

## Initial Notes on Koijen and Yogo (2025)

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Koijen and Yogo (2025) [KY25] provides a response to Fuchs, Fukuda and Neuhann (2025) [FFN25].<sup>1</sup> We appreciate their detailed reply, and welcome this and future opportunities to discuss the identification of demand systems. This note offers some initial reactions to KY25.

In short, KY25 incorrectly interprets much of what we say and do in FFN25. In particular, KY25 does not address the main concern we raise, which is that the logit demand system in KY19 does not sufficiently account for cross-asset spillovers. This is what creates the potential for large biases in asset demand estimation. They also overstate the theoretical foundations of asset demand systems. In the following, we discuss these and other concerns in more detail.

- 1) **Theoretical Foundations.** KY25 argues that asset pricing models which generate a valid stochastic discount factor (SDF) have a demand system representation which “shares the same theoretical foundations [...]”. This claim is incorrect. While a valid SDF has a demand system representation, the converse need not hold: without additional restrictions, a given demand system may not generate a valid SDF representation. Hence the two representations are not formally equivalent. The reason for this disconnect is that the Euler conditions which characterize the demand system may not be *sufficient* for a valid SDF.<sup>2</sup> Our theoretical analysis speaks to this complication.

Given this issue, one must validate the consistency of the demand system with the assumed pricing rule. For example, KY19 assumes that prices satisfy no arbitrage and that the return matrix admits a factor structure. But since logit demand does not permit cross-asset demand complementarities, it is unclear whether it generates the endogenous price adjustment mechanism that leads to such a return matrix. If it does not, the model is either internally inconsistent or does not capture the marginal investor. Put simply, *even if factor structures are a natural starting point, structural models must be designed to actually produce the return structures they assume.*

- 2) **Concerns with logit demand.** Appendix A in KY25 presents a setting in which the KY19 estimator works because the true underlying substitution matrix is assumed to satisfy the logit assumptions. While this is obviously correct, our point in FFN25 is different: the logit

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<sup>1</sup> These papers are available at [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=5274709](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5274709) and [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=4672473](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4672473), respectively.

<sup>2</sup> We thank Narayana Kocherlakota for suggesting an example of this in the context of the CAPM. See [here](#).

assumptions impose symmetric and independent substitution patterns between assets, and these are at odds with standard portfolio choice models.

In particular, FFN25 shows that standard models typically feature asymmetric patterns of substitutability and complementarity between assets, and that these depend on concurrent holdings of other assets. As such, these models induce cross-asset spillovers which can severely bias elasticity estimates. Logit demand ignores these spillovers by assumption. *Critically, this is a feature of the logit functional form, not an inherent property of the data or of economic behavior.*

- 3) **What is our model for?** KY25 argue that our model is too abstract to be useful. We disagree. Our model is designed to illustrate the problem of cross-asset spillovers in the starkest possible fashion, not to match real-world prices. This makes it a useful laboratory to investigate the assumptions required for identification. Since logit presumes symmetric substitution, we develop a model that allows for asymmetric substitution. In real-world data, such asymmetries are likely to be a first-order concern.

This is useful because *KY19 provides neither a discussion of cross-asset spillovers and demand complementarities, nor an explicit motivation for the cross-section as a way to mitigate these concerns.* This is in a notable contrast to Haddad et al. 2025.<sup>3</sup>

We also purposefully set up our model to admit a simple estimator based on within-asset price variation given a supply shock. Hence, we do not need to rely on the cross-section of prices. Indeed, it is generally *more* difficult to identify structural parameters without within-asset price variation -- other assets are typically only imperfect controls.

- 4) **Cross-sectional estimators and the relative elasticity.** Appendix B in KY25 discusses cross-sectional estimation in more detail. KY25 argue that cross-sectional regressions can accurately recover demand elasticities using a single cross-section of prices. This is true in our purposefully stylized benchmark economy in which *all* inside assets are ex-ante symmetric. However, it is not true in the general case with asymmetric assets, which is the empirically relevant case. This is highlighted in the earlier sections of our paper, where we discuss the general problem of spillovers.

More generally, Haddad et al. 2025 provide a formal analysis of the cross-sectional estimator. Given specific symmetry assumptions on substitution patterns, they find that cross-sectional regressions generally recover the *relative* elasticity between two assets, not the absolute elasticity of a given asset. One exception is the logit demand system,

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<sup>3</sup> See “Causal Inference for Asset Pricing,” available at [https://loulaliche.com/docs/causal\\_inference\\_HHHKL.pdf](https://loulaliche.com/docs/causal_inference_HHHKL.pdf).

which imposes sufficient symmetry assumptions to recover the absolute elasticity as well. As stated above, *FFN25 is interested in the case where the logit assumptions fail.*

Finally, although Koijen and Yogo do not discuss this in KY25, the results discussed in footnote 12 of FFN25 (and previously shared with Koijen and Yogo and Haddad et al.) show that the cross-sectional estimator may be quite sensitive to small deviations from the required symmetry assumptions.<sup>4</sup> This is a concern because the symmetry assumptions pertain to latent parameters, and thus cannot be directly verified.

- 5) **Controls.** As KY25 points out, KY19 is clear about the use of controls. We do not disagree with this. *Instead, FFN25 argues that controls change the interpretation of the resulting estimates.* Controls lead to estimates of “residual demand,” which is demand over the asset cash flows unaccounted for by controls. We provide examples in which residual demand has little relation to asset-level demand.
- 6) **Message.** FFN25 does not conclude that demand system asset pricing is inherently flawed. We state clearly that there exist environments in which KY19 accurately recovers structural parameters. The statement KY25 quotes from our literature review is *a simple factual observation describing a large strand of the prior empirical asset pricing literature.* There is nothing “unscientific” about this. Instead, we credited KY19 for developing a promising new approach to asset pricing, and also discuss many related approaches.

An important goal of demand system asset pricing is to inform policymakers and investors. Hence, we believe it is pertinent to clearly state the scope and limitations of the current approaches. This will also help identify promising directions for future research.

We hope that this short note clarifies the key points in FFN25 and contributes constructively to the ongoing dialogue about the empirical content of asset demand systems.

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<sup>4</sup> These results are available [here](#).