ARTICLES

REDEMPTION CONSTRAINTS OF BRAZILIAN EQUITY FUNDS, LIQUIDITY OF ASSETS, AND PERFORMANCE

Restrições de resgate em fundos de ações, liquidez dos ativos e desempenho

Restricciones de rescate en fondos de acciones, liquidez de los activos y desempeño

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SUPPLEMENTARY MATERIAL / *MATERIAL SUPLEMENTAR / MATERIAL SUPLEMENTARIO*

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Table 1. **Portfolio Liquidity and Performance in Actively Managed Funds**

Variáveis	Model 01 sharpe		Model 02 sharpepos		Model 03 sortino		Model 04 alpha	
	b	rse	b	rse	b	rse	b	rse
iliqcart	0.015	0.031	0.011	0.041	0.157	0.116	0.306	0.415
nlnw	0.106***	0.006	0.068***	0.010	0.193***	0.030	1.560***	0.099
age	-0.019***	0.002	-0.020***	0.003	-0.046***	0.006	-0.302***	0.026
ifp2	0.147***	0.023	0.104***	0.030	0.355***	0.091	1.579***	0.337
manrate	-0.040***	0.008	-0.047***	0.010	-0.108***	0.036	-0.489***	0.125
perrate	0.054***	0.020	0.150***	0.027	0.516***	0.084	0.595**	0.298
Constant	1.864***	0.116	2.548***	0.173	15.172***	0.650	-10.352***	1.859
Observations	8,852		3,401		8,852		8,852	
Maximum VIF	1.42		1.37		1.42		1.35	

Notes: ***significant at 1%; **significant at 5%; *significant at 10%; rse = robust standard error.

Table 2. **Liquidity and Portfolio Constraints in Actively Managed Funds**

Variáveis	Model 01 sharpe		Model 02 sharpepos		Model 03 sortino		Model 04 alpha	
	b	rse	b	rse	b	rse	b	rse
restr*iliqcart	0.041	0.040	0.060	0.050	0.057	0.123	-0.078	0.489
nlnw	0.107***	0.006	0.069***	0.010	0.190***	0.029	1.554***	0.098
age	-0.019***	0.002	-0.020***	0.003	-0.046***	0.006	-0.302***	0.026
ifp2	0.144***	0.021	0.098***	0.027	0.400***	0.086	1.703***	0.306
manrate	-0.040***	0.007	-0.047***	0.010	-0.114***	0.036	-0.503***	0.122
perrate	0.054***	0.020	0.150***	0.026	0.504***	0.084	0.567*	0.295
Constant	1.862***	0.115	2.543***	0.172	15.224***	0.650	-10.214***	1.847
Observations	8,852		3,401		8,852		8,852	
Maximum VIF	1.28		1.25		1.28		1.28	

Notes: ***significant at 1%; **significant at 5%; *significant at 10%; rse = robust standard error.

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Table 3. **Portfolio Liquidity and Performance (incubation bias test)**

Variáveis	Model 01 sharpe		Model 02 sharpepos		Model 03 sortino		Model 04 alpha	
	b	rse	b	rse	b	rse	b	rse
iliqcart	0.036	0.043	0.059	0.055	0.170	0.138	0.557	0.566
nlnw	0.070***	0.008	0.034***	0.011	0.133***	0.028	0.978***	0.115
age	-0.011***	0.002	-0.009***	0.002	-0.032***	0.006	-0.138***	0.029
ifp2	0.112***	0.025	0.097***	0.033	0.319***	0.092	0.640*	0.372
manrate	-0.038***	0.008	-0.039***	0.011	-0.088**	0.035	-0.607***	0.135
perrate	0.096***	0.022	0.235***	0.030	0.628***	0.093	0.358	0.321
Constant	2.102***	0.139	2.747***	0.198	12.953***	0.665	-6.549***	2.132
Observations	7,098		2,645		7,098		7,098	
Maximum VIF	1.39		1.37		1.39		1.39	

Notes: ***significant at 1%; **significant at 5%; *significant at 10%; rse = robust standard error.

Table 4. **Liquidity Constraints and Portfolio Liquidity (incubation bias test)**

Variáveis	Model 01 sharpe		Model 02 sharpepos		Model 03 sortino		Model 04 alpha	
	b	rse	b	rse	b	rse	b	rse
restr*iliqcart	0.090*	0.052	0.114*	0.063	0.251	0.169	0.614	0.599
nlnw	0.070***	0.007	0.034***	0.011	0.133***	0.028	0.977***	0.112
age	-0.011***	0.002	-0.009***	0.002	-0.032***	0.006	-0.138***	0.029
ifp2	0.109***	0.022	0.097***	0.029	0.334***	0.085	0.722**	0.320
manrate	-0.038***	0.008	-0.040***	0.011	-0.090***	0.035	-0.619***	0.135
perrate	0.095***	0.022	0.233***	0.030	0.621***	0.093	0.333	0.322
Constant	2.096***	0.135	2.745***	0.196	12.957***	0.662	-6.504***	2.074
Observations	7,098		2,645		7,098		7,098	
Maximum VIF	1.30		1.27		1.30		1.30	

Notes: ***significant at 1%; **significant at 5%; *significant at 10%; rse = robust standard error.

Table 5. **Portfolio Liquidity and Performance (funds with three constraints)**

Variáveis	Model 01 sharpe		Model 02 sharpepos		Model 03 sortino		Model 04 alpha	
	b	rse	b	rse	b	rse	b	rse
iliqcart	0.041	0.048	0.102	0.067	0.479**	0.190	0.954	0.734
nlnw	0.055***	0.008	0.029**	0.012	0.090***	0.034	0.694***	0.126
age	-0.015***	0.002	-0.017***	0.002	-0.051***	0.006	-0.161***	0.028
ifp2	0.065**	0.028	0.039	0.039	0.237**	0.108	0.210	0.445
manrate	-0.048***	0.008	-0.040***	0.012	-0.070*	0.042	-0.850***	0.149
perrate	0.033	0.025	0.159***	0.038	0.478***	0.114	0.146	0.404
Constant	2.468***	0.142	2.930***	0.219	13.625***	0.705	-2.478	2.324
Observations	6,097		2,261		6,097		6,097	
Maximum VIF	1.47		1.48		1.47		1.47	

Notes: ***significant at 1%; **significant at 5%; *significant at 10%; rse = robust standard error.

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Table 6. **Liquidity Constraints and Portfolio Liquidity (funds with three constraints)**

Variáveis	Model 01 sharpe		Model 02 sharpepos		Model 03 sortino		Model 04 alpha	
	b	rse	b	rse	b	rse	b	rse
restr*iliqcart	0.384*	0.230	0.202*	0.119	1.923	1.489	6.130	5.539
nlnw	0.055***	0.008	0.029**	0.012	0.091***	0.033	0.697***	0.124
age	-0.015***	0.002	-0.017***	0.002	-0.051***	0.006	-0.162***	0.027
ifp2	0.077***	0.023	0.073**	0.033	0.395***	0.105	0.513	0.351
manrate	-0.050***	0.008	-0.044***	0.012	-0.087**	0.042	-0.881***	0.145
perrate	0.331	0.025	0.161***	0.038	0.483***	0.114	0.153	0.404
Constant	2.467***	0.140	2.936***	0.218	13.641***	0.701	-2.471	2.277
Observations	6,097		2,261		6,097		6,097	
Maximum VIF	1.36		1.32		1.36		1.36	

Notes: ***significant at 1%; **significant at 5%; *significant at 10%; rse = robust standard error.

Table 7. **Breush-Pagan, Chow and Hausman tests performed to choose the best panel model in the relationship between portfolio liquidity and performance.**

Variáveis	Model 01 sharpe		Model 02 sharpepos		Model 03 sortino		Model 04 alpha	
	b	se	b	rse	b	rse	b	se
iliqcart	-0.018	0.062	0.022	0.044	0.181	0.119	-0.238	0.507
nlnw	-0.003	0.015	0.046***	0.009	0.137***	0.026	1.110***	0.092
age	-0.407***	0.006	-0.018***	0.002	-0.048***	0.006	-0.220***	0.028
ifp2	0.039	0.059	0.120***	0.029	0.405***	0.087	1.528***	0.368
manrate	-25.281***	7.43	-0.042***	0.010	-0.092***	0.034	-0.631***	0.138
perrate	omitido	omitido	0.195***	0.026	0.648***	0.083	0.462	0.329
Constant	44.373***	11.676	2.734	0.163	14.312***	0.574	-5.464***	1.716
Observations	10,064		3,819		10,064		10,064	
Maximum VIF	1.41		1.38		1.41		1.41	
Breusch-Pagan	0.000		1.000		1.000		0.004	
Chow	0.000		0.991		0.361		0.558	
Hausman	0.000		0.000		0.000		0.000	

Notes: ***significant at 1%; **significant at 5%; *significant at 10%; rse = robust standard error.

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Table 8. **Breush-Pagan, Chow and Hausman tests performed to choose the best panel model for the effect of the relationship between liquidity constraints and portfolio liquidity on performance.**

Variáveis	Model 01 sharpe		Model 02 sharpepos		Model 03 sortino		Model 04 alpha	
	b	se	b	rse	b	rse	b	se
restr*iliqcart	-0.070	0.090	0.065	0.049	0.060	0.125	-0.124	0.631
nlnw	-0.003	0.015	0.046***	0.009	0.136***	0.026	1.112***	0.092
age	-0.407***	0.006	-0.018***	0.002	-0.048***	0.006	-0.220***	0.028
ifp2	0.043	0.058	0.117***	0.026	0.456***	0.083	1.470***	0.345
manrate	-25.175***	7.427	-0.042***	0.010	-0.098***	0.034	-0.624***	0.137
perrate	omitido	omitido	0.194***	0.026	0.636***	0.083	0.476	0.327
Constant	44.206***	11.676	2.731***	0.161	14.354***	0.574	-5.511***	1.714
Observations	10,064		3,819		10,064		10,064	
Maximum VIF	1.29		1.25		1.29		1.29	
Breusch-Pagan	0.000		1.000		1.000		0.003	
Chow	0.000		0.991		0.343		0.536	
Hausman	0.000		0.000		0.000		0.000	

Notes: ***significant at 1%; **significant at 5%; *significant at 10%; rse = robust standard error.

Table 9. **Liquidity Constraints and Sharpe Ratio by Period**

Variables	2009 - 2013		2014 - 2016	
sharpe	b	rse	b	rse
liqconst	0.222***	0.031	-0.010	0.021
nlnw	0.107***	0.009	0.062***	0.008
age	-0.029***	0.002	-0.004***	0.002
ifp2	0.226***	0.030	0.049**	0.020
manrate	-0.044***	0.011	-0.032***	0.008
perrate	0.160***	0.031	-0.113***	0.020
Constant	1.613***	0.146	-1.678***	0.138
Observations	5,384		4,680	
Maximum VIF	1.30		1.36	

Notes: ***significant at 1%; **significant at 5%; *significant at 10%; rse = robust standard error.

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Table 10. **Liquidity Constraints and Sharpe Ratio (positive risk premium) by Period**

Variables	2009 - 2013		2014 - 2016	
sharpepos	b	rse	b	rse
liqconst	0.281***	0.042	-0.016	0.030
nlnw	0.086***	0.013	0.003	0.013
age	-0.035***	0.004	-0.002	0.002
ifp2	0.222***	0.038	-0.064**	0.027
manrate	-0.048***	0.015	-0.040***	0.012
perrate	0.258***	0.041	-0.056**	0.028
Constant	2.014***	0.218	0.464**	0.235
Observations	2,352		1,467	
Maximum VIF	1.33		1.41	

Notes: ***significant at 1%; **significant at 5%; *significant at 10%; rse = robust standard error.

Table 11. **Liquidity Constraints and Sortino Ratio by Period**

Variables	2009 - 2013		2014 - 2016	
sortino	b	rse	b	rse
liqconst	0.772***	0.160	0.009	0.033
nlnw	0.211***	0.041	0.063**	0.027
age	-0.080***	0.010	-0.009***	0.003
ifp2	0.805***	0.147	-0.022	0.032
manrate	-0.132**	0.058	-0.047**	0.019
perrate	1.032***	0.155	-0.129***	0.032
Constant	12.853***	0.786	-1.689***	0.478
Observations	5,384		4,680	
Maximum VIF	1.30		1.36	

Notes: ***significant at 1%; **significant at 5%; *significant at 10%; rse = robust standard error.

Table 12. **Liquidity Constraints and Jensen's Alpha by Period**

Variables	2009 - 2013		2014 - 2016	
alfa	b	rse	b	rse
liqconst	2.424***	0.481	-0.389	0.445
nlnw	1.287***	0.125	1.011***	0.150
age	-0.397***	0.032	-0.025	0.038
ifp2	2.247***	0.394	0.292	0.405
manrate	-0.527**	0.167	-0.657***	0.163
perrate	2.381***	0.441	-2.267***	0.405
Constant	-9.148***	2.290	-21.350***	2.586
Observations	5,384		4,680	
Maximum VIF	1.30		1.36	

Notes: ***significant at 1%; **significant at 5%; *significant at 10%; rse = robust standard error.

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Table 13. **Liquidity Constraints and Portfolio Liquidity (stocks)**

Variables	2009 - 2013		2014 - 2016	
difa	b	rse	b	rse
liqconst	7.107***	1.064	5.900***	1.051
nlnw	1.176***	0.414	1.871***	0.397
age	-0.757***	0.133	-0.783***	0.111
ifp2	59.354***	0.845	48.148***	0.894
manrate	1.577***	0.458	1.241***	0.432
perrate	4.141***	1.005	2.021**	0.968
Constant	-88.873***	7.014	-87.295***	6.772
Observations	6,606		5,023	
Maximum VIF	1.31		1.35	

Notes: ***significant at 1%; **significant at 5%; *significant at 10%; rse = robust standard error.

Table 14. **Portfolio Liquidity and Liquidity Constraints (funds)**

Variables	2009 - 2013		2014 - 2016	
diff	b	rse	b	rse
liqconst	6.132**	2.616	11.844***	2.754
nlnw	-2.614***	0.549	-3.210***	0.626
age	-0.373*	0.199	-0.463**	0.210
ifp2	-30.579***	3.052	-24.234***	2.770
manrate	-4.904***	1.097	-7.427***	1.236
perrate	-13.571***	2.609	-20.387***	2.804
Constant	54.109***	9.746	68.904***	11.220
Observations	6,606		5,023	
Maximum VIF	1.31		1.35	

Notes: ***significant at 1%; **significant at 5%; *significant at 10%; rse = robust standard error.

Table 15. **Liquidity Constraints and Portfolio Liquidity (funds and stocks)**

Variables	2009 - 2013		2014 - 2016	
dift	b	rse	b	rse
liqconst	13.225***	2.816	17.871***	2.944
nlnw	-1.437**	0.691	-1.233	0.752
age	-1.131***	0.225	-1.229***	0.239
ifp2	28.718***	3.164	23.723***	2.917
manrate	-3.327***	1.172	-6.213***	1.303
perrate	-9.467***	2.785	-18.265***	2.969
Constant	-34.799***	12.122	20.274	13.307
Observations	6,606		5,023	
Maximum VIF	1.31		1.35	

Notes: ***significant at 1%; **significant at 5%; *significant at 10%; rse = robust standard error.

Table 16. Portfolio Liquidity and Performance by Period (sharpe)

Variables	2009 - 2013		2014 - 2016	
sharpe	b	rse	b	rse
iliqcart	0.031	0.052	-0.071**	0.035
nlnw	0.111***	0.009	0.061***	0.008
age	-0.032***	0.002	-0.004***	0.002
ifp2	0.252***	0.036	0.071***	0.023
manrate	-0.042***	0.011	-0.035***	0.008
perrate	0.244***	0.030	-0.123***	0.020
Constant	1.593***	0.151	-1.652***	0.140
Observations	5,384		4,680	
Maximum VIF	1.42		1.38	

Notes: ***significant at 1%; **significant at 5%; *significant at 10%; rse = robust standard error.

Table 17. Portfolio Liquidity and Performance by Period (sharpepos)

Variables	2009 - 2013		2014 - 2016	
sharpepos	b	rse	b	rse
iliqcart	0.032	0.071	-0.048	0.044
nlnw	0.092***	0.013	0.002	0.013
age	-0.039***	0.004	-0.001	0.002
ifp2	0.262***	0.045	-0.054*	0.028
manrate	-0.043***	0.015	-0.042***	0.012
perrate	0.369***	0.040	-0.066**	0.027
Constant	1.964***	0.225	0.480**	0.111
Observations	2,352		1,467	
Maximum VIF	1.42		1.35	

Notes: ***significant at 1%; **significant at 5%; *significant at 10%; rse = robust standard error.

Table 18. Portfolio Liquidity and Performance by Period (sortino)

Variables	2009 - 2013		2014 - 2016	
sortino	b	rse	b	rse
iliqcart	0.358	0.235	-0.076	0.054
nlnw	0.227***	0.042	0.063**	0.027
age	-0.090***	0.010	-0.010***	0.002
ifp2	0.813***	0.163	0.007	0.036
manrate	-0.114*	0.058	-0.050**	0.019
perrate	1.335***	0.150	-0.133***	0.033
Constant	12.714***	0.796	-1.666***	0.483
Observations	5.384		4.680	
Maximum VIF	1.42		1.38	

Notes: ***significant at 1%; **significant at 5%; *significant at 10%; rse = robust standard error.

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Table 19. Portfolio Liquidity and Performance by Period (alpha)

Variables	2009 - 2013		2014 - 2016	
alpha	b	rse	b	rse
iliqcart	0.429	0.592	-1.112*	0.637
nlnw	1.329***	0.127	0.988***	0.149
age	-0.430***	0.033	-0.022	0.037
ifp2	2.507***	0.453	0.588	0.464
manrate	-0.497***	0.175	-0.710***	0.166
perrate	3.299***	0.413	-2.510***	0.398
Constant	-9.392***	2.333	-20.911***	2.619
Observations	5,384		4,680	
Maximum VIF	1.42		1.38	

Notes: ***significant at 1%; **significant at 5%; *significant at 10%; rse = robust standard error.

Table 20. Liquidity Constraints, Portfolio Liquidity, and Performance by Period (sharpe)

Variables	2009 - 2013		2014 - 2016	
sharpe	b	rse	b	rse
restr*iliqcart	0.117	0.066	-0.016	0.039
nlnw	0.111***	0.009	0.061***	0.008
age	-0.032***	0.002	-0.004***	0.002
ifp2	0.243***	0.032	0.050**	0.020
manrate	-0.041***	0.011	-0.032***	0.008
perrate	0.243***	0.030	-0.117***	0.020
Constant	1.588***	0.150	-1.671***	0.139
Observations	5,384		4,680	
Maximum VIF	1.26		1.32	

Notes: ***significant at 1%; **significant at 5%; *significant at 10%; rse = robust standard error.

Table 21. Liquidity Constraints, Portfolio Liquidity and Performance by Period (sharpepos)

Variables	Period 2009 - 2013		Period 2014 - 2016	
sharpepos	b	rse	b	rse
restr*iliqcart	0.109	0.085	-0.016	0.053
nlnw	0.092***	0.013	0.002	0.013
age	-0.039***	0.004	-0.001	0.002
ifp2	0.256***	0.040	-0.065**	0.027
manrate	-0.043***	0.015	-0.040***	0.012
perrate	0.368***	0.039	-0.063**	0.027
Constant	1.960***	0.223	0.471**	0.237
Observations	2,352		1,467	
Maximum VIF	1.22		1.33	

Notes: ***significant at 1%; **significant at 5%; *significant at 10%; rse = robust standard error.

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Table 22. **Liquidity Constraints, Portfolio Liquidity and Performance Constraints by Period (sortino)**

Variables	Period 2009 - 2013		Period 2014 - 2016	
sortino	b	rse	b	rse
restr*iliqcart	0.135	0.262	-0.002	0.058
nlnw	0.224***	0.042	0.063**	0.027
age	-0.091***	0.010	-0.009***	0.002
ifp2	0.912***	0.155	-0.019	0.033
manrate	-0.125**	0.059	-0.047**	0.019
perrate	1.318***	0.151	-0.126***	0.032
Constant	12.796***	0.795	-1.690***	0.482
Observations	5,384		4,680	
Maximum VIF	1.26		1.32	

Notes: ***significant at 1%; **significant at 5%; *significant at 10%; rse = robust standard error.

Table 23. **Liquidity Constraints, Portfolio Liquidity, and Performance by Period (Alpha)**

Variables	Period 2009 - 2013		Period 2014 - 2016	
alpha	b	rse	b	rse
restr*iliqcart	0.485	0.717	-0.450	0.653
nlnw	1.327***	0.126	0.995***	0.148
age	-0.430***	0.033	-0.021	0.038
ifp2	2.573***	0.413	0.296	0.414
manrate	-0.507***	0.171	-0.672***	0.163
perrate	3.279***	0.411	-2.422***	0.396
Constant	-9.333***	2.311	-21.158***	2.589
Observations	5,384		4,680	
Maximum VIF	1.26		1.32	

Notes: ***significant at 1%; **significant at 5%; *significant at 10%; rse = robust standard error.

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