The Finansavisen Inside Portfolio

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We consider a case of secondary dissemination of insider trades.
A Norwegian trade newspaper, “Finansavisen”, publishes a regular column where they select the inside trades they view as most informative, and use these trades to make portfolio recommendations.
We analyze these portfolio recommendations.

Starting in 1995, *Finansavisen*, a Norwegian daily newspaper, publishes a column where they, based on the recent insider trades, pick some (insider buy) trades that they view as significant.
These significant trades they use to construct a portfolio.
On each date, the portfolio contains five stocks. The portfolio is added to by typically one, sometimes two or three, of the stocks with recent insider buys that the newspaper thinks are most significant.
To maintain the number of stocks at five they remove some of the current stocks from the portfolio, typically those that have been there the longest.
The portfolios and their changes are typically presented over two pages in the Saturday edition.
Use the portfolio changes in the newspaper for the period 1995 (when this column was initiated) up to October of 2014.

Number of Shares

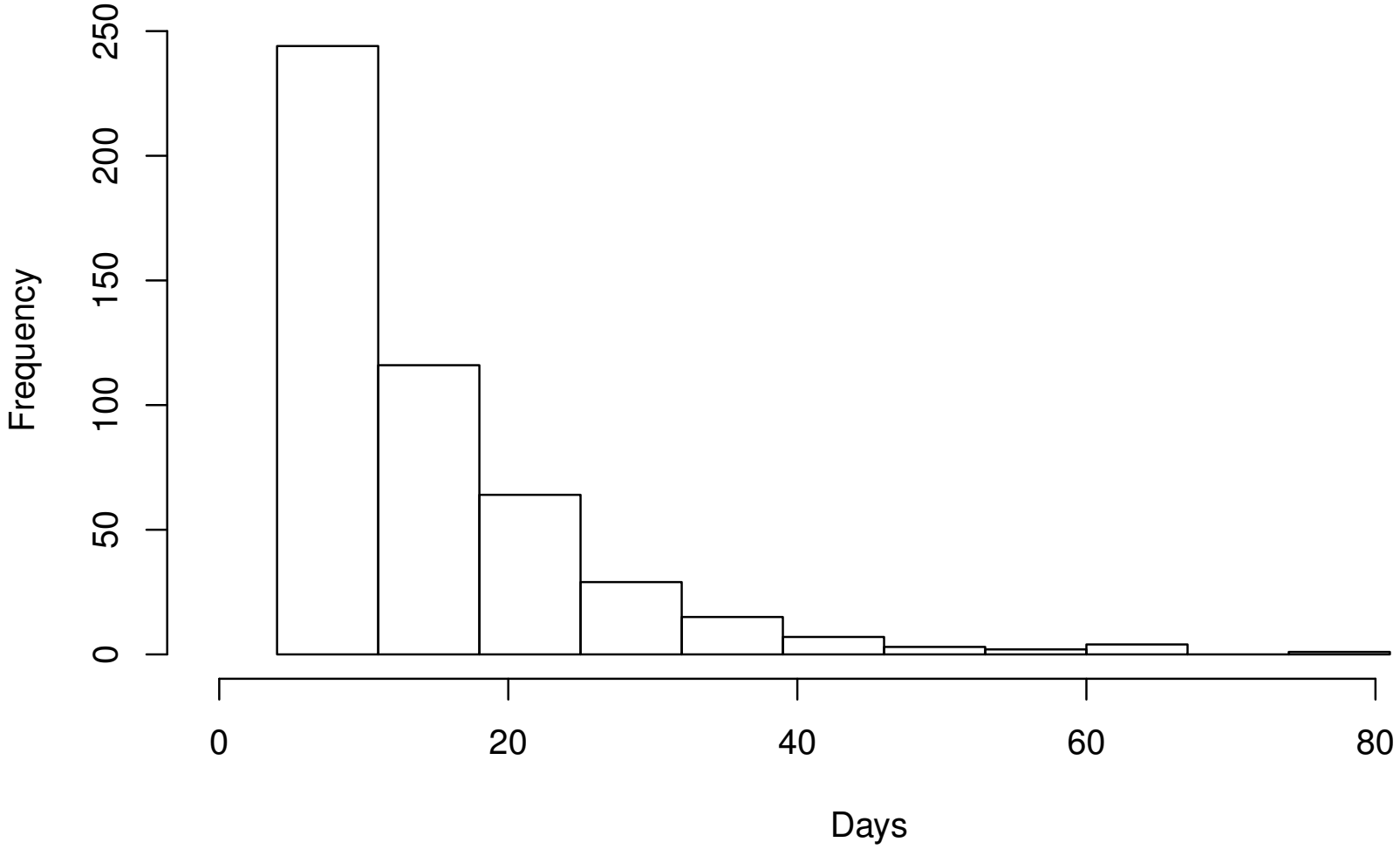
Year	No Portfolio Changes	No Unique Stocks in Portfolio
1995	6	10
1996	30	31
1997	26	29
1998	23	25
1999	31	40
2000	27	26
2001	21	26
2002	33	36
2003	26	24
2004	24	24
2005	25	27
2006	26	32
2007	24	36
2008	25	37
2009	23	26
2010	27	29
2011	29	32
2012	24	25
2013	21	23
2014	17	21

The number of newspaper columns with inside portfolio changes each year

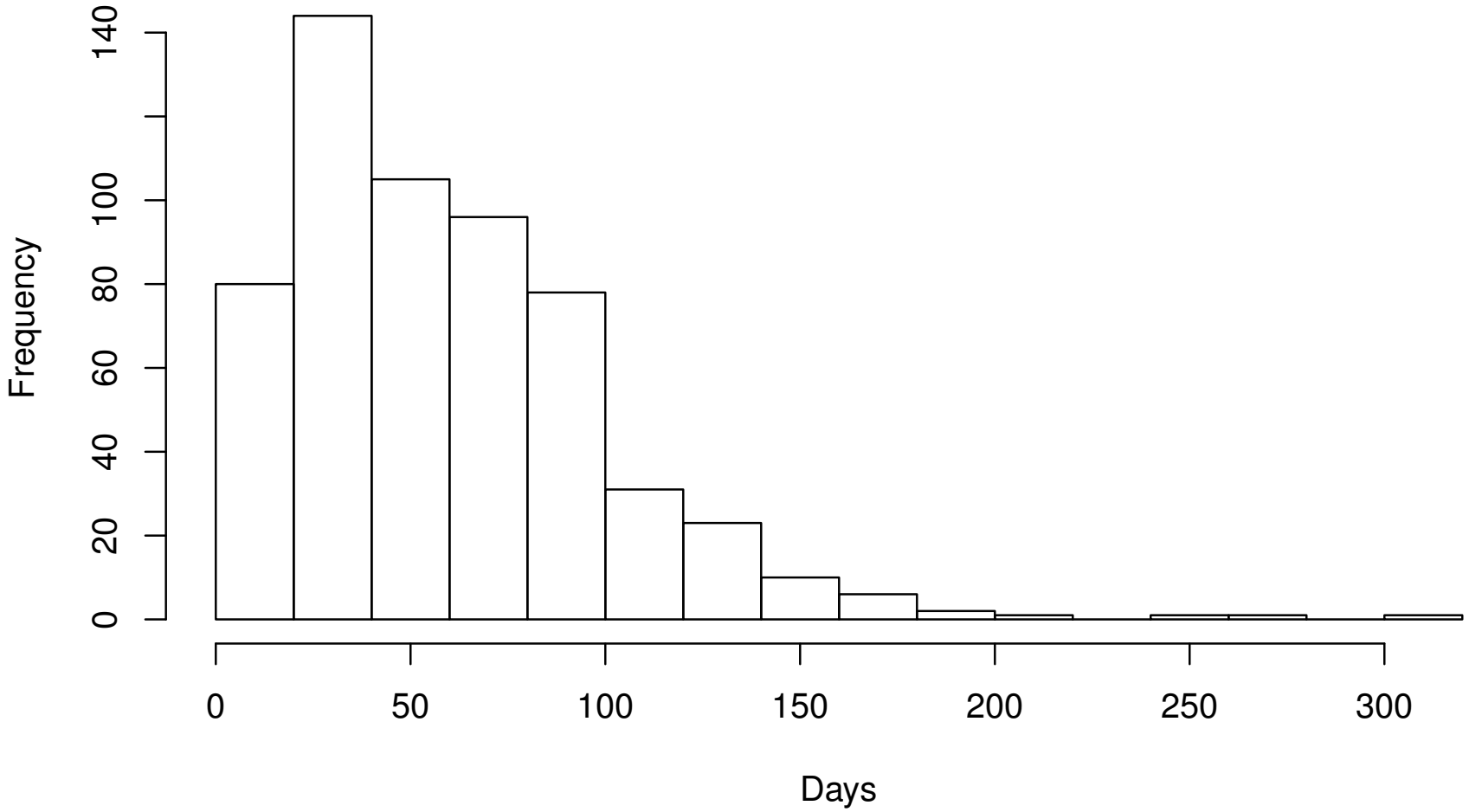
Duration

	Days in Inside Portfolio	Days till first inside sale
Average	59.1	460.3
Median	49.0	278.0

Distribution of time (in days) between changes in the Inside Portflio.



Distribution of time (in days) a stock stays in the inside portfolio



Calculating returns

We construct portfolio returns of "The Inside Portfolio".
Timing issue: The newspaper is published on a Saturday.
For a member of the public using this information, the first occasion one can trade is then the following Monday.
If, on the other hand, one want to look at the returns of a portfolio which the newspaper journalist construct *simultaneously* as writing up the column, this could be done by assuming the stocks are bought (and sold) on the Friday before the Saturday publication.
Interestingly, it is this method that the newspaper uses to calculate their own portfolio performance.
We calculate portfolio returns using both assumptions:

- Trading using Friday close, (Friday)
- Trading using Monday close, (Monday)

Calculating returns

Calculate returns for Inside Portfolio using a weekly frequency.
Construct comparable market portfolios:

- equally weighted
- value weighted portfolio

Returns for Inside Portfolio

$R_p \quad \leftarrow$ Return for Inside Portfolio.

	R_p	$R_m(ew)$	$R_m(vw)$
Friday	0.0055	0.0049	0.0047
Monday	0.0034	0.0049	0.0047

Descriptive statistics for the portfolios:

- Finansavisen" portfolio, assuming
  - Friday close (Friday)
  - Monday close (Monday).
- Equally weighted portfolio of returns on the OSE. ($r_m(ew)$).
- Value weighted portfolio of returns on the OSE. ($r_m(vw)$).

Excess returns for Inside Portfolio

$$R_p^e = R_p - R_f \quad \leftarrow \text{Excess Return for Inside Portfolio}$$

	eR_p	$eR_m(ew)$	$eR_m(vw)$
Friday	0.0047	0.0041	0.0039
Monday	0.0026	0.0041	0.0039

Descriptive statistics for the portfolios:

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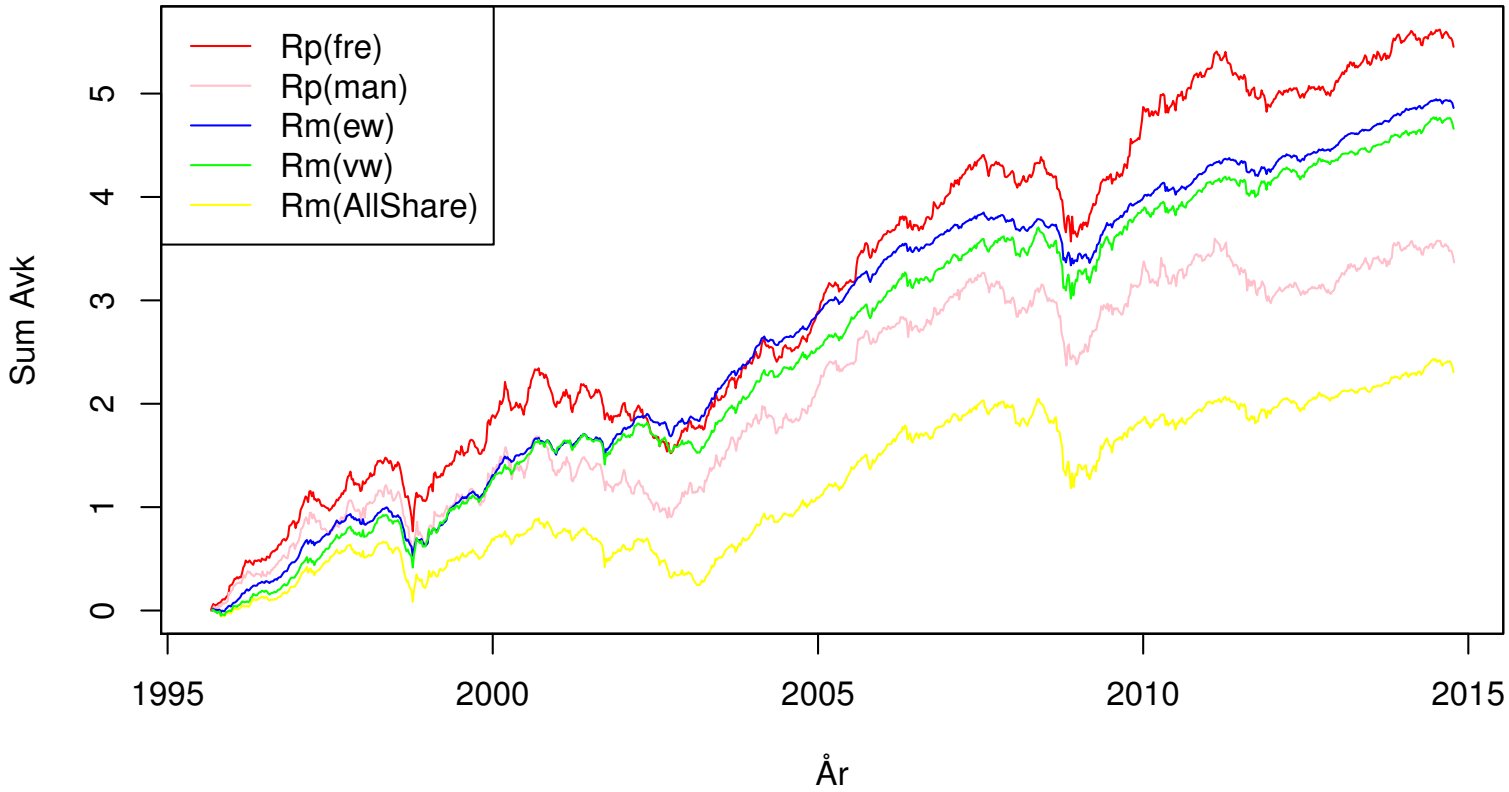
Aggregate Returns



Aggregate returns. We plot $AggR_t = \sum_{j=\mathbf{0}}^{t} R_j$. This is shown for the Inside Portfolio for two alternative assumptions about trading day: Friday ($R_p(fre)$) and Monday ($R_p(man)$). Additionally, market portfolios: Equally weighted ($R_m(ew)$) and value weighted ($R_m(vw)$), Oslo Børs All Share Index ($R_m(AllShare)$) and a world index ($R_m(msci)$). This is MSCI World Total Return Index. The US index is converted to return in NOK, Norwegian Currency.

Performance evaluation

The business of evaluating the performance of a portfolio manager has developed a rich set of methodologies for testing whether a manager is skilled or not.
The goal is to identify whether the manager has a skill that goes beyond simple, well known strategies that can easily be implemented by unskilled investors. For example, portfolio tilts towards small stocks should not necessarily be viewed as skill.
The methods can be grouped into two major approaches

1. Returns-based performance evaluation
2. Portfolio holdings-based performance evaluation

Performance evaluation of managed portfolios

Pros and cons.

Returns-based:

1. Rely on less information
2. Returns are often available at higher frequencies than other information

Portfolio holdings-based

1. Will more clearly identify skill
2. Require more information than returns-based measures.

Benchmark

A benchmark is a measuring tape, a portfolio that is an alternative investment opportunity.
Good benchmarks should be

- Unambiguous
- Tradeable
- Measurable
- Appropriate
- Reflective of current investment opinions
- Specified in advance.

Measuring the performance of the Inside Portfolio

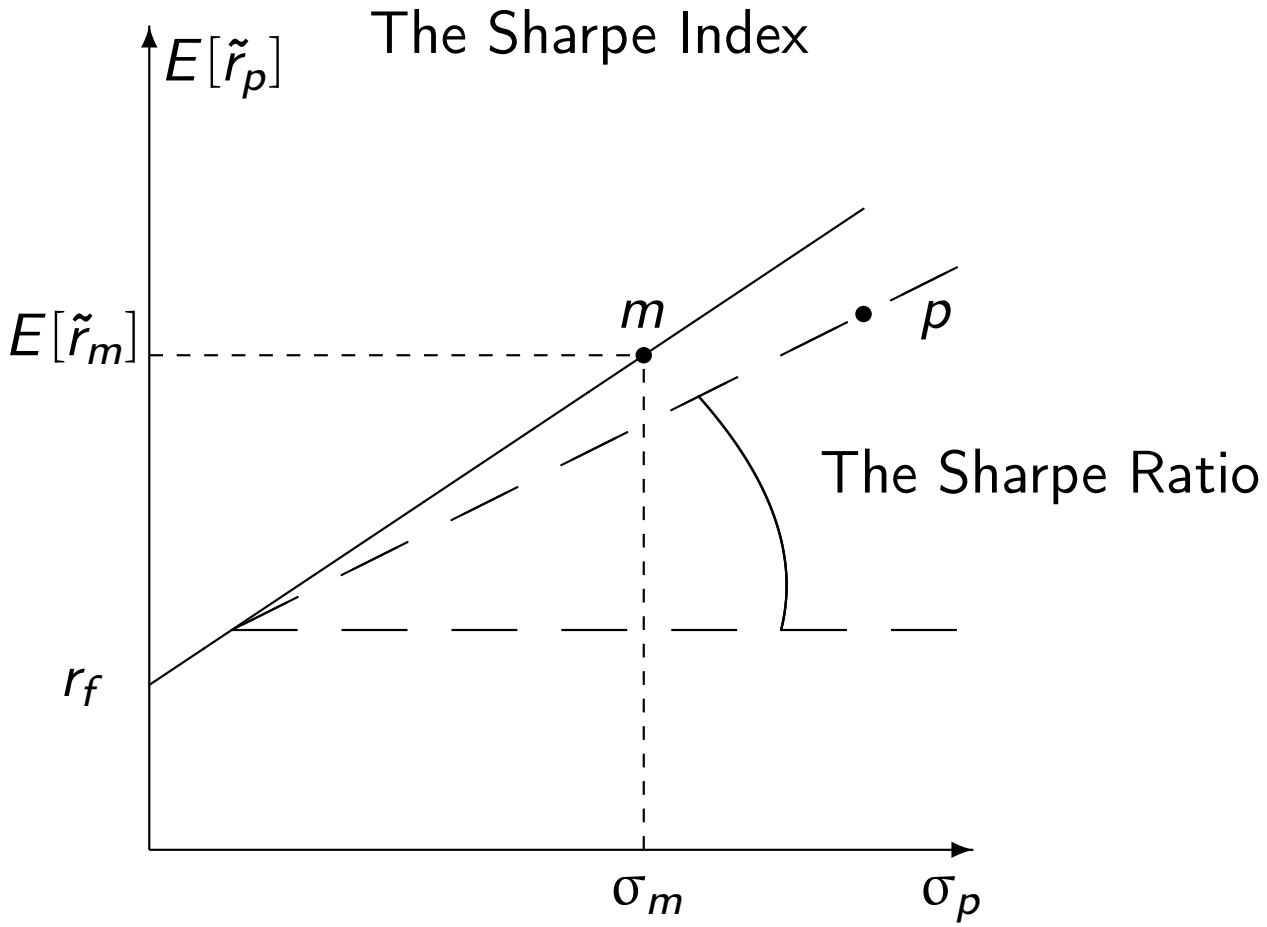
Show calculations of

- Sharpe Ratio/Information Ratio
- Jensens alpha
- Regression alpha in a Fama French setting
- Time-varying factor exposures
- Stochastic Discount Factor based approaches
- Measures based on portfolio *weights*

Sharpe Ratio

The simplest performance measure.

Geometrically, it measures how far is an asset p from the Capital Market Line



Sharpe Ratios for Inside Portfolio

$$SR(R_p) = \frac{E[R_p - R_f]}{\sigma(R_p - R_f)} \quad \leftarrow \text{Sharpe Ratio}$$

	$SR(R_p)$	$SR(R_m(ew))$	$SR(R_m(vw))$
Friday	0.112	0.200	0.134
Monday	0.062	0.196	0.131

Descriptive statistics for the portfolios:

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Information Ratio

The Information Ratio is related to the Sharpe Ratio.
It measures the deviation from the portfolio to a *reference index* I.

$$IR(R_p) = \frac{E[R_p - R_I]}{\sigma(R_p - R_I)}$$

This index I does not need to be the market index
(but if it is this is equivalent to the Sharpe Ratio).
It is typically used to measure how well a portfolio manager *tracks* the reference index (I).

Information Ratios for Inside Portfolio

$$IR(R_p) = \frac{E[R_p - R_I]}{\sigma(R_p - R_I)} \quad \leftarrow \text{Information Ratio}$$

	$IRew(R_p)$	$IRvw(R_p)$
Friday	0.017	0.023
Monday	-0.050	-0.043

Descriptive statistics for the portfolios:

- Finansavisen" portfolio, assuming
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Alpha

Alpha (α) is an answer to the question:
Does the return on a portfolio/asset exceed its *required* return?

$$\alpha_p = r_p - \text{required return} = r_p - \hat{r}_p$$

To find an estimate of requred return an asset pricing model is required.
The classical such asset pricing model is the CAPM.

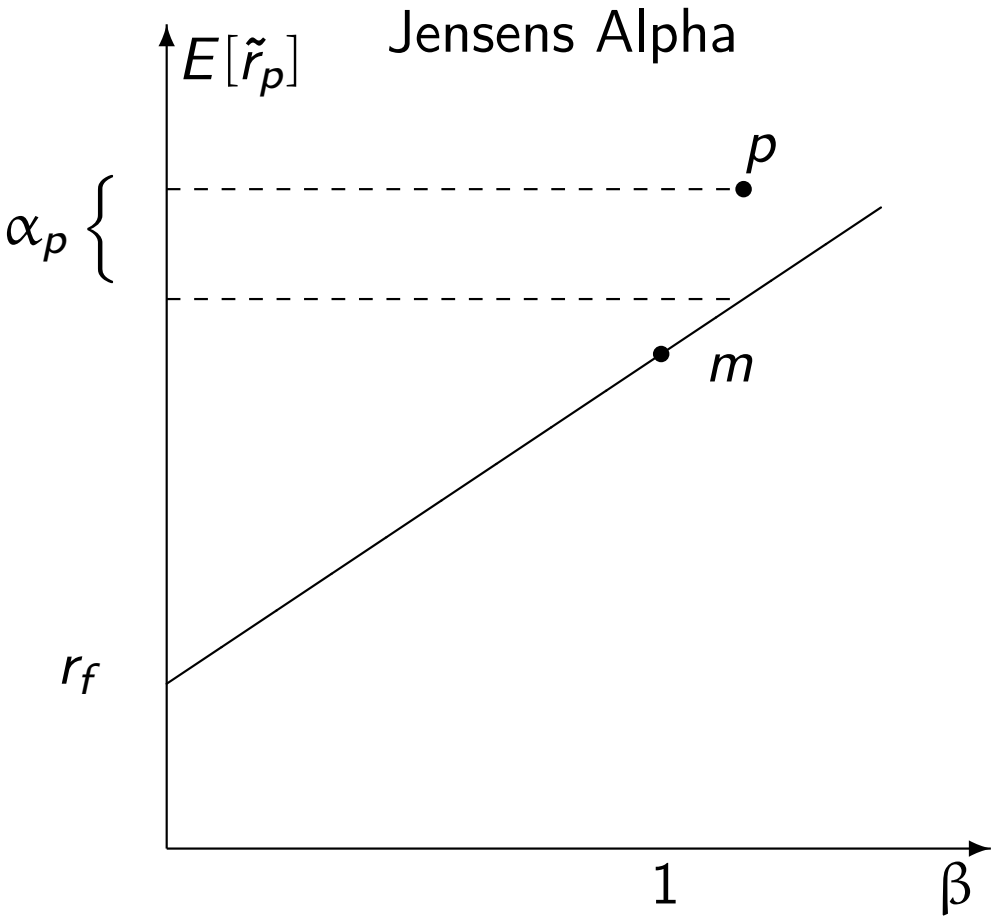
$$\hat{r}_p = (r_f + \beta_p(r_m - r_f))$$

Alpha is then

$$\alpha_p = r_p - (r_f + \beta_p(r_m - r_f))$$

This was used by Michael Jensen (1969) in the article introducing this measure.
It is therefore often called *Jensen's alpha*

Jensen's Alpha



Estimating Jensen's alpha for the Inside Portfolio

	Dependent variable: R_p^e	
	EW	VW
Constant	-0.003^{***}	-0.001
	(0.001)	(0.001)
eRm	1.424^{***}	0.954^{***}
	(0.044)	(0.033)
Observations	994	994
Adjusted R^2	0.510	0.461
Note:	$^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$	

The table shows results a performance regression of "Finansavisen" portfolios. We show calculations for the "Finansavisen" portfolio under the assumptions that trades are done at monday. We show results for two specifications: (1): EW market index and (2) VW market index.

Alpha Regressions

CAPM is not the only possible Asset Pricing Model.
Alternative model: Fama and French (1995) three-factor model:

$$R^e_{pt} = \alpha_p + \beta_p R^e_{mt} + s_p \mathrm{SMB}_t + h_p \mathrm{HML}_t + \varepsilon_{pt}$$

where

- R^e_{pt} is excess return on a the portfolio to be evaluated (net return minus T-bill return)
- R^e_{mt} is excess return on a aggregate market proxy portfolio
- SMB_t returns on zero-investment factor-mimicking portfolio sorted on size
- HML_t returns on zero-investment factor-mimicking portfolio sorted on book-to-market.

We construct factor portfolios that match in time those of the "Finansavisen" portfolio.

Alpha Regressions for Inside Portfolio, three factor model

	Dependent variable: R_p^e	
	EW	VW
Constant	-0.002^{**}	-0.003^{***}
	(0.001)	(0.001)
eRm	1.320^{***}	1.127^{***}
	(0.050)	(0.046)
SMB	-0.143^{***}	0.378^{***}
	(0.045)	(0.059)
HML	-0.131^{***}	-0.159^{***}
	(0.044)	(0.045)
Observations	994	994
Adjusted R^2	0.519	0.488
Note:	$^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$	

The table shows results from a three factor performance regressions of "Finansavisen" portfolios. We show calculations for the "Finansavisen" portfolio under the assumptions that trades are done at monday. We show results for two specifications: (1): EW market index and (2) VW market index.

Portfolio evaluation with time varying risk in alpha estimation

The standard benchmark assumes the risk loadings are constant for the analysis period.

In the application we consider here portfolio compositions change substantially each time the newspaper column is published, which may also change the portfolio risk.

In such cases one want to allow for time varying risk measures.

Discuss this in the context of a one-factor (CAPM) asset pricing model.

$$R^e_{pt} = \alpha_p + \beta_p R^e_{mt} + \varepsilon_{pt}$$

If the risk is time varying, one need to replace the β_p with a time varying coefficient, β_{pt}, and evaluate

$$R^e_{pt} = \alpha_p + \beta_{p,t-1} R^e_{mt} + \varepsilon_{pt}$$

where $\beta_{p,t-1}$ is estimated using ex-ante information.

Implementing portfolio evaluation with time varying risk in alpha estimation

Use the portfolio weights and estimates of the betas of the component assets in the portfolio.

- w_{it} is the weight of asset i in the portfolio at time t, and
- $\beta_{i,t-1}$ is an estimate of the (conditional) beta of asset i at time t.

Calculate the conditional beta for the portfolio as

$$\beta_{p,t-1} = \sum_i w_{it} \beta_{it-1}$$

Betas for individual assets are estimated using information available at time $t-1$.

Result – estimate of alpha with time varying risk:

$$\tilde{\alpha}_{pt} = R^e_{pt} - \hat{\beta}_{pt} R^e_{mt}$$

Alpha estimates for Inside Portfolio, time varying betas

Results from estimating portfolio alpha with time varying beta risk

$$\tilde{\alpha}_{pt} = R^e_{pt} - \hat{\beta}_{pt} R^e_{mt}$$

Average	p-value
-0.00320	0.00079

We show calculations for the "Finansavisen" portfolio assuming trade on monday. The tables characterize the time series of monthly alphas by calculating its mean and a t-test for whether the mean is different from zero.

Stochastic Discount Factor based performance evaluation

An alternative formulation of the performance estimation problem comes from adapting the methods used for estimating asset pricing model.
Any asset pricing model can be written as a condition on the stochastic discount factor m_t that prices the risk in the economy at time t.

$$E[\mathbf{m}_t \mathbf{R}_t - 1] = 0$$

This relationship must also hold for any managed portfolio p

$$E[\mathbf{m}_t R_{pt} - 1] = 0$$

Stochastic Discount Factors

Suppose we estimate the discount factor $\hat{m}$ using a crossection of assets. This *empirical stochastic discount factor* can then be used to evaluate any *other* assets, such as a portfolio.
Performance measurement is then a matter of calculating:

$$\alpha_p = \hat{m}_t R_{pt} - 1$$

When R_{pt} is a gross return (Unconditional), or

$$\alpha_p = \hat{m}_t R_{pt}$$

When R_{pt} is an excess return (Unconditional).

Stochastic Discount Factor based performance evaluation

We implement this analysis on the inside portfolios.
We first need a parameterization of the discount factor $\mathbf{m}$.
Choose a three-factor model

$$\mathbf{m}_t = 1 + b_1 R^e_{mt} + b_2 \mathrm{SMB}_t + b_3 \mathrm{HML}_t$$

The parameters of this model is estimated using GMM on ten size-sorted portfolios for the Norwegian cross-section over the same period we do performance evaluation.
The estimated $\mathbf{m}$ is then used to calculate the alpha.

Estimating performance if the inside portfolios with a stochastic discount factor approach

Panel A: Alpha estimates

	mean	p-value
InsPort	0.0010	0.6535

Panel B: The parameters of the estimated stochastic discount factor

	Stochastic Discount Factor
b_1	$-31.173\ (4.309)^{***}$
b_2	$-16.461\ (2.986)^{***}$
b_3	$-53.851\ (12.656)^{***}$
Num. obs.	994

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$

We estimate the parameters of $\mathbf{m}_t = 1 + b_1 R^e_{mt} + b_2 \mathrm{SMB}_t + b_3 \mathrm{HML}_t$ using 10 size based portfolios for Norway. The resulting empirical $\mathbf{m}$ is then used to estimate alphas. The alphas are summarized in Panel A. The parameters of the SDF are estimated with GMM. The parameter estimates are shown in Panels B and C. We list

Portfolio Weights based performance measures

The intiuition is simple:
A skilled manager will have portfolio weights that move in the same direction as future returns.
Skill boils down to ability to identify

- misvalued shares

Once having identified these, use information to

- buy more (increase weight in) undervalued shares.
- buy less (decrease weight in) overvalued shares.

Over time market moves to remove misvaluation.
This allows skilled managers to realize the gains from their active positions

Portfolio Weights based performance measures ctd.

Weights-based measurement of skill ask whether changes in portfolio weights covary with future returns in a way consistent with skill.

Formally:

A portfolio is described by a set of

- weights $\mathbf{w}_t = \{w_{it}\}$ and
- returns $\mathbf{R}_t = \{R_{it}\}$.

holdings-bases measures looks at the covariance between lagged weights and current returns.

$$PHM_t = \text{cov}(\mathbf{w}_{t-1}, \mathbf{R}_t)$$

Portfolio Weights based performance measures ctd.

If a portfolio manager is skilled

$$PHM_t = \text{cov}(\mathbf{w}_{t-1}, \mathbf{R}_t)$$

is positive.
To implement such a weights based measure, we use the method proposed by Grinblatt and Titman (1993), which calculate the monthly performance measure

$$GT_t = \sum_j \left(w_{j,t-1} - w_{j,t-2}\right) R_{j,t}$$

Finansavisen portfolio: Covariance measure

mean	stdev	p-value
0.000117	(0.00)	0.594

The table summarizes estimates of the Grinblatt and Titman (1993) weights based performance measures for the Finansavisen portfolios. The Grinblatt and Titman measure is each month t calculated as $GT_t = \sum_j (w_{j,t-1} - w_{j,t-2}) R_{j,t}$, where the index j is over stocks in the inside portfolio. We show descriptive statistics (mean, stdev), as well as the p-value for a test that the mean is equal to zero (p-value).

Short term stock price reaction

A cleaner way to look at whether the inclusion of a stock in
Event study of the stock price reaction at the publication of portfolio recommendation.
The date when a stock is added to their portfolio.
We center the event study (time zero) on the first trading date following the newspaper publication.
We start the analysis 10 trading days before the publication.

Event study Finansavisen publication

Entering their portfolio

Event studies centered at the date when a stock enters the Finansavisen portfolio. CAR's are calculated using the market model.

Relative to 10 trading days before, the price has increased by 2.8% by the close on the first trading day after the newspaper publication.
This increase is spread over a few days.
Signs of a "two-step" pattern.
Possibly two effects

- first the effect when the market learns of the insider trade,
- a separate effect when that particular trade enters the "Finansavisen" insider portfolio.

After the first day there is no further upwards movement in the stock price.

Concluding the analysis of the Finansavisen Inside Portfolio

We have characterized and evaluated the portfolios constructed by Finansavisen based on their view of the informativeness of reported trades by insiders.
If a reader of the paper tried to follow the newspaper recommendations, they would not be compensated for their risk.

- The benchmark regression finds a significantly negative alpha, both with a single factor and a three factor model.
- The same conclusion is found using a time varying beta.
- Evaluating the performance with a stochastic discount factor approach, and a weights based performance measure, we do not find an alpha statistically different from zero.

Eugene F Fama and Kenneth R French. Size and book-to-market factors in earnings and returns. *Journal of Finance*, 50(1):131–56, March 1995.

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Michael C Jensen. Risk, the pricing of capital assets, and the evaluation of investment portfolios. *Journal of Finance*, 24(5):959–960, December 1969.