

An Intertemporal Risk Factor Model (2025 Update of Factors)

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Abstract

This document provides a brief summary of the 2025 update on the ICAPM tradable factors from Chabi-Yo, Gonçalves, and Loudis ([2025](#))

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Update Description and Analysis

We construct the tradable Intertemporal CAPM (ICAPM) factors (r_m , r_E , and r_V) following the exact same methodology as in Chabi-Yo, Gonçalves, and Loudis (2025), but using the CRSP 2024 annual update (covering data up to December 2024, instead of December 2019 as in Chabi-Yo, Gonçalves, and Loudis (2025)).

The factors can differ even over the original sample period since the CRSP dataset used for the construction of the factors is updated. Table 1 shows that the updated factors are almost identical to the original factors over the original sample period (1928 to 2019). In the case of r_V , we do detect a difference statistically, but economically there is almost no difference.

Table 2 provides risk prices estimated exactly as in Table 3 (Panel B) of Chabi-Yo, Gonçalves, and Loudis (2025). The first two panels show that (consistent with Table 1) the risk prices are almost identical over the original sample period (1928 to 2019). The third panel provides risk prices over the updated sample period (1928 to 2024). The results are qualitatively the same as in Chabi-Yo, Gonçalves, and Loudis (2025) and have only relatively small quantitative differences.

References

Chabi-Yo, F., A. S. Gonçalves, and J. Loudis (2025). “An Intertemporal Risk Factor Model”. In: *Management Science*. Forthcoming.

Table 1
Similarity Between Factors over Original Sample Period (01-1928 to 12-2019)

$$f_t^{(updated)} = \alpha + \beta \cdot f_t^{(original)} + \varepsilon_t$$

	$f = r_m$	$f = r_{\mathbb{E}}$	$f = r_{\mathbb{V}}$
$\mathbb{C}or[f^{(updated)}, f^{(original)}]$	100.00%	99.91%	99.92%
α (annualized, %)	0.00	0.05	0.09
$(t_{\alpha=0})$	(-0.91)	(0.56)	(1.42)
β	1.00	1.00	1.00
$(t_{\beta=1})$	(0.72)	(-1.18)	(2.46)
R^2_{adj}	100.00%	99.81%	99.83%

Table 2
ICAPM Risk Prices (Original and Updated Samples)

The original sample goes from 01-1928 to 12-2019 while the updated sample goes from 01-1928 to 12-2024

Risk Prices ($M_t = a + b' f_t$)

	Original Sample & Original Factors				Original Sample & Updated Factors				Updated Sample & Updated Factors			
	CAPM	ICAPM _E	ICAPM _V	ICAPM	CAPM	ICAPM _E	ICAPM _V	ICAPM	CAPM	ICAPM _E	ICAPM _V	ICAPM
b_m	0.12	0.26	0.12	0.26	0.12	0.26	0.12	0.26	0.12	0.24	0.13	0.23
(t_{stat})	(3.05)	(3.57)	(2.35)	(3.59)	(3.05)	(3.54)	(2.41)	(3.54)	(3.23)	(3.53)	(2.58)	(3.48)
b_E		0.18		0.32		0.18		0.32		0.15		0.25
(t_{stat})		(3.02)		(4.28)		(2.99)		(4.04)		(2.67)		(3.44)
b_V			-0.00	-0.18			0.00	-0.18			0.00	-0.14
(t_{stat})			(-0.03)	(-3.34)			(0.06)	(-3.12)			(0.04)	(-2.49)
$[\gamma]$	[2.3]	[4.9]	[2.2]	[4.8]	[2.3]	[4.9]	[2.3]	[4.8]	[2.3]	[4.4]	[2.4]	[4.3]