underbrace{\frac{Dividend_{t+1}}{Price_t}}_{\text{Dividend yield}}$
- $E(return_{12}) = \frac{TP_{12}}{Price_t} - 1 + \frac{F(DPS_{t+1})}{Price_t}$

8 of 51

- $E(return_{12}) = \frac{TP_{12}}{Price_t} - 1 + \frac{\text{annualized } DPS_{t+1}}{Price_t}$
- Stock recommendations = f(TPs) 99% of published research is US focused, where historically few firms paid dividends
- Subsumes forecasts of accounting numbers, e.g. EPS, growth
- Increasing # of dividend paying firms
 - E.g. around **81% of the S&P500** firms paid dividend in 2013
- Historically, total dividend payments FAR Exceeded NET buybacks
- Increasing importance of dividends to investors (e.g. in 2012: net inflows into mutual funds and exchange-traded funds focused on dividend paying stocks: \$9 billion vs. a net outflow of \$7.3 billion for all other US stock funds)
- dividend yield accounted for **90% of the real return from global equities** over the period 1900-2005 (Dimson et al. 2008)
- Some investors invest only in dividend paying stocks
 - Tax incentives
 - Dividend arbitrage

9 of 51

Research on target prices and dividend estimates

- Research on the **accuracy, price-impact** and **investment value** almost non-existent
 - Bradshaw's 2011 review of analyst forecasting lit: only **3** papers that look at EPS and TPs!
- TPs:
 - Bilinski et al. (2013)-TP accuracy in a sample of 16 countries, incl. US & UK
 - Brav and Lehavy (2003) and Asquith et al. (2005), Bilinski (2014a) and Bilinski and Eames (2014): **short-term price impact** of TPs
- DPS
 - Brown et al. (2002, 2006)-accuracy of **consensus dividend forecasts**
 - Bilinski (2014b)-accuracy of **individual dividend forecasts** in a sample of 16 countries

10 of 51

Three measures of usefulness

- Accuracy:**

$$\text{forecast error} = \frac{|actual\ value - forecasted\ value|}{Price}$$

$$\text{e.g. TP error} = \frac{|actual\ price_{12} - TP|}{Price_0}$$

Indicator variable for whether the TP has been meet at any point over the 12-moths

11 of 51

short-term price reactions

- Forecasts that "move" the market convey new information

$$Price\ reaction = f(revisions)$$

$$= \Delta TP + \Delta DPS + \Delta \text{other information}$$

12 of 51

Investment value

- Do abnormal returns (ARs) exist in **efficient markets?**

In efficient market, prices react **fully** and **immediately** to new information

Report announcement

13 of 51

- Investment value** means **drift**, i.e. prices move away from **fundamentals**
- Drift per see ≠ ARs**

Drift exists bcs of **market inefficiencies**, e.g. arbitrage costs (liq, risk), sentiment, irrational investors

Report announcement

14 of 51

The *usefulness* of sell-side analysts **target prices** (I/B/E/S): measure #1

- Target prices often feature prominently in analyst reports

General Motors

CARbitrage: Resuming with Overweight and \$45 Target

What's Changed

Rating: **NA to Overweight**

Price Target: **NA to \$45.00**

Key Ratios and Statistics

Reuters: GM N Bloomberg: GM US

Price Target: \$45.00

52-Week Range: \$33.47-19.00

Fiscal Year ending: 12/11 12/12e 12/13e 12/14e

We resume our OW rating and **\$45 TP** following the completion of PSA's €1bn capital raise. With 80% upside to fair value, GM slots in as the #2 ranked stock (out of 19) in our NA auto coverage universe.

GM offers leverage to improving demand in the US, restructuring potential in Europe and execution vs. low expectations on a number of operational and

16 of 51

Research questions:

- Bilinski et al. (2014)** ask the following Qs:
 - Do analyst TPs **beat simple TP forecasts**
 - Which analysts** issue **more accurate** TPs
 - how **institutional** and **regulatory differences** across countries affect TP forecast accuracy
- the **US, 12 European countries, Japan, Australia and Hong Kong**, from **January 1, 2002 to July 1, 2009**
- 585,718 target price** forecasts for **9,982 firms** issued by **12,792 analysts** employed by **621 brokers**

17 of 51

	TP/P (%)
Australia	19.4%
Austria	17.3%
Belgium	9.5%
Denmark	20.8%
Finland	10.7%
France	15.6%
Germany	16.9%
Hong Kong	14.5%
Italy	13.9%
Japan	14.7%
Netherlands	14.3%
Spain	17.1%
Sweden	14.9%
Switzerland	23.3%
United Kingdom	16.1%
United States	20.6%
Total	18.6%

$$return = \frac{TP}{Price_t} - 1 + \frac{Dividend_{t+1}}{Price_t}$$

4.4% p.a.

18 of 51

TABLE 3
Summary statistics of target price accuracy measures

Panel A: Mean values of TP forecast accuracy measures

	N	Main TP forecast accuracy measures	
		Met_any (%)	aTPE (%)
Australia	24852	66.1%	47.4%
Austria	2546	59.8%	50.6%
Belgium	4407	59.1%	40.6%
Denmark	5036	56.1%	58.2%
Finland	8649	62.2%	44.1%
France	26103	58.3%	38.7%
Germany	24239	60.8%	44.3%
Hong Kong	22729	64.3%	48.4%
Italy	10711	54.0%	38.3%
Japan	41316	59.1%	37.3%
Netherlands	11994	59.1%	37.9%
Spain	9252	60.2%	39.4%
Sweden	12953	58.6%	47.5%
Switzerland	12593	55.8%	45.4%
United Kingdom	44996	57.5%	47.8%
United States	323342	54.7%	49.5%
Average		59.1%	44.7%

TP error =
$$\frac{|actual\ price_{12} - TP|}{Price_0}$$

Example:
$$\frac{|155 - 200|}{100}$$

Analysts TPs. vs simple models

- Analyst TPs **do not have to be perfectly accurate** to be useful: *as long as analyst TPs are more accurate compared to forecasts investors could make themselves*
- Naïve TP** = stock price on the forecast issue date * (1+ the previous 12-month firm buy-and-hold return)
- Naïve TP** = stock price on the forecast issue date * (1+ \hat{a} + \hat{b} * RM)
- Naïve TP** = industry mean P/E ratio & analyst EPS estimate

20 of 51

Analysts TPs. vs simple models

Analysts TPs are more accurate than the 3 naïve TPs

	Met_any > naïve	TPE - simple	PE
Australia	0.000	0.000	0.000
Austria	0.000	0.000	0.000
Denmark	0.000	0.000	0.000
Finland	0.000	0.000	0.000
France	0.000	0.000	0.000
Germany	0.000	0.000	0.000
Italy	0.000	0.000	0.000
Japan	0.000	0.000	0.000
Netherlands	0.000	0.000	0.000
Spain	0.000	0.000	0.000
Sweden	0.000	0.000	0.000
Switzerland	0.000	0.000	0.000
United Kingdom	0.000	0.000	0.000
United States	0.000	0.000	0.000
Total	0.720	0.000	-0.094

Which analysts and when issue more accurate TPs

- better past TP forecasters**, analysts with higher forecasting **experience**, following **more firms**, **country-specialized**, and employed by a **large broker** issue more accurate TPs.
- For the **country characteristics**: the accounting **disclosure quality**, the origin of the legal system, **cultural traits**, and **IFRS regulation**

22 of 51

Overall conclusion

- Analyst **TPs** seem **optimistic on average**, e.g. TP/P of 16.1% for UK stocks over 2002-2009
- Though relatively inaccurate, analyst TPs seem to **beat simple benchmarks**
- Can be **useful**, particularly if you follow TPs issued by more **skilled analysts**

23 of 51

The usefulness of sell-side analysts **dividend forecasts**: measure #1

Analyst dividend forecasts, Bilinski 2014

$$\text{return} = \frac{TP}{\text{Price}_t} - 1 + \frac{\text{Dividend}_{t+1}}{\text{Price}_t}$$

- Dividend yield on the FTSE100/All share: around 3%
- SP500: 1.9%

Source: Eikon/SDI Economics

Bilinski 2014

- I/B/E/S dividend estimates over the fiscal years 2000–2010 for the US, 12 European countries, Australia, and two Asian countries
- 320,877 dividend forecasts for 9,090 firms issued by 15,682 analysts employed by 748 brokers.

$$\text{DPS error} = \frac{|\text{actual DPS} - \text{annualized DPS forecast}|}{\text{Price}}$$

26 of 51

DPS/P and DPS error vs. EPS error

	N	DPS/P
Australia	38323	5.25%
Austria	2938	2.62%
Belgium	5764	2.62%
Denmark	4208	1.75%
Finland	15316	3.26%
France	37135	2.08%
Germany	27383	2.27%
Hong Kong	21214	3.69%
Italy	10664	3.38%
Japan	54787	1.27%
Netherlands	10973	3.29%
Spain	10251	2.95%
Sweden	12789	4.92%
Switzerland	11680	1.81%
United Kingdom	47502	3.27%
United States	62551	3.58%
Average		3.00%

DPS/P and DPS error vs. EPS error

	N	DPS/P	DPS forecast error	EPS forecast error	DPS error/EPS error
Australia	38323	5.25%	1.27%	2.80%	-54.8%
Austria	2938	2.62%	0.59%	1.84%	-68.2%
Belgium	5764	2.62%	0.64%	1.52%	-58.0%
Denmark	4208	1.75%	0.60%	1.58%	-2.1%
Finland	15316	3.26%	1.20%	2.26%	7.0%
France	37135	2.08%	0.44%	1.84%	-76.1%
Germany	27383	2.27%	0.60%	1.20%	-50.4%
Hong Kong	21214	3.69%	1.24%	1.52%	-18.4%
Italy	10664	3.38%	1.04%	1.27%	-18.1%
Japan	54787	1.27%	0.17%	0.20%	-13.0%
Netherlands	10973	3.29%	0.72%	1.54%	-46.0%
Spain	10251	2.95%	0.83%	2.72%	-49.6%
Sweden	12789	4.92%	1.37%	1.51%	-68.5%
Switzerland	11680	1.81%	0.48%	1.62%	-72.1%
United Kingdom	47502	3.27%	0.45%	1.62%	-72.1%
United States	62551	3.58%	0.42%	2.50%	-83.1%
Average		3.00%	0.75%	2.13%	-64.60%

100 times more accurate than TPs

28 of 51

Analyst dividend forecasts vs. simple dividend estimates

- Past DPS:** a martingale dividend forecast where the next year dividend equals the past dividend
- Mean Payout*NI:** the product of the mean payout ratio calculated over the previous seven years and the net income for the previous fiscal year
- Lintner's partial-adjustment model to forecast future dividends

$$d_t = d_{t-1} + c(d^T - d_{t-1}) + v_t \quad d^T = k^T * e_t$$

- Target payout*NI:** target payout ratio and net income for the previous fiscal year
- Target payout*EPS:** target payout ratio estimated from equation (6) and the analyst EPS forecast
- Lintner:** dividend forecast from the Lintner model

29 of 51

The difference: accuracy of analyst DPS - simple DPS forecasts

	past	mean payout	Lintner
Australia	-0.83%	0.00%	0.00%
Austria	0.00%	0.00%	0.00%
Belgium	0.00%	0.00%	0.00%
Denmark	0.00%	0.00%	0.00%
Finland	0.00%	0.00%	0.00%
France	0.00%	0.00%	0.00%
Germany	0.00%	0.00%	0.00%
Hong Kong	0.00%	0.00%	0.00%
Italy	0.00%	0.00%	0.00%
Japan	0.00%	0.00%	0.00%
Netherlands	0.00%	0.00%	0.00%
Spain	0.00%	0.00%	0.00%
Sweden	0.00%	0.00%	0.00%
Switzerland	0.00%	0.00%	0.00%
United Kingdom	-2.73%	-2.89%	-3.79%
United States	-0.94%	-2.08%	-4.05%
Average	-0.78%	-1.87%	-2.85%

In %: in the UK analysts are 38% more accurate than simple DPS forecasts

Which DPS are more accurate

- **More skilled analysts** issue more accurate dividend forecasts
- dividend forecasts are on average more accurate in countries where the **tax code** favors dividend income, where **equity markets are more important**,

31 of 51

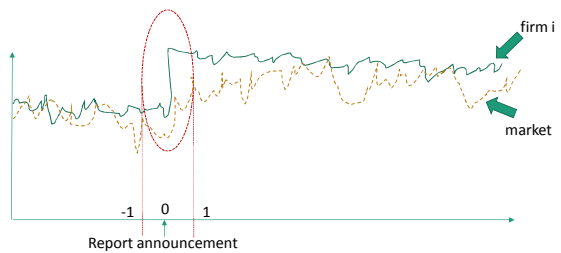
To sum up

- Dividend forecasts **very accurate**
- Since **investors would attach more weight** to more **precise signals**, we would expect a **STRONGER price impact of DPS than TPs**

32 of 51

Short-term price reactions

short-term price reactions



$$CARs = f(revisions) = \Delta TP + \Delta DPS + \Delta \text{other information}$$

34 of 51

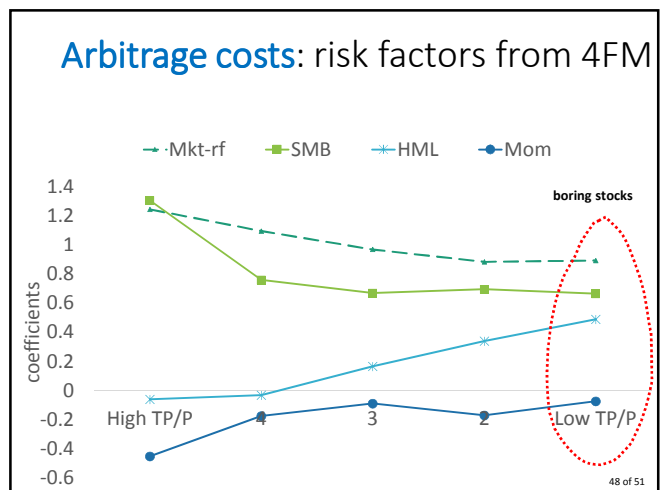
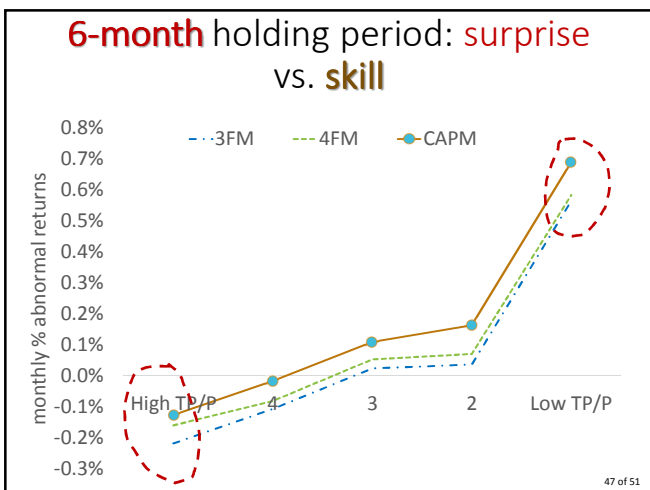
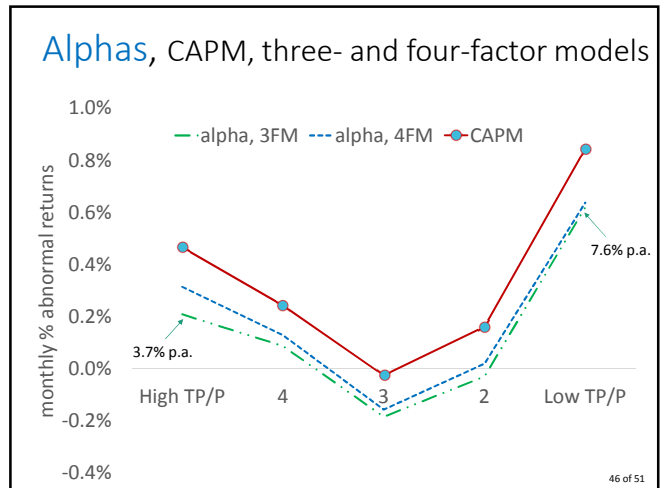
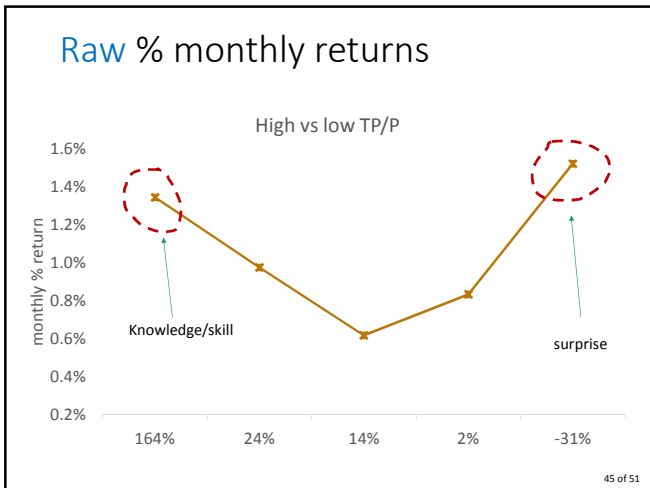
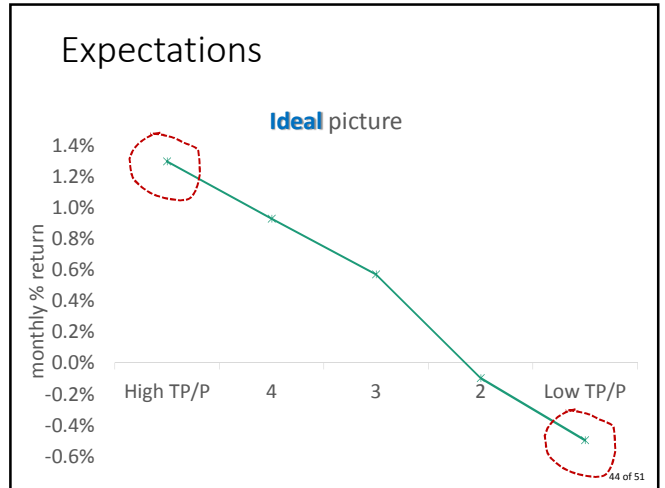
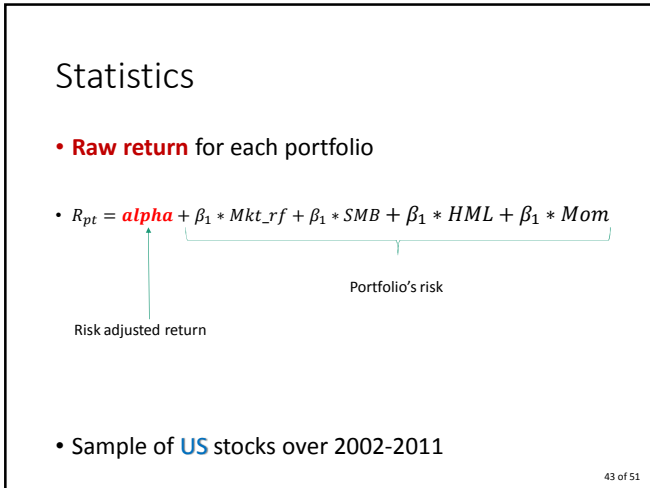
$$CARs = f(revisions) = \Delta EPS + \Delta TP + \Delta DPS + \Delta \text{stock recommendations}$$

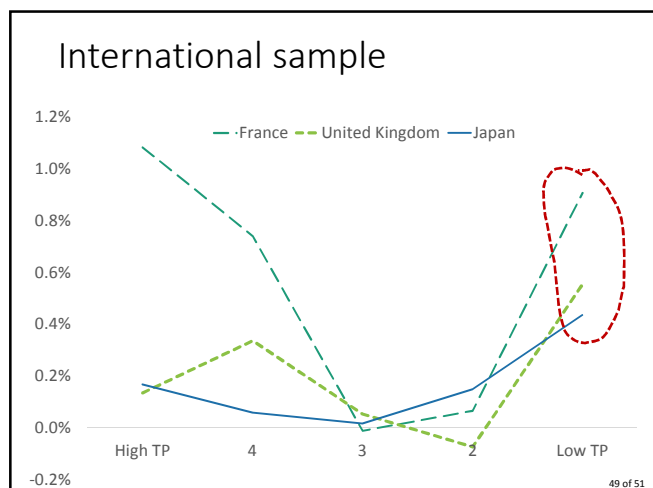
	Model 1		Model 2		Model 3	
	Estimate	p	Estimate	p	Estimate	p
Intercept	0.001	0.000	0.001	0.005	0.001	0.000
ΔEPS	0.318	0.000	0.307	0.000	0.247	0.000
ΔDPS	0.268	0.000			0.212	0.000
Upgrade					0.011	0.000
Downgrade					-0.015	0.000
ΔTP			0.050	0.000	0.044	0.000
N	152415		152415		152415	
F-test	609.70		854.71		522.95	
p	0.000		0.000		0.000	
R	1.91%		3.06%		3.87%	

A **10%** revision in DPS/Price (e.g. DPS/Price from 3% to 3.3%) will lead to a **2.12% Abnormal** price reaction, e.g. **FTSE100** up by **2%**, the price will be **4.12%** around the revision

A **10%** revision in TP/Price (e.g. TP/P from 10% to 11%) will lead to a **0.44% Abnormal** price reaction

Investment value of TPs and DPS





Portfolios based on **DPS forecasts**
and **TP&DPS**

Not much action

50 of 51

To sum up

- TP seem to have **some investment value**
 - **High TP/P**: evidence of a drift and investment value
 - **Low TP/P** surprise the market: a contrarian strategy may generate value
 - **Caveats**: US evidence only, need to control for transaction costs, trends may change over time
- 51 of 51

Conclusions

- Analysts put effort to produce **accurate TP** and **dividend forecasts**
 - These forecasts **beat simple estimates** from public data
 - Evidence of **investment value**
 - **Extensions** to **samples outside the US** can yield interesting insights since accuracy/information content/efficiency vary across countries
 - My papers available at: www.cass.city.ac.uk/experts/P.Bilinski
 - Events organized by the **Centre for Financial Analysis and Reporting Research**:
<http://www.cass.city.ac.uk/research-and-faculty/centres/cefarr>
 - email: Pawel.Bilinski.1@city.ac.uk
- 52 of 51