LONG-TERM INVESTING

OLE CHRISTIAN BECH-MOEN

CIO ALLOCATION STRATEGIES

NORGES BANK INVESTMENT MANAGEMENT

OCTOBER 8TH 2018
$1,000,000,000,000
Our mission
Safeguard financial wealth for future generations
A large portfolio shift

Source: The Norwegian Petroleum Directorate
A fund owned by the Norwegian people

Governance model

- Government Pension Fund Act
- Management mandate and ethical guidelines
- Investment guidelines
- Investments and ownership
4,147 billion kroner in total return
Accumulated market value as at 30.06.2018. Billions of kroner

Source: Norges Bank Investment Management
Decision-making structure
Active choices have to be made at every step of the process

- Market
  - Market index
  - Reference index
    - Reference portfolio
      - Actual portfolio

What is «the market»?
What index suppliers to use?
EQ/FI weighting?
Oil- and gas stocks?
Rebalancing rules
Risk factors exposure
Scope of investment universe
Internal vs. external mandates
Active strategies

Source: Norges Bank Investment Management
The bank’s choices impact total return

… but determining the reference index is much more important


The graph shows accumulated return on the fund and the reference index over the last five years, measured in the fund’s currency basket. The percentage numbers in brackets show annualised yearly return on the reference index and annualised yearly excess return over the last five years.
A broad and global equity portfolio

Source: FTSE, Norges Bank Investment Management
Allocation to different bond markets

Source: Bloomberg, Norges Bank Investment Management. Shows government bond holdings in local currency only.
Real estate provides further diversification

Excluding real estate investments in the logistics sector.

Source: Norges Bank Investment Management

Only in the portfolio
Relevant topics for long-term investors
Some of our recent research processes

04 | 2017
PETROLEUM WEALTH AND OIL PRICE EXPOSURE OF EQUITY SECTORS
DISCUSSION NOTE

In this note, we analyse the short- and long-term co-movement of equity sectors with oil prices. We discuss how Norwegian petroleum wealth is exposed to a permanent oil price decline through sectors that co-move with oil prices.

01 | 2017
INTERNATIONAL DIVERSIFICATION FOR LONG-TERM INVESTORS
DISCUSSION NOTE

In this note, we explore the benefits of international diversification from the perspective of a long-term, multi-asset investor.

01 | 2018
NO-TRADE BAND REBALANCING RULES: EXPECTED RETURNS AND TRANSACTION COSTS
DISCUSSION NOTE

In this note, we explore equity share rebalancing using no-trade band rules. We compare rules based on their implications for the behaviour of the equity share, expected returns, and turnover and transaction costs.
Asset pricing 101

Price = Cash Flows / Discount Rates

Notes: for illustration purposes only
Source of price change matters

At least for long-term investors

- **Discount rate shock**: Higher expected return after shock (steeper slope) => *Transitory* effect on price
- **Cash flow shock**: Same expected return after shock (same slope) => *Permanent* effect on price
INTERNATIONAL DIVERSIFICATION
Diversification benefits: decreased?
Rolling pairwise correlations

Source: Global Financial Data, FactSet, MSCI, JP Morgan, Barclays, NBIM calculations.
Sources of *changes* in correlations

- Correlated Cash Flows
- Correlated Discount Rates
- Cross Correlations

Equity

Fixed income

Source: based on framework from Viceira, Wang, and Zhou (2017); Data from Global Financial Data. NBIM calculations.
Diversification benefits for long-term investors

Equities

Source: based on framework from Asness, Israelov, and Liew (2011). Data from Global Financial Data, FactSet, MSCI, JP Morgan, Barclays. NBIM calculations.
Diversification benefits for long-term investors

Equities

Source: based on framework from Asness, Israelov, and Liew (2011). Data from Global Financial Data, FactSet, MSCI, JP Morgan, Barclays. NBIM calculations.
Diversification benefits for long-term investors

Fixed Income

Investment horizon (months)

Narrow

Broad

Expected shortfall

Source: based on framework from Asness, Israelov, and Liew (2011). Data from Global Financial Data, FactSet, MSCI, JP Morgan, Barclays. NBIM calculations.
Diversification benefits for long-term investors

60-40 Equities-Fixed Income

Expected shortfall

Investment horizon (months)

Source: based on framework from Asness, Israelov, and Liew (2011). Data from Global Financial Data, FactSet, MSCI, JP Morgan, Barclays. NBIM calculations.
OIL AND GAS STOCKS
How to think about investing in oil and gas?

How inflow (after management costs) has increased over time in the portfolio:

- **1998-2001**: Initial period with limited inflows.
- **2001-2007**: Steady increase in inflows.
- **2007-2016**: Significant rise in inflows, reaching NOK 323bn.

**Petroleum revenue** vs. **Oil- and gas stocks?**

Total returns driven by the market
Total returns on oil stocks not significantly different from MSCI World

Notes: Oil & Gas sector is based on MSCI World Energy sector and World is based on MSCI World Index. Log returns represented with a base of 10.
Sizeable return differentials
Oil stocks outperformed during the 2000s, underperformed since 2010

Notes: Oil & Gas sector is based on MSCI World Energy sector and World is based on MSCI World Index. Log returns represented with a base of 10.
Return differentials driven by oil price

Investing in oil stocks instead of the market adds oil price exposure

---

Oil & Gas sector USD log return

World USD log return

Oil & Gas sector relative USD returns

Oil price (WTI, RHS)

Notes: Oil & Gas sector is based on MSCI World Energy sector and World is based on MSCI World Index. Log returns represented with a base of 10.
Oil price sensitivity, sector relative to market

Oil & Gas stands out

Source: Bloomberg, Ken French, MSCI, NBIM calculations.
Oil price sensitivity, decomposed
Cash flow news (permanent) vs discount rate news (transitory)

Source: Bloomberg, Ken French, MSCI, NBIM calculations.
Notes: FTSE Oil & Gas stocks relative return regressions, monthly observations from January 1994 to July 2017, with all series measured in USD. Robust standard errors calculated using the Newey-West (1987) methodology (with 3-month lag length). Source: FTSE, Ken French, NBIM
EQUITY SHARE REBALANCING
Why rebalance?
Motivation for rebalancing

- Limit deviation from strategic equity share
- Capture variation in expected returns
- Reduce transaction cost
Equity share rebalancing

Current rebalancing rule

Source: Norges Bank Investment Management
Equity share rebalancing
What would happen if we did not rebalance?

Source: Norges Bank Investment Management
Rebalancing rules and expected returns

Can simple rebal rules capture variation in expected returns?

Source: Norges Bank Investment Management
Rebalancing and Expected Returns

Historical returns – decomposed - discount rate news dominate

Alpha variability
Alphas across 50 year samples, from simulations
Adjusted rebalancing rule
The Bank’s advice to the Ministry of Finance

Source: Norges Bank Investment Management.
Thank you