European Commercial Real Estate Data Alliance (E-CREDA)

European Commercial Real Estate Data Alliance
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Data-driven real estate & the future of investment decisions in an uncertain world

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Revisiting valuation smoothing in commercial real estate

Revisiting lead-lag relationships in Commercial Real Estate: the case for appraisers

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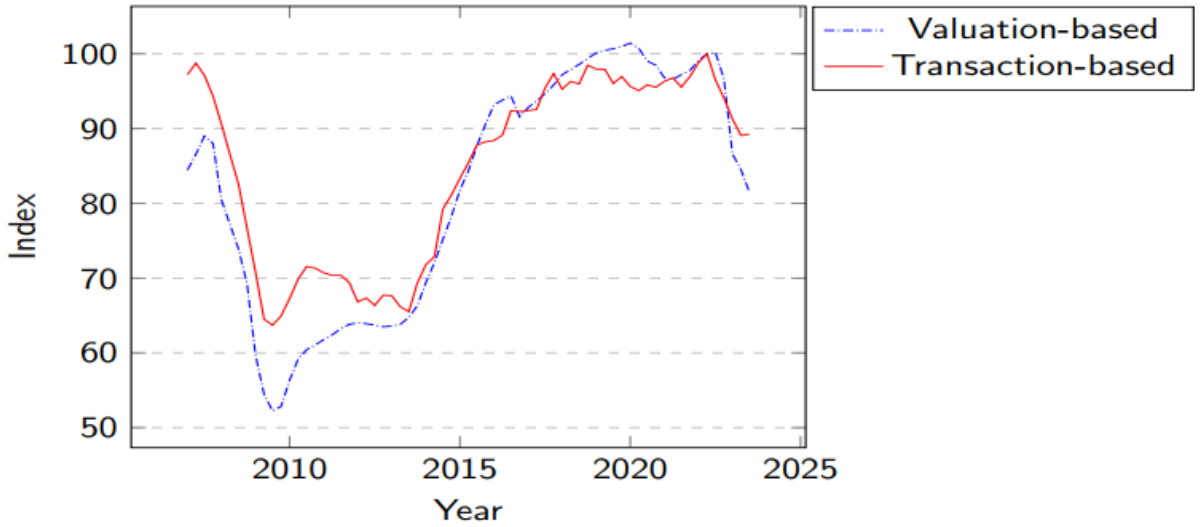
Overview

Introduction

- Industry consensus that appraisers look at dated transactions and therefore lag the true market (Geltner, 2015)
- However, these are the UK office price indexes at the end of Q2 2023:



- And:

		Std.Dev.	1st-Order Autocorr.
United Kingdom	Transaction-based	3.32%	0.63
	Valuation-based	3.57%	0.73
United States	Transaction-based	3.27%	0.61
	Valuation-based	3.22%	0.87
Netherlands	Transaction-based	2.98%	0.91
	Valuation-based	2.33%	0.76

Literature Review

- Two large strains of research that touch upon this subject: Price discovery and appraisal smoothing
- Listed markets lead transactions, which lead valuations (Geltner, 2015; Barkham and Geltner, 1995; Ang et al., 2013; Geltner et al., 2003; Yavas and Yildirim, 2011)
- Appraisal smoothing: $V_t^* = \alpha V_t + (1 - \alpha) V_{t-1}^*$ (Geltner, 1991, 1993; Fisher et al., 1994; Quan and Quigley, 1991; Edelstein and Quan, 2006)
- Smoothing rational on a property level as only a noisy estimate of the current value is available, on an index level however this leads to lag
- Also more recent research on dynamic appraisal smoothing (Cho et al., 2014) and the optimal desmoothing methodology (Delfim and Hoesli, 2021)

Methodology - Frozen transaction-based indexes

- What is this 'true value' of V_t?
- Research tends to focus on a long history of transaction prices
- Assuming appraisers could have known those transaction prices, they 'lag'
- Transaction-based indexes however revise significantly (Van de Minne et al., 2020, 2025)
- We estimate repeat-sales indexes with revisions all the way back to 2007 and use those to examine lead-lag relationships

$$r_{ist} = \mu_t - \mu_s + \epsilon_{it} - \epsilon_{is}, \qquad \epsilon \sim \mathcal{N}(0, 2\sigma^2_\epsilon) \tag{1}$$

$$\mu_t = \mu_{t-1} + \eta_t, \qquad \eta_t \sim \mathcal{N}(0, \sigma^2_\eta) \tag{2}$$

- Do these classic lead-lag relationships hold up with frozen indexes?

Methodology - Lead-lag relationships

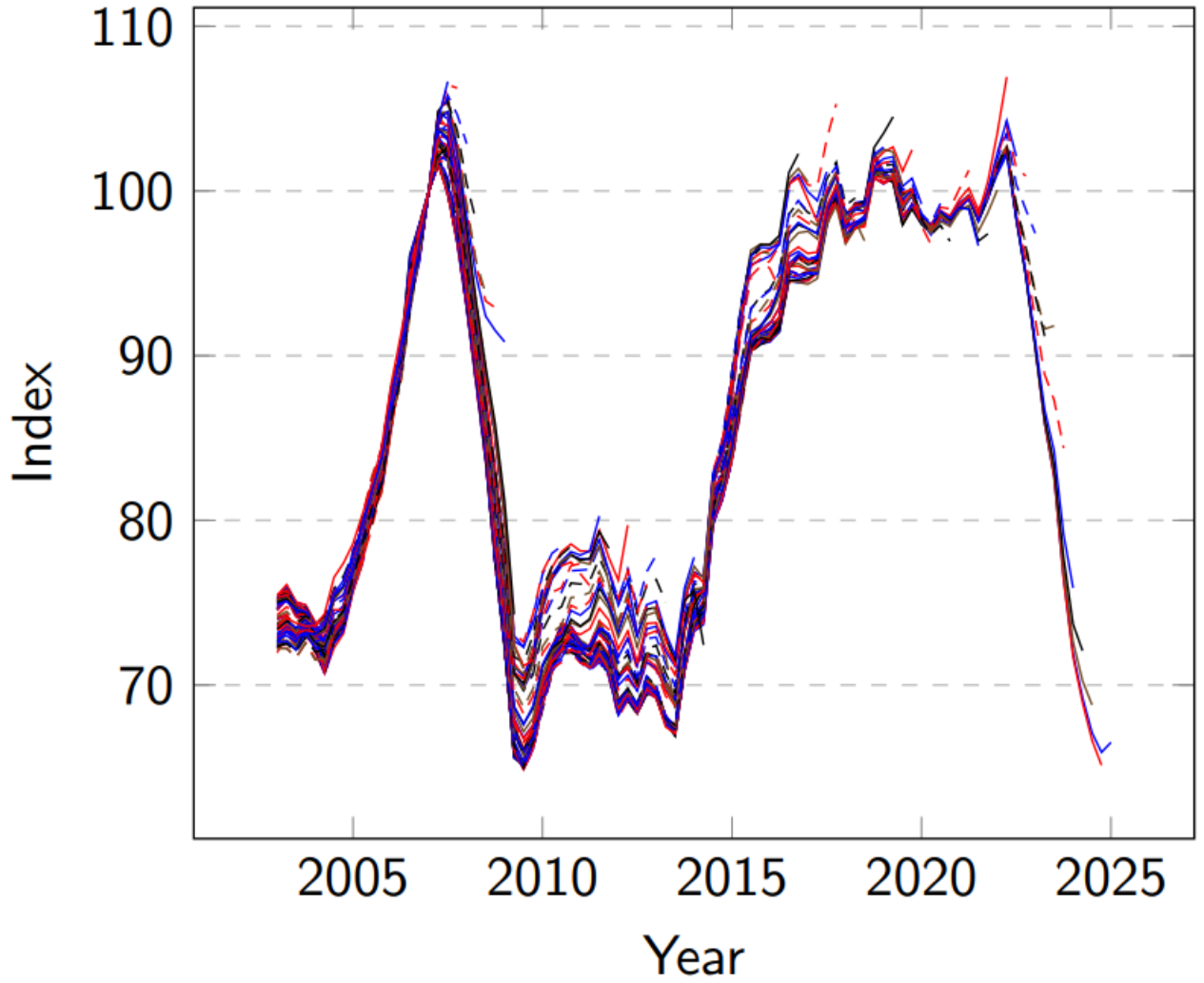
- Test granger causation between transaction-based and valuation-based index
- We show standard unfrozen transaction-based indexes and the frozen versions
- We find that it is not very clear appraisers purely lag the transaction-market available to them at the time of their appraisal
- They might lag a 'true' value, but it is not transactions
- Look at liquid indicators as public proxies and demand indexes

Data

- MSCI (RCA) transaction data from 2001 to 2024
- MSCI (IPD) valuation data from 2001 to 2024
- We study the commercial office markets of the United Kingdom, United States and the Netherlands
- From the transaction data we create repeat-sales indexes, we run all revisions starting in 2007
- From the valuation data we use the asset value growth returns, which are directly comparable to the returns from the repeat sales data
- Also use MSCI Liquid indexes (REIT-based) and Price Expectations Gap (Demand index) (Van Dijk et al., 2020; Fisher et al., 2003)

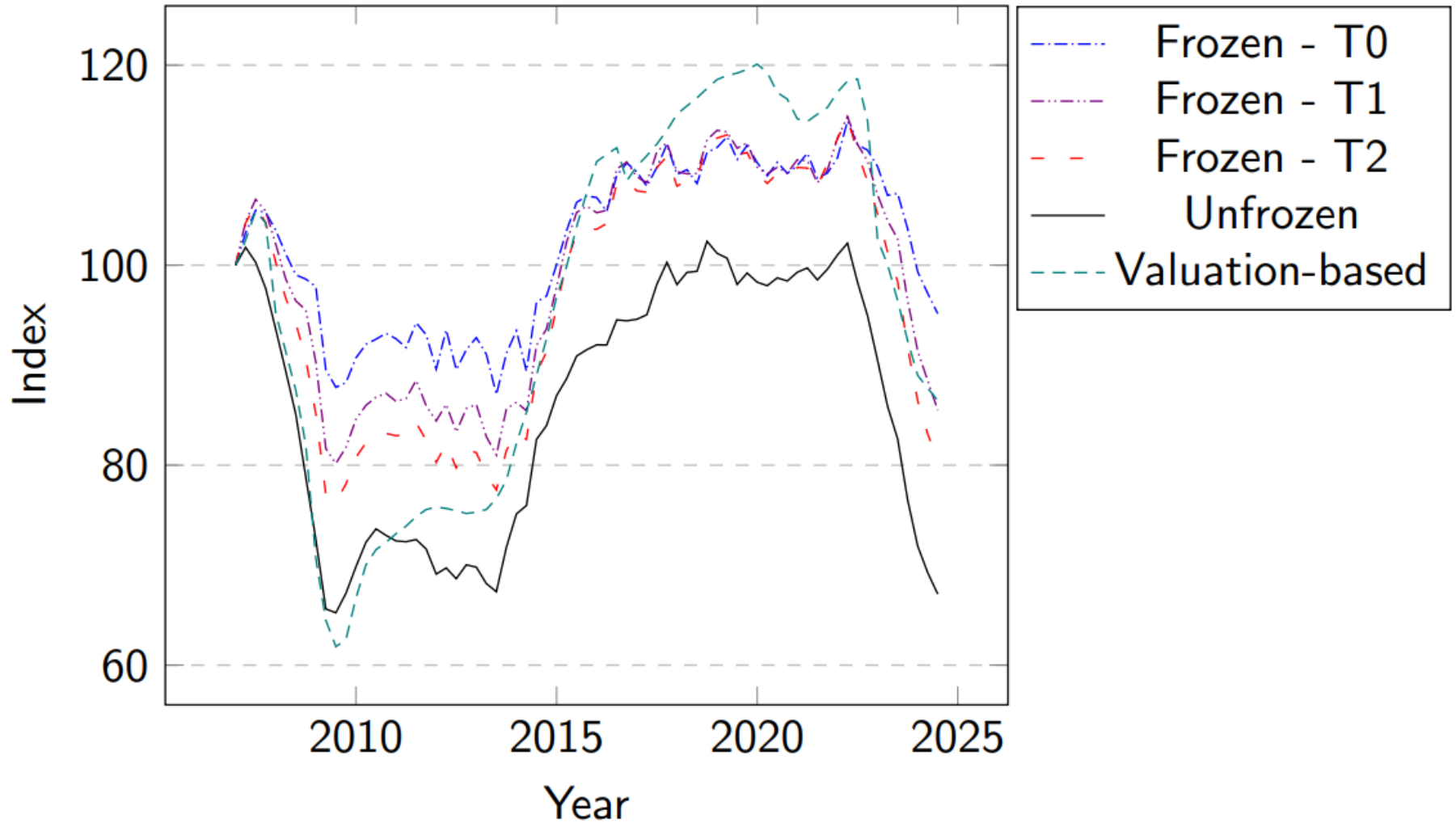
Results - Revisions

Figure: **United Kingdom - Revisions**



Results - Lead-lag

Figure: **United Kingdom - Indexes**



Results - Classic unfrozen Lead-lag

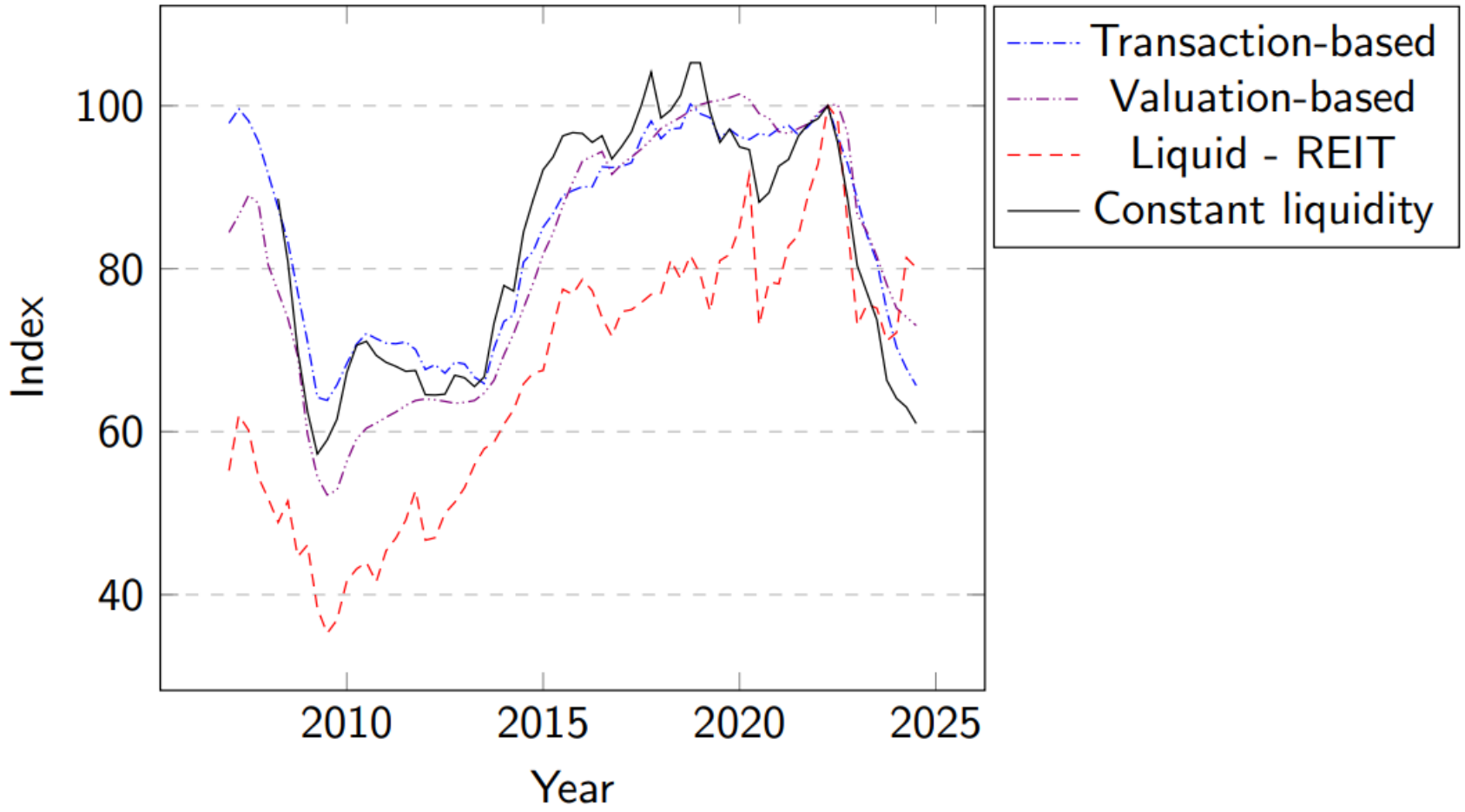
	Dependent variable:			
	Valuation return (Val)		Unfrozen transaction return (Trans)	
United Kingdom	(1)	(2)	(3)	(4)
Val - t-1	0.734***	0.386***		0.386***
	(0.082)	(0.121)		(0.133)
Trans - t-1		0.479***	0.638***	0.313**
		(0.130)	(0.094)	(0.143)
Constant	−0.001	0.001	−0.002	−0.003
	(0.003)	(0.003)	(0.003)	(0.003)
R^2	0.542	0.619	0.406	0.473
F value		13.482		8.446
P value		0.000		0.005
Note:				*p<0.1; **p<0.05; ***p<0.01

Results - Frozen Lead-lag

	Dependent variable:			
	Valuation return (Val)		Frozen transaction return (Trans)	
United Kingdom	(1)	(2)	(3)	(4)
Val - t-1	0.734***	0.689***		0.300***
	(0.082)	(0.111)		(0.102)
Trans - t-1		0.083	0.382***	0.135
		(0.138)	(0.099)	(0.126)
Constant	−0.001	−0.001	−0.0003	−0.0003
	(0.003)	(0.003)	(0.003)	(0.003)
R^2	0.542	0.544	0.182	0.277
F value		0.368		8.698
P value		0.546		0.004
Note:				*p<0.1; **p<0.05; ***p<0.01

What does lead? Liquidity

Figure: **United Kingdom - Indexes**



Conclusion

- Traditional view that appraiser lag a true value because they look at outdated transactions for their valuations seems dated
- Given the information available at the time, it does not seem to be that they lag the transaction-market
- Appraisers in some countries deserve a bit more credit, as they seem to even lead the transaction-market in low liquidity environments
- Other forms of information are used to update valuations, like yield movement or the lack in demand in the market
- This should be stimulated, appraisers should be constrained to use closed transactions
- Still notoriously lagged appraisals out there (Germany, Japan), that could be helped by UK valuation practice

Questions & Comments?

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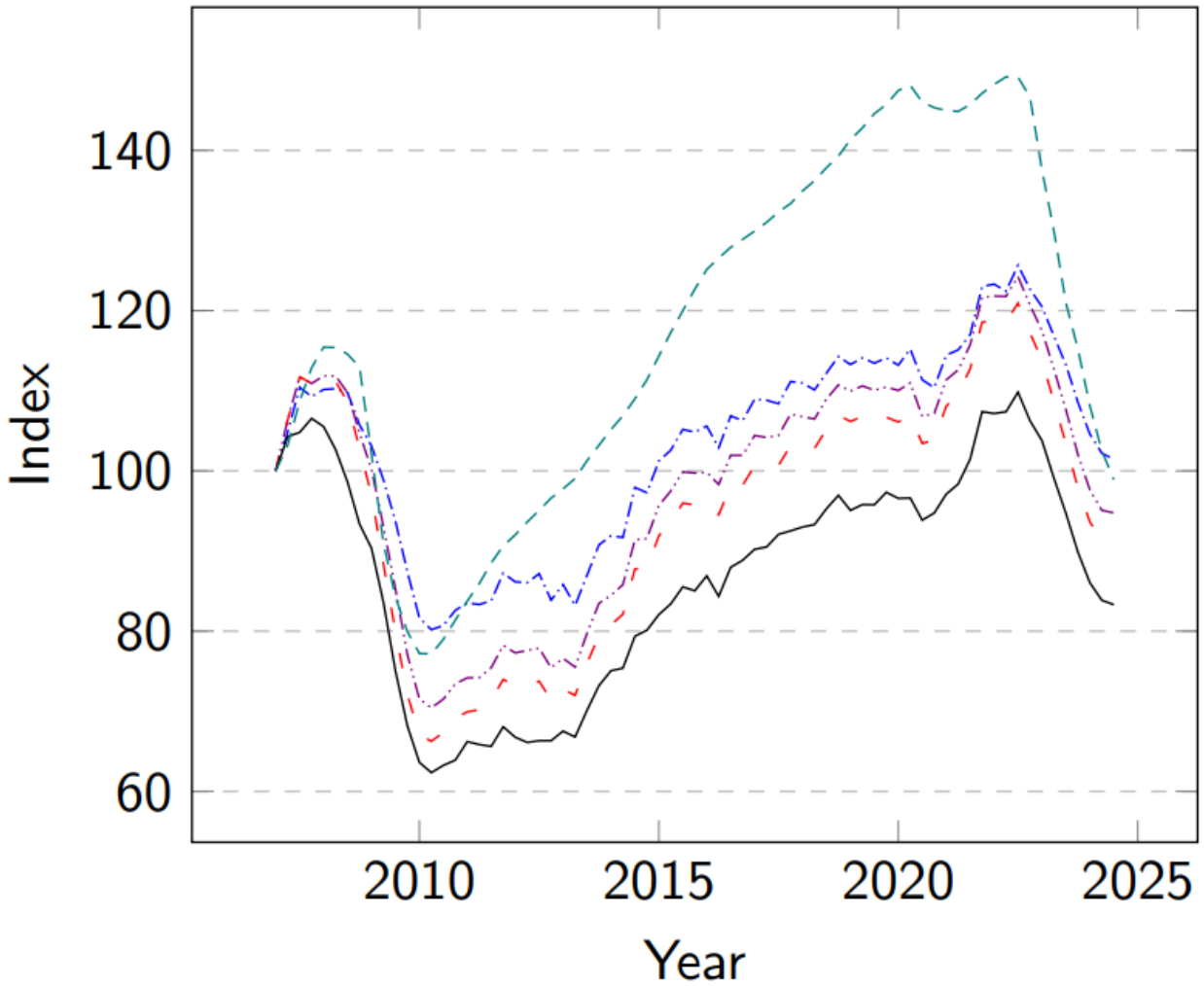
Appendix - Lead-lag

Figure: **United States - Indexes**



Appendix - Lead-lag

Figure: **Netherlands - Indexes**