Portfolio Allocation with Transaction Costs

Marcelo Fernandes Gustavo Grivol Duda Mendes

Derivatives and Asset Pricing Conference 2026

Discussion:
Julian Terstegge, University of Michigan

Paper: "Portfolio Allocation with Transaction Costs"

trade costs in U() $\Rightarrow$ portfolio turnover regularization

portfolios under trade costs

- two-step approach of trading towards frictionless target portfolio
  - e.g. Brandt, Santa-Clara & Valkanov (2009), Garleanu, Pedersen (2013)
  - here: one-step approach
- ad-hoc choices on turnover regularization
  - here: exact form of regularization from economic primitives

Paper: "Portfolio Allocation with Transaction Costs"

trade costs in U() $\Rightarrow$ portfolio turnover regularization

portfolios under trade costs

- two-step approach of trading towards frictionless target portfolio
  - e.g. Brandt, Santa-Clara & Valkanov (2009), Garleanu, Pedersen (2013)
  - here: one-step approach
- ad-hoc choices on turnover regularization
  - here: exact form of regularization from economic primitives

$\Rightarrow$ better portfolios under trade costs

Comment 1: Uses / Framing

where the paper is

- our portfolios are better economically motivated,
  and perform better under trade costs,
  in simulations and empirically

Comment 1: Uses / Framing

where the paper is

- our portfolios are better economically motivated,
  and perform better under trade costs,
  in simulations and empirically

where the paper could go

Comment 1: Uses / Framing

where the paper is

- our portfolios are better economically motivated,
  and perform better under trade costs,
  in simulations and empirically

where the paper could go

- which characteristics are worth trading on?
  - Novy-Marx and Velikov (2016), DeMiguel et al. (2020)

Comment 1: Uses / Framing

where the paper is

- our portfolios are better economically motivated,
  and perform better under trade costs,
  in simulations and empirically

where the paper could go

- which characteristics are worth trading on?
  - Novy-Marx and Velikov (2016), DeMiguel et al. (2020)
  - especially wrt the liq premium!

Comment 1: Uses / Framing

where the paper is

- our portfolios are better economically motivated,
  and perform better under trade costs,
  in simulations and empirically

where the paper could go

- which characteristics are worth trading on?
  - Novy-Marx and Velikov (2016), DeMiguel et al. (2020)
  - especially wrt the liq premium!
- stock-level "break-even cost" for each anomaly

Comment 1: Uses / Framing

where the paper is

- our portfolios are better economically motivated,
  and perform better under trade costs,
  in simulations and empirically

where the paper could go

- which characteristics are worth trading on?
  - Novy-Marx and Velikov (2016), DeMiguel et al. (2020)
  - especially wrt the liq premium!
- stock-level "break-even cost" for each anomaly
- measuring the cost of constraints / Limits to arbitrage

Comment 2: The two step approach has advantages

the two-step approach dominates in practice

Comment 2: The two step approach has advantages

the two-step approach dominates in practice

- separate alpha model and risk model from an execution/turnover model

Comment 2: The two step approach has advantages

the two-step approach dominates in practice

- separate alpha model and risk model from an execution/turnover model
- transparency in portfolio construction

Comment 2: The two step approach has advantages

the two-step approach dominates in practice

- separate alpha model and risk model from an execution/turnover model
- transparency in portfolio construction
- different cost structures across accounts

Comment 2: The two step approach has advantages

the two-step approach dominates in practice

- separate alpha model and risk model from an execution/turnover model
- transparency in portfolio construction
- different cost structures across accounts

this paper: two-step approach has a cost (suboptimal regularization)

Comment 2: The two step approach has advantages

the two-step approach dominates in practice

- separate alpha model and risk model from an execution/turnover model
- transparency in portfolio construction
- different cost structures across accounts

this paper: two-step approach has a cost (suboptimal regularization)

- does this cost exceed benefits? justifying switching?

Comment 2: The two step approach has advantages

the two-step approach dominates in practice

- separate alpha model and risk model from an execution/turnover model
- transparency in portfolio construction
- different cost structures across accounts

this paper: two-step approach has a cost (suboptimal regularization)

- does this cost exceed benefits? justifying switching?
- this should be the (practitioner) benchmark
- e.g. mean–variance (or factor risk) + quadratic turnover penalty

Comment 3: Still many choices, just later

- quadratic utility over returns net of proportional trade costs

$\Rightarrow$ linear and quadratic turnover terms

Comment 3: Still many choices, just later

- quadratic utility over returns net of proportional trade costs

$\Rightarrow$ linear and quadratic turnover terms

- both penalties depend on $\mu_{i,t}$

Comment 3: Still many choices, just later

- quadratic utility over returns net of proportional trade costs

$\Rightarrow$ linear and quadratic turnover terms

- both penalties depend on $\mu_{i,t}$
- optimization w non-differentiable parts, due to $|\Delta W_t|$

Comment 3: Still many choices, just later

- quadratic utility over returns net of proportional trade costs

$\Rightarrow$ linear and quadratic turnover terms

- both penalties depend on $\mu_{i,t}$
- optimization w non-differentiable parts, due to $|\Delta W_t|$
- proximal gradient algorithm

Comment 3: Still many choices, just later

- quadratic utility over returns net of proportional trade costs

$\Rightarrow$ linear and quadratic turnover terms

- both penalties depend on $\mu_{i,t}$
- optimization w non-differentiable parts, due to $|\Delta W_t|$
- proximal gradient algorithm
- $\mu_{i,t}$ estimated via symmetric (look-ahead) kernel; Σ_t via shrinkage

Comment 3: Still many choices, just later

- quadratic utility over returns net of proportional trade costs

$\Rightarrow$ linear and quadratic turnover terms

- both penalties depend on $\mu_{i,t}$
- optimization w non-differentiable parts, due to $|\Delta W_t|$
- proximal gradient algorithm
- $\mu_{i,t}$ estimated via symmetric (look-ahead) kernel; Σ_t via shrinkage
- dimension-reduction: weight changes are
  linear function of stock characteristics

Comment 3: Still many choices, just later

- quadratic utility over returns net of proportional trade costs

$\Rightarrow$ linear and quadratic turnover terms

- both penalties depend on $\mu_{i,t}$
- optimization w non-differentiable parts, due to $|\Delta W_t|$
- proximal gradient algorithm
- $\mu_{i,t}$ estimated via symmetric (look-ahead) kernel; Σ_t via shrinkage
- dimension-reduction: weight changes are linear function of stock characteristics
- lasso projects unfeasible weights onto characteristics

Comment 3: Still many choices, just later

- quadratic utility over returns net of proportional trade costs

$\Rightarrow$ linear and quadratic turnover terms

- both penalties depend on $\mu_{i,t}$
- optimization w non-differentiable parts, due to $|\Delta W_t|$
- proximal gradient algorithm
- $\mu_{i,t}$ estimated via symmetric (look-ahead) kernel; Σ_t via shrinkage
- dimension-reduction: weight changes are linear function of stock characteristics
- lasso projects unfeasible weights onto characteristics
- final "implementable" portfolio via current characteristics

Comment 3: Still many choices, just later

- quadratic utility over returns net of proportional trade costs

$\Rightarrow$ linear and quadratic turnover terms

- both penalties depend on $\mu_{i,t}$
- optimization w non-differentiable parts, due to $|\Delta W_t|$
- proximal gradient algorithm
- $\mu_{i,t}$ estimated via symmetric (look-ahead) kernel; Σ_t via shrinkage
- dimension-reduction: weight changes are linear function of stock characteristics
- lasso projects unfeasible weights onto characteristics
- final "implementable" portfolio via current characteristics
- post-optimization: short-sale constraints and rescaling weights

Comment 4: Expected Returns

the conditional moment estimation problem

- the objective (eq. (6)) depends on $\mu_{i,t}$ in every term
- the ad hoc penalty papers do not require μ_t for regularization
- μ_t is the hardest quantity to estimate in finance

$\Rightarrow$ bias-variance tradeoff

Comment 5: Look Ahead Bias

- the symmetric kernel used to estimate μ_t employs future returns

$\Rightarrow$ performance due to correct regularization or future info?

- re-run with a one-sided kernel?

(The paper acknowledges this issue very explicitly.)

Comment 6: Strength of the Empirical Evidence

monte carlo: great!

Comment 6: Strength of the Empirical Evidence

monte carlo: great!

- "prophet recovered" clearly dominates BSV and static Markowitz on both Sharpe and quadratic utility across all scenarios

Comment 6: Strength of the Empirical Evidence

monte carlo: great!

- "prophet recovered" clearly dominates BSV and static Markowitz on both Sharpe and quadratic utility across all scenarios
- gains increase with dimensionality

Comment 6: Strength of the Empirical Evidence

monte carlo: great!

- "prophet recovered" clearly dominates BSV and static Markowitz on both Sharpe and quadratic utility across all scenarios
- gains increase with dimensionality
- but: the DGP is known and stable,
  characteristics are linked to returns by construction

Comment 6: Strength of the Empirical Evidence

monte carlo: great!

- "prophet recovered" clearly dominates BSV and static Markowitz on both Sharpe and quadratic utility across all scenarios
- gains increase with dimensionality
- but: the DGP is known and stable, characteristics are linked to returns by construction

real data: less great

Comment 6: Strength of the Empirical Evidence

monte carlo: great!

- "prophet recovered" clearly dominates BSV and static Markowitz on both Sharpe and quadratic utility across all scenarios
- gains increase with dimensionality
- but: the DGP is known and stable, characteristics are linked to returns by construction

real data: less great

- "recovered" has the highest turnover of all strategies

Comment 6: Strength of the Empirical Evidence

monte carlo: great!

- "prophet recovered" clearly dominates BSV and static Markowitz on both Sharpe and quadratic utility across all scenarios
- gains increase with dimensionality
- but: the DGP is known and stable, characteristics are linked to returns by construction

real data: less great

- "recovered" has the highest turnover of all strategies
- higher trade costs lead to higher turnover for "recovered"

Comment 6: Strength of the Empirical Evidence

monte carlo: great!

- "prophet recovered" clearly dominates BSV and static Markowitz on both Sharpe and quadratic utility across all scenarios
- gains increase with dimensionality
- but: the DGP is known and stable, characteristics are linked to returns by construction

real data: less great

- "recovered" has the highest turnover of all strategies
- higher trade costs lead to higher turnover for "recovered"
- "recovered" ranks *last* among all strategies on quadratic utility at $\gamma = 5$ and $\gamma = 10$

Conclusion, "Portfolio Allocation with Transaction Costs"

(1) framing wrt asset pricing
(2) benefits of the two step approach
(3) still many choices, just later
(4) expected returns
(5) look ahead bias
(6) empirical evidence

Very promising paper!

References

Brandt, M. W., Santa-Clara, P., Valkanov, R., 2009, Parametric portfolio policies: Exploiting characteristics in the cross-section of equity returns, Review of Financial Studies 22(9), 3412–3447.

Garleanu, N. B., Pedersen, L. H., 2013, Dynamic trading with predictable returns and transaction costs, Journal of Finance 68(6), 2309–2340.

Novy-Marx, R., Velikov, M., 2016, A taxonomy of anomalies and their trading costs, Review of Financial Studies 29, 104–147.

DeMiguel, V., Mart´ın-Utrera, A., Nogales, F. J., Uppal, R., 2020, A transaction-cost perspective on the multitude of firm characteristics, Review of Financial Studies 33(5), 2180–2222.