

## Referências Bibliográficas

- [Almgren et al. 2002] ALMGREN, R.; CHRISS, N.. **Optimal execution of portfolio transactions**. Journal of Risk, 3, 2002.
- [Alpaydin 2004] ALPAYDIN, E.. **Introduction to Machine Learning (Adaptive Computation and Machine Learning)**. The MIT Press, October 2004. 2.2, 2.2.5, 2.3, 2.3.2
- [Bellman 1957] BELLMAN, R.. **A markovian decision process**. Indiana Univ. Math. J., 6:679–684, 1957. 2.2.3, 2.2.5
- [Bertsekas 1987] BERTSEKAS, D. P.. **Dynamic programming: deterministic and stochastic models**. Prentice-Hall, Inc., Upper Saddle River, NJ, USA, 1987. 2.2.5
- [Bertsimas & Lo 1998] BERTSIMAS, D.; LO, A. W.. **Optimal control of execution costs**. Journal of Financial Markets, 1(1):1–50, April 1998. 1.3
- [Chan & Shelton 2001] CHAN, N. T.; SHELTON, C. R.. **An electronic market-maker**. In: SEVENTH INTERNATIONAL CONFERENCE OF THE SOCIETY FOR COMPUTATIONAL ECONOMICS, 2001. 1.3
- [Cliff & Bruten 1997] CLIFF, D.; BRUTEN, J.. **Minimal-intelligence agents for bargaining behaviors in market-based environments**. Technical Reports HPL-97-91, HP Labs (Bristol, UK), August 1997. 134 pages, <http://www.hpl.hp.com/techreports/97/HPL-97-91.html>.
- [Coggins et al. 2003] COGGINS, R.; BLAZEJEWSKI, A. ; AITKEN, M.. **Optimal trade execution of equities in a limit order market**. In: IN INTERNATIONAL CONFERENCE ON COMPUTATIONAL INTELLIGENCE FOR FINANCIAL ENGINEERING, p. 371–378, 2003. 1.3
- [El-Yaniv et al. 2001] EL-YANIV, R.; FIAT, A.; KARP, R. M. ; TURPIN, G.. **Optimal search and one-way trading online algorithms**. Algorithmica, 30(1):101–139, 2001. 1.3
- [Gjerstad & Dickhaut 1998] GJERSTAD, S.; DICKHAUT, J.. **Price formation in double auctions**. Games and Economic Behavior, 22:1–29, 1998. 1.3

- [Kaelbling et al. 1996] KAEHLING, L. P.; LITTMAN, M. L. ; MOORE, A. W.. **Reinforcement learning: a survey**. Journal of Artificial Intelligence Research, 4:237–285, 1996. 2.2.1, 2.2.5
- [Kakade et al. 2004] KAKADE, S. M.; KEARNS, M.; MANSOUR, Y. ; ORTIZ, L. E.. **Competitive algorithms for vwap and limit order trading**. In: EC '04: PROCEEDINGS OF THE 5TH ACM CONFERENCE ON ELECTRONIC COMMERCE, p. 189–198, New York, NY, USA, 2004. ACM. 1.3
- [Kim & Shelton 2002] KIM, A. J.; SHELTON, C. R.. **Modeling stock order flows and learning market-making from data**. Technical Report CBCL-217, MIT Artificial Intelligence Laboratory, 2002.
- [Kohavi 1995] KOHAVI, R.. **A study of cross-validation and bootstrap for accuracy estimation and model selection**. In: IJCAI, p. 1137–1145, 1995. 2.3, 2.3, 2.3.1
- [Markowitz 1952] MARKOWITZ, H.. **Portfolio selection**. The Journal of Finance, 7(1):77–91, 1952. 3.5.1
- [Nevmyvaka et al. 2005] NEVMYVAKA, Y.; KEARNS, M.; PAPANDREOU, M. ; SYCARA, K.. **Electronic trading in order-driven markets: efficient execution**. In: E-COMMERCE TECHNOLOGY, 2005. CEC 2005. SEVENTH IEEE INTERNATIONAL CONFERENCE ON, p. 190–197, 2005. 1.3, 3.5, 3.5.1, 3.5.1, 3.5.2
- [Nevmyvaka et al. 2006] NEVMYVAKA, Y.; FENG, Y. ; KEARNS, M.. **Reinforcement learning for optimized trade execution**. In: ICML '06: PROCEEDINGS OF THE 23RD INTERNATIONAL CONFERENCE ON MACHINE LEARNING, p. 673–680, New York, NY, USA, 2006. ACM. 1.1, 1.3, 2.2.6, 3.4, 4.2, 5
- [Nilsson 2005] NILSSON, N. J.. **Introduction to Machine Learning (An Early Draft of a Proposed Textbook)**. Stanford University, March 2005. 2.2.1, 2.2.1
- [Russell & Norvig 2003] RUSSELL, S. J.; NORVIG. **Artificial Intelligence: A Modern Approach (Second Edition)**. Prentice Hall, 2003. 2.2.1
- [Setiono 2001] SETIONO, R.. **Feedforward neural network construction using cross validation**. Neural Comput., 13(12):2865–2877, 2001. 2.3
- [Sutton & Barto 1998] SUTTON, R. S.; BARTO, A. G.. **Reinforcement Learning: An Introduction (Adaptive Computation and Machine**

Learning). The MIT Press, March 1998. 2.2.2, 2.2.2, 2.2.3, 2.2.3, 2.2.4, 2.2.4, 2.2.4

[Tesauro & Bredin 2002] TESAURO, G.; BREDIN, J. L.. **Strategic sequential bidding in auctions using dynamic programming**. In: AAMAS '02: PROCEEDINGS OF THE FIRST INTERNATIONAL JOINT CONFERENCE ON AUTONOMOUS AGENTS AND MULTIAGENT SYSTEMS, p. 591–598, New York, NY, USA, 2002. ACM. 1.3

[Wang et al. 2006] WANG, J.; NESKOVIC, P. ; COOPER, L. N.. **Neighborhood size selection in the k-nearest-neighbor rule using statistical confidence**. Pattern Recogn., 39(3):417–423, 2006. 2.3

## A

### Tabelas de Resultados dos Experimentos

Neste anexo, apresentamos todos os resultados detalhados dos experimentos descritos no Capítulo 4. Todas as tabelas aqui apresentadas possuem quatro colunas. Na primeira, podemos ver a classificação da estratégia no experimento, na segunda, o nome da estratégia, na terceira, o valor de  $\Gamma_{medio}$  (seção 4.4) e na quarta, podemos ver a quantia média de dinheiro que a estratégia pagou ou recebeu.

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
1	Ótima	0,999939060	1620,40918
2	Submit and Leave (fator=-8.0)	1,000127125	1620,71572
3	Kearns (agressividade =1.0)	1,000129890	1620,72002
4	Kearns (agressividade otimizada)	1,000129890	1620,72002
5	Submit and Leave (fator=-7.0)	1,000130463	1620,72139
6	Submit and Leave (fator=-20.0)	1,000131893	1620,72363
7	Submit and Leave (fator=-19.0)	1,000131893	1620,72363
8	Submit and Leave (fator=-18.0)	1,000131893	1620,72363
9	Submit and Leave (fator=-17.0)	1,000131893	1620,72363
10	Submit and Leave (fator=-16.0)	1,000131893	1620,72363
11	Submit and Leave (fator=-15.0)	1,000131893	1620,72363
12	Submit and Leave (fator=-14.0)	1,000131893	1620,72363
13	Submit and Leave (fator=-13.0)	1,000131893	1620,72363
14	Submit and Leave (fator=-12.0)	1,000131893	1620,72363
15	Submit and Leave (fator=-11.0)	1,000132084	1620,72412
16	Submit and Leave (fator=-10.0)	1,000132561	1620,72480
17	Submit and Leave (fator=-9.0)	1,000133038	1620,72549
18	Submit and Leave (fator=-6.0)	1,000133801	1620,72686
19	Kearns (agressividade =0.75)	1,000135994	1620,72988
Continua na próxima página			

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
20	Submit and Leave (fator=-5.0)	1,000137711	1620,73330
21	Submit and Leave (fator=-4.0)	1,000141430	1620,73945
22	Reinforcement Learning (e,f,q,t)	1,000142193	1620,74062
23	Submit and Leave (fator=-3.0)	1,000143433	1620,74277
24	Submit and Leave (fator=1.0)	1,000145245	1620,74502
25	Reinforcement Learning (c,e,f,t)	1,000148582	1620,75098
26	Submit and Leave (fator=-2.0)	1,000149918	1620,75312
27	Reinforcement Learning (e,f,t)	1,000165367	1620,77861
28	Submit and Leave (fator=-1.0)	1,000165749	1620,77900
29	Submit and Leave (fator=0.0)	1,000189590	1620,81768
30	Submit and Execute	1,000291157	1620,98252
31	Submit and Leave (fator=2.0)	1,000402069	1621,16045
32	Kearns (agressividade =0.25)	1,000479794	1621,28574
33	Kearns (agressividade =0.0)	1,000486183	1621,29727
34	Aleatória	1,000544453	1621,39072
35	Submit and Leave (fator=3.0)	1,000691795	1621,62939
36	Submit and Leave (fator=4.0)	1,000990391	1622,11357
37	Kearns (agressividade =0.5)	1,001088238	1622,27314
38	Submit and Leave (fator=5.0)	1,001289845	1622,59883
39	Submit and Leave (fator=6.0)	1,001593781	1623,09092
40	Submit and Leave (fator=7.0)	1,001896572	1623,58145
41	Submit and Leave (fator=8.0)	1,002201462	1624,07539
42	Submit and Leave (fator=9.0)	1,002505207	1624,56748
43	Submit and Leave (fator=10.0)	1,002811909	1625,06436
44	Submit and Leave (fator=11.0)	1,003118706	1625,56123
45	Submit and Leave (fator=12.0)	1,003425407	1626,05811
46	Submit and Leave (fator=13.0)	1,003732300	1626,55508
47	Submit and Leave (fator=14.0)	1,004039097	1627,05195
48	Submit and Leave (fator=15.0)	1,004342937	1627,54434
49	Submit and Leave (fator=16.0)	1,004646969	1628,03691
50	Submit and Leave (fator=17.0)	1,004955578	1628,53691
51	Submit and Leave (fator=18.0)	1,005264282	1629,03691
52	Submit and Leave (fator=19.0)	1,005572891	1629,53691
53	Submit and Leave (fator=20.0)	1,005881500	1630,03691

Tabela A.1: 10-Fold Cross Validation,  $R = 10$ , Compra, Dólar

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
1	Ótima	0,999939060	1620,40918
Continua na próxima página			

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
2	Submit and Leave (fator=-8.0)	1,000127125	1620,71572
3	Submit and Leave (fator=-7.0)	1,000130463	1620,72139
4	Kearns (agressividade =1.0)	1,000130749	1620,72148
5	Kearns (agressividade otimizada)	1,000130749	1620,72148
6	Submit and Leave (fator=-20.0)	1,000131893	1620,72363
7	Submit and Leave (fator=-19.0)	1,000131893	1620,72363
8	Submit and Leave (fator=-18.0)	1,000131893	1620,72363
9	Submit and Leave (fator=-17.0)	1,000131893	1620,72363
10	Submit and Leave (fator=-16.0)	1,000131893	1620,72363
11	Submit and Leave (fator=-15.0)	1,000131893	1620,72363
12	Submit and Leave (fator=-14.0)	1,000131893	1620,72363
13	Submit and Leave (fator=-13.0)	1,000131893	1620,72363
14	Submit and Leave (fator=-12.0)	1,000131893	1620,72363
15	Submit and Leave (fator=-11.0)	1,000132084	1620,72412
16	Submit and Leave (fator=-10.0)	1,000132561	1620,72480
17	Submit and Leave (fator=-9.0)	1,000133038	1620,72549
18	Submit and Leave (fator=-6.0)	1,000133801	1620,72686
19	Submit and Leave (fator=-5.0)	1,000137711	1620,73330
20	Submit and Leave (fator=-4.0)	1,000141430	1620,73945
21	Submit and Leave (fator=-3.0)	1,000143433	1620,74277
22	Submit and Leave (fator=1.0)	1,000145245	1620,74502
23	Submit and Leave (fator=-2.0)	1,000149918	1620,75312
24	Submit and Leave (fator=-1.0)	1,000165749	1620,77900
25	Reinforcement Learning (e,f,t)	1,000167656	1620,78301
26	Reinforcement Learning (e,f,q,t)	1,000169373	1620,78467
27	Reinforcement Learning (c,e,f,t)	1,000179195	1620,80098
28	Submit and Leave (fator=0.0)	1,000189590	1620,81768
29	Submit and Execute	1,000291157	1620,98252
30	Kearns (agressividade =0.25)	1,000305176	1621,00312
31	Kearns (agressividade =0.5)	1,000307846	1621,00859
32	Submit and Leave (fator=2.0)	1,000402069	1621,16045
33	Kearns (agressividade =0.0)	1,000503254	1621,32617
34	Kearns (agressividade =0.75)	1,000610733	1621,49385
35	Aleatória	1,000642014	1621,54834
36	Submit and Leave (fator=3.0)	1,000691795	1621,62939
37	Submit and Leave (fator=4.0)	1,000990391	1622,11357
Continua na próxima página			

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
38	Submit and Leave (fator=5.0)	1,001289845	1622,59883
39	Submit and Leave (fator=6.0)	1,001593781	1623,09092
40	Submit and Leave (fator=7.0)	1,001896572	1623,58145
41	Submit and Leave (fator=8.0)	1,002201462	1624,07539
42	Submit and Leave (fator=9.0)	1,002505207	1624,56748
43	Submit and Leave (fator=10.0)	1,002811909	1625,06436
44	Submit and Leave (fator=11.0)	1,003118706	1625,56123
45	Submit and Leave (fator=12.0)	1,003425407	1626,05811
46	Submit and Leave (fator=13.0)	1,003732300	1626,55508
47	Submit and Leave (fator=14.0)	1,004039097	1627,05195
48	Submit and Leave (fator=15.0)	1,004342937	1627,54434
49	Submit and Leave (fator=16.0)	1,004646969	1628,03691
50	Submit and Leave (fator=17.0)	1,004955578	1628,53691
51	Submit and Leave (fator=18.0)	1,005264282	1629,03691
52	Submit and Leave (fator=19.0)	1,005572891	1629,53691
53	Submit and Leave (fator=20.0)	1,005881500	1630,03691

Tabela A.2: 10-Fold Cross Validation,  $R = 30$ , Compra, Dólar

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
1	Ótima	0,999939060	1620,40918
2	Submit and Leave (fator=-8.0)	1,000127125	1620,71572
3	Submit and Leave (fator=-7.0)	1,000130463	1620,72139
4	Submit and Leave (fator=-20.0)	1,000131893	1620,72363
5	Submit and Leave (fator=-19.0)	1,000131893	1620,72363
6	Submit and Leave (fator=-18.0)	1,000131893	1620,72363
7	Submit and Leave (fator=-17.0)	1,000131893	1620,72363
8	Submit and Leave (fator=-16.0)	1,000131893	1620,72363
9	Submit and Leave (fator=-15.0)	1,000131893	1620,72363
10	Submit and Leave (fator=-14.0)	1,000131893	1620,72363
11	Submit and Leave (fator=-13.0)	1,000131893	1620,72363
12	Submit and Leave (fator=-12.0)	1,000131893	1620,72363
13	Kearns (agressividade =1.0)	1,000131989	1620,72363
14	Kearns (agressividade otimizada)	1,000131989	1620,72363
15	Submit and Leave (fator=-11.0)	1,000132084	1620,72412
16	Submit and Leave (fator=-10.0)	1,000132561	1620,72480
17	Submit and Leave (fator=-9.0)	1,000133038	1620,72549
Continua na próxima página			

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
18	Submit and Leave (fator=-6.0)	1,000133801	1620,72686
19	Submit and Leave (fator=-5.0)	1,000137711	1620,73330
20	Submit and Leave (fator=-4.0)	1,000141430	1620,73945
21	Submit and Leave (fator=-3.0)	1,000143433	1620,74277
22	Submit and Leave (fator=1.0)	1,000145245	1620,74502
23	Reinforcement Learning (e,f,q,t)	1,000149059	1620,75205
24	Submit and Leave (fator=-2.0)	1,000149918	1620,75312
25	Reinforcement Learning (e,f,t)	1,000159454	1620,76953
26	Reinforcement Learning (c,e,f,t)	1,000164509	1620,77656
27	Submit and Leave (fator=-1.0)	1,000165749	1620,77900
28	Submit and Leave (fator=0.0)	1,000189590	1620,81768
29	Kearns (agressividade =0.5)	1,000223923	1620,87275
30	Submit and Execute	1,000291157	1620,98252
31	Kearns (agressividade =0.25)	1,000340271	1621,06035
32	Submit and Leave (fator=2.0)	1,000402069	1621,16045
33	Kearns (agressividade =0.75)	1,000457859	1621,24727
34	Kearns (agressividade =0.0)	1,000504112	1621,32764
35	Aleatória	1,000662041	1621,58174
36	Submit and Leave (fator=3.0)	1,000691795	1621,62939
37	Submit and Leave (fator=4.0)	1,000990391	1622,11357
38	Submit and Leave (fator=5.0)	1,001289845	1622,59883
39	Submit and Leave (fator=6.0)	1,001593781	1623,09092
40	Submit and Leave (fator=7.0)	1,001896572	1623,58145
41	Submit and Leave (fator=8.0)	1,002201462	1624,07539
42	Submit and Leave (fator=9.0)	1,002505207	1624,56748
43	Submit and Leave (fator=10.0)	1,002811909	1625,06436
44	Submit and Leave (fator=11.0)	1,003118706	1625,56123
45	Submit and Leave (fator=12.0)	1,003425407	1626,05811
46	Submit and Leave (fator=13.0)	1,003732300	1626,55508
47	Submit and Leave (fator=14.0)	1,004039097	1627,05195
48	Submit and Leave (fator=15.0)	1,004342937	1627,54434
49	Submit and Leave (fator=16.0)	1,004646969	1628,03691
50	Submit and Leave (fator=17.0)	1,004955578	1628,53691
51	Submit and Leave (fator=18.0)	1,005264282	1629,03691
52	Submit and Leave (fator=19.0)	1,005572891	1629,53691
53	Submit and Leave (fator=20.0)	1,005881500	1630,03691

Tabela A.3: 10-Fold Cross Validation,  $R = 60$ , Compra, Dólar

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
1	Ótima	1,000021338	1596,77112
2	Submit and Execute	1,000187159	1597,03455
3	Submit and Leave (fator=1.0)	1,000230908	1597,10632
4	Submit and Leave (fator=-6.0)	1,000247002	1597,13330
5	Kearns (agressividade =1.0)	1,000248671	1597,13293
6	Kearns (agressividade otimizada)	1,000248671	1597,13293
7	Kearns (agressividade =0.75)	1,000250697	1597,13574
8	Submit and Leave (fator=-5.0)	1,000252843	1597,14136
9	Submit and Leave (fator=-4.0)	1,000258088	1597,14819
10	Submit and Leave (fator=-20.0)	1,000262141	1597,15332
11	Submit and Leave (fator=-19.0)	1,000262141	1597,15332
12	Submit and Leave (fator=-18.0)	1,000262141	1597,15332
13	Submit and Leave (fator=-17.0)	1,000262141	1597,15332
14	Submit and Leave (fator=-16.0)	1,000262141	1597,15332
15	Submit and Leave (fator=-15.0)	1,000262141	1597,15332
16	Submit and Leave (fator=-14.0)	1,000262141	1597,15332
17	Submit and Leave (fator=-13.0)	1,000262141	1597,15332
18	Submit and Leave (fator=-12.0)	1,000262141	1597,15332
19	Submit and Leave (fator=-11.0)	1,000262141	1597,15332
20	Submit and Leave (fator=-10.0)	1,000262141	1597,15332
21	Submit and Leave (fator=-9.0)	1,000262141	1597,15332
22	Submit and Leave (fator=-8.0)	1,000262141	1597,15332
23	Submit and Leave (fator=-7.0)	1,000262141	1597,15344
24	Submit and Leave (fator=-3.0)	1,000263214	1597,15674
25	Reinforcement Learning (e,f,q,t)	1,000264406	1597,15833
26	Reinforcement Learning (c,e,f,t)	1,000264645	1597,15601
27	Reinforcement Learning (e,f,t)	1,000267863	1597,16162
28	Submit and Leave (fator=-2.0)	1,000270009	1597,16821
29	Submit and Leave (fator=-1.0)	1,000278354	1597,18286
30	Submit and Leave (fator=0.0)	1,000291228	1597,20374
31	Submit and Leave (fator=2.0)	1,000457525	1597,45117
32	Kearns (agressividade =0.0)	1,000458121	1597,45642
33	Kearns (agressividade =0.25)	1,000487089	1597,51672
Continua na próxima página			

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
34	Aleatória	1,000728250	1597,89941
35	Submit and Leave (fator=3.0)	1,000766873	1597,94678
36	Submit and Leave (fator=4.0)	1,001073599	1598,43591
37	Submit and Leave (fator=5.0)	1,001384020	1598,93469
38	Kearns (agressividade =0.5)	1,001404762	1598,97974
39	Submit and Leave (fator=6.0)	1,001694679	1599,43469
40	Submit and Leave (fator=7.0)	1,002004504	1599,93469
41	Submit and Leave (fator=8.0)	1,002315044	1600,43469
42	Submit and Leave (fator=9.0)	1,002626419	1600,93469
43	Submit and Leave (fator=10.0)	1,002941728	1601,43469
44	Submit and Leave (fator=11.0)	1,003258586	1601,93469
45	Submit and Leave (fator=12.0)	1,003574967	1602,43469
46	Submit and Leave (fator=13.0)	1,003889799	1602,93469
47	Submit and Leave (fator=14.0)	1,004203677	1603,43469
48	Submit and Leave (fator=15.0)	1,004515171	1603,93469
49	Submit and Leave (fator=16.0)	1,004826427	1604,43469
50	Submit and Leave (fator=17.0)	1,005138516	1604,93469
51	Submit and Leave (fator=18.0)	1,005450845	1605,43469
52	Submit and Leave (fator=19.0)	1,005762577	1605,93469
53	Submit and Leave (fator=20.0)	1,006074786	1606,43469

Tabela A.4: Método *Holdout*,  $R = 10$ , Compra, Dólar

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
1	Ótima	1,000021338	1596,77112
2	Submit and Execute	1,000187159	1597,03455
3	Kearns (agressividade =0.25)	1,000204563	1597,06213
4	Submit and Leave (fator=1.0)	1,000230908	1597,10632
5	Kearns (agressividade =1.0)	1,000241518	1597,12292
6	Kearns (agressividade otimizada)	1,000241518	1597,12292
7	Submit and Leave (fator=-6.0)	1,000247002	1597,13330
8	Submit and Leave (fator=-5.0)	1,000252843	1597,14136
9	Submit and Leave (fator=-4.0)	1,000258088	1597,14819
10	Submit and Leave (fator=-20.0)	1,000262141	1597,15332
11	Submit and Leave (fator=-19.0)	1,000262141	1597,15332
12	Submit and Leave (fator=-18.0)	1,000262141	1597,15332
13	Submit and Leave (fator=-17.0)	1,000262141	1597,15332
14	Submit and Leave (fator=-16.0)	1,000262141	1597,15332
Continua na próxima página			

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
15	Submit and Leave (fator=-15.0)	1,000262141	1597,15332
16	Submit and Leave (fator=-14.0)	1,000262141	1597,15332
17	Submit and Leave (fator=-13.0)	1,000262141	1597,15332
18	Submit and Leave (fator=-12.0)	1,000262141	1597,15332
19	Submit and Leave (fator=-11.0)	1,000262141	1597,15332
20	Submit and Leave (fator=-10.0)	1,000262141	1597,15332
21	Submit and Leave (fator=-9.0)	1,000262141	1597,15332
22	Submit and Leave (fator=-8.0)	1,000262141	1597,15332
23	Submit and Leave (fator=-7.0)	1,000262141	1597,15344
24	Submit and Leave (fator=-3.0)	1,000263214	1597,15674
25	Reinforcement Learning (e,f,q,t)	1,000266671	1597,16248
26	Submit and Leave (fator=-2.0)	1,000270009	1597,16821
27	Reinforcement Learning (c,e,f,t)	1,000271797	1597,17273
28	Reinforcement Learning (e,f,t)	1,000273943	1597,17261
29	Submit and Leave (fator=-1.0)	1,000278354	1597,18286
30	Submit and Leave (fator=0.0)	1,000291228	1597,20374
31	Kearns (agressividade =0.5)	1,000343323	1597,28357
32	Submit and Leave (fator=2.0)	1,000457525	1597,45117
33	Kearns (agressividade =0.0)	1,000467062	1597,46570
34	Aleatória	1,000699043	1597,84961
35	Submit and Leave (fator=3.0)	1,000766873	1597,94678
36	Submit and Leave (fator=4.0)	1,001073599	1598,43591
37	Kearns (agressividade =0.75)	1,001129389	1598,53662
38	Submit and Leave (fator=5.0)	1,001384020	1598,93469
39	Submit and Leave (fator=6.0)	1,001694679	1599,43469
40	Submit and Leave (fator=7.0)	1,002004504	1599,93469
41	Submit and Leave (fator=8.0)	1,002315044	1600,43469
42	Submit and Leave (fator=9.0)	1,002626419	1600,93469
43	Submit and Leave (fator=10.0)	1,002941728	1601,43469
44	Submit and Leave (fator=11.0)	1,003258586	1601,93469
45	Submit and Leave (fator=12.0)	1,003574967	1602,43469
46	Submit and Leave (fator=13.0)	1,003889799	1602,93469
47	Submit and Leave (fator=14.0)	1,004203677	1603,43469
48	Submit and Leave (fator=15.0)	1,004515171	1603,93469
49	Submit and Leave (fator=16.0)	1,004826427	1604,43469
50	Submit and Leave (fator=17.0)	1,005138516	1604,93469
Continua na próxima página			

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
51	Submit and Leave (fator=18.0)	1,005450845	1605,43469
52	Submit and Leave (fator=19.0)	1,005762577	1605,93469
53	Submit and Leave (fator=20.0)	1,006074786	1606,43469

Tabela A.5: Método *Holdout*,  $R = 30$ , Compra, Dólar

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
1	Ótima	1,000021338	1596,77112
2	Kearns (agressividade =0.25)	1,000177741	1597,02380
3	Submit and Execute	1,000187159	1597,03455
4	Kearns (agressividade =0.5)	1,000219584	1597,08093
5	Kearns (agressividade =1.0)	1,000222564	1597,09399
6	Kearns (agressividade otimizada)	1,000222564	1597,09399
7	Submit and Leave (fator=1.0)	1,000230908	1597,10632
8	Reinforcement Learning (c,e,f,t)	1,000246167	1597,12964
9	Submit and Leave (fator=-6.0)	1,000247002	1597,13330
10	Submit and Leave (fator=-5.0)	1,000252843	1597,14136
11	Submit and Leave (fator=-4.0)	1,000258088	1597,14819
12	Submit and Leave (fator=-20.0)	1,000262141	1597,15332
13	Submit and Leave (fator=-19.0)	1,000262141	1597,15332
14	Submit and Leave (fator=-18.0)	1,000262141	1597,15332
15	Submit and Leave (fator=-17.0)	1,000262141	1597,15332
16	Submit and Leave (fator=-16.0)	1,000262141	1597,15332
17	Submit and Leave (fator=-15.0)	1,000262141	1597,15332
18	Submit and Leave (fator=-14.0)	1,000262141	1597,15332
19	Submit and Leave (fator=-13.0)	1,000262141	1597,15332
20	Submit and Leave (fator=-12.0)	1,000262141	1597,15332
21	Submit and Leave (fator=-11.0)	1,000262141	1597,15332
22	Submit and Leave (fator=-10.0)	1,000262141	1597,15332
23	Submit and Leave (fator=-9.0)	1,000262141	1597,15332
24	Submit and Leave (fator=-8.0)	1,000262141	1597,15332
25	Submit and Leave (fator=-7.0)	1,000262141	1597,15344
26	Submit and Leave (fator=-3.0)	1,000263214	1597,15674
27	Reinforcement Learning (e,f,t)	1,000268698	1597,16431
28	Submit and Leave (fator=-2.0)	1,000270009	1597,16821
29	Reinforcement Learning (e,f,q,t)	1,000276685	1597,17810
Continua na próxima página			

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
30	Submit and Leave (fator=-1.0)	1,000278354	1597,18286
31	Submit and Leave (fator=0.0)	1,000291228	1597,20374
32	Kearns (agressividade =0.75)	1,000318289	1597,24023
33	Submit and Leave (fator=2.0)	1,000457525	1597,45117
34	Kearns (agressividade =0.0)	1,000467062	1597,46570
35	Aleatória	1,000690818	1597,84229
36	Submit and Leave (fator=3.0)	1,000766873	1597,94678
37	Submit and Leave (fator=4.0)	1,001073599	1598,43591
38	Submit and Leave (fator=5.0)	1,001384020	1598,93469
39	Submit and Leave (fator=6.0)	1,001694679	1599,43469
40	Submit and Leave (fator=7.0)	1,002004504	1599,93469
41	Submit and Leave (fator=8.0)	1,002315044	1600,43469
42	Submit and Leave (fator=9.0)	1,002626419	1600,93469
43	Submit and Leave (fator=10.0)	1,002941728	1601,43469
44	Submit and Leave (fator=11.0)	1,003258586	1601,93469
45	Submit and Leave (fator=12.0)	1,003574967	1602,43469
46	Submit and Leave (fator=13.0)	1,003889799	1602,93469
47	Submit and Leave (fator=14.0)	1,004203677	1603,43469
48	Submit and Leave (fator=15.0)	1,004515171	1603,93469
49	Submit and Leave (fator=16.0)	1,004826427	1604,43469
50	Submit and Leave (fator=17.0)	1,005138516	1604,93469
51	Submit and Leave (fator=18.0)	1,005450845	1605,43469
52	Submit and Leave (fator=19.0)	1,005762577	1605,93469
53	Submit and Leave (fator=20.0)	1,006074786	1606,43469

Tabela A.6: Método *Holdout*,  $R = 60$ , Compra, Dólar

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
1	Ótima	1,000044346	1596,81018
2	Submit and Leave (fator=-20.0)	0,999895513	1596,56897
3	Submit and Leave (fator=-19.0)	0,999894142	1596,56689
4	Submit and Leave (fator=-18.0)	0,999893069	1596,56531
5	Submit and Leave (fator=-17.0)	0,999892354	1596,56396
6	Submit and Leave (fator=-16.0)	0,999891341	1596,56213
7	Submit and Leave (fator=-15.0)	0,999890268	1596,56006
8	Submit and Leave (fator=-14.0)	0,999889612	1596,55823
9	Submit and Leave (fator=-13.0)	0,999888957	1596,55652
10	Submit and Leave (fator=-12.0)	0,999888182	1596,55505
Continua na próxima página			

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
11	Submit and Leave (fator=-11.0)	0,999887228	1596,55383
12	Submit and Leave (fator=-10.0)	0,999886036	1596,55225
13	Submit and Leave (fator=-9.0)	0,999884903	1596,55042
14	Submit and Leave (fator=-8.0)	0,999883711	1596,54883
15	Submit and Leave (fator=-7.0)	0,999883056	1596,54773
16	Submit and Leave (fator=-6.0)	0,999881566	1596,54456
17	Submit and Leave (fator=-5.0)	0,999877512	1596,53845
18	Reinforcement Learning (e,f,q,t)	0,999875546	1596,53638
19	Submit and Leave (fator=-4.0)	0,999874175	1596,53235
20	Submit and Leave (fator=-3.0)	0,999865413	1596,51868
21	Reinforcement Learning (e,f,t)	0,999863267	1596,51807
22	Reinforcement Learning (c,e,f,t)	0,999862969	1596,51624
23	Submit and Leave (fator=-2.0)	0,999850035	1596,49500
24	Kearns (agressividade =1.0)	0,999839008	1596,47791
25	Kearns (agressividade otimizada)	0,999839008	1596,47791
26	Submit and Leave (fator=-1.0)	0,999828935	1596,46338
27	Submit and Execute	0,999812424	1596,43469
28	Submit and Leave (fator=0.0)	0,999799848	1596,41675
29	Submit and Leave (fator=1.0)	0,999795854	1596,40784
30	Kearns (agressividade =0.75)	0,999532878	1595,99036
31	Submit and Leave (fator=2.0)	0,999528170	1595,97803
32	Aleatória	0,999495327	1595,92847
33	Submit and Leave (fator=3.0)	0,999237716	1595,52100
34	Kearns (agressividade =0.5)	0,998934388	1595,03455
35	Submit and Leave (fator=4.0)	0,998932183	1595,03198
36	Submit and Leave (fator=5.0)	0,998621106	1594,53259
37	Submit and Leave (fator=6.0)	0,998306870	1594,03320
38	Submit and Leave (fator=7.0)	0,997995317	1593,53455
39	Kearns (agressividade =0.25)	0,997995317	1593,53455
40	Submit and Leave (fator=8.0)	0,997682393	1593,03455
41	Submit and Leave (fator=9.0)	0,997368634	1592,53455
42	Submit and Leave (fator=10.0)	0,997056067	1592,03455
43	Submit and Leave (fator=11.0)	0,996742427	1591,53455
44	Submit and Leave (fator=12.0)	0,996429443	1591,03455
45	Submit and Leave (fator=13.0)	0,996116221	1590,53455
46	Submit and Leave (fator=14.0)	0,995802820	1590,03455
Continua na próxima página			

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
47	Kearns (agressividade =0.0)	0,995802820	1590,03455
48	Submit and Leave (fator=15.0)	0,995488763	1589,53455
49	Submit and Leave (fator=16.0)	0,995175898	1589,03455
50	Submit and Leave (fator=17.0)	0,994862020	1588,53455
51	Submit and Leave (fator=18.0)	0,994550407	1588,03455
52	Submit and Leave (fator=19.0)	0,994237721	1587,53455
53	Submit and Leave (fator=20.0)	0,993923962	1587,03455

Tabela A.7: Método *Holdout*,  $R = 10$ , Venda, Dólar

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
1	Ótima	1,000044346	1596,81018
2	Reinforcement Learning (e,f,t)	0,999907732	1596,58740
3	Submit and Leave (fator=-20.0)	0,999895513	1596,56897
4	Submit and Leave (fator=-19.0)	0,999894142	1596,56689
5	Submit and Leave (fator=-18.0)	0,999893069	1596,56531
6	Submit and Leave (fator=-17.0)	0,999892354	1596,56396
7	Submit and Leave (fator=-16.0)	0,999891341	1596,56213
8	Submit and Leave (fator=-15.0)	0,999890268	1596,56006
9	Submit and Leave (fator=-14.0)	0,999889612	1596,55823
10	Submit and Leave (fator=-13.0)	0,999888957	1596,55652
11	Submit and Leave (fator=-12.0)	0,999888182	1596,55505
12	Submit and Leave (fator=-11.0)	0,999887228	1596,55383
13	Submit and Leave (fator=-10.0)	0,999886036	1596,55225
14	Submit and Leave (fator=-9.0)	0,999884903	1596,55042
15	Submit and Leave (fator=-8.0)	0,999883711	1596,54883
16	Submit and Leave (fator=-7.0)	0,999883056	1596,54773
17	Reinforcement Learning (e,f,q,t)	0,999881625	1596,54541
18	Submit and Leave (fator=-6.0)	0,999881566	1596,54456
19	Submit and Leave (fator=-5.0)	0,999877512	1596,53845
20	Submit and Leave (fator=-4.0)	0,999874175	1596,53235
21	Submit and Leave (fator=-3.0)	0,999865413	1596,51868
22	Reinforcement Learning (c,e,f,t)	0,999863386	1596,51477
23	Submit and Leave (fator=-2.0)	0,999850035	1596,49500
24	Kearns (agressividade =1.0)	0,999830604	1596,46655
25	Kearns (agressividade otimizada)	0,999830604	1596,46655
Continua na próxima página			

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
26	Submit and Leave (fator=-1.0)	0,999828935	1596,46338
27	Submit and Execute	0,999812424	1596,43469
28	Submit and Leave (fator=0.0)	0,999799848	1596,41675
29	Submit and Leave (fator=1.0)	0,999795854	1596,40784
30	Submit and Leave (fator=2.0)	0,999528170	1595,97803
31	Aleatória	0,999339044	1595,67810
32	Kearns (agressividade =0.75)	0,999239922	1595,52405
33	Submit and Leave (fator=3.0)	0,999237716	1595,52100
34	Submit and Leave (fator=4.0)	0,998932183	1595,03198
35	Submit and Leave (fator=5.0)	0,998621106	1594,53259
36	Submit and Leave (fator=6.0)	0,998306870	1594,03320
37	Submit and Leave (fator=7.0)	0,997995317	1593,53455
38	Kearns (agressividade =0.25)	0,997995317	1593,53455
39	Kearns (agressividade =0.5)	0,997995079	1593,53320
40	Submit and Leave (fator=8.0)	0,997682393	1593,03455
41	Submit and Leave (fator=9.0)	0,997368634	1592,53455
42	Submit and Leave (fator=10.0)	0,997056067	1592,03455
43	Submit and Leave (fator=11.0)	0,996742427	1591,53455
44	Submit and Leave (fator=12.0)	0,996429443	1591,03455
45	Submit and Leave (fator=13.0)	0,996116221	1590,53455
46	Submit and Leave (fator=14.0)	0,995802820	1590,03455
47	Kearns (agressividade =0.0)	0,995802820	1590,03455
48	Submit and Leave (fator=15.0)	0,995488763	1589,53455
49	Submit and Leave (fator=16.0)	0,995175898	1589,03455
50	Submit and Leave (fator=17.0)	0,994862020	1588,53455
51	Submit and Leave (fator=18.0)	0,994550407	1588,03455
52	Submit and Leave (fator=19.0)	0,994237721	1587,53455
53	Submit and Leave (fator=20.0)	0,993923962	1587,03455

Tabela A.8: Método *Holdout*,  $R = 30$ , Venda, Dólar

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
1	Ótima	1,000044346	1596,81018
2	Reinforcement Learning (e,f,t)	0,999918938	1596,60583
3	Submit and Leave (fator=-20.0)	0,999895513	1596,56897
4	Submit and Leave (fator=-19.0)	0,999894142	1596,56689
5	Submit and Leave (fator=-18.0)	0,999893069	1596,56531
6	Submit and Leave (fator=-17.0)	0,999892354	1596,56396
7	Submit and Leave (fator=-16.0)	0,999891341	1596,56213
Continua na próxima página			

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
8	Submit and Leave (fator=-15.0)	0,999890268	1596,56006
9	Submit and Leave (fator=-14.0)	0,999889612	1596,55823
10	Submit and Leave (fator=-13.0)	0,999888957	1596,55652
11	Submit and Leave (fator=-12.0)	0,999888182	1596,55505
12	Submit and Leave (fator=-11.0)	0,999887228	1596,55383
13	Submit and Leave (fator=-10.0)	0,999886036	1596,55225
14	Submit and Leave (fator=-9.0)	0,999884903	1596,55042
15	Submit and Leave (fator=-8.0)	0,999883711	1596,54883
16	Submit and Leave (fator=-7.0)	0,999883056	1596,54773
17	Submit and Leave (fator=-6.0)	0,999881566	1596,54456
18	Submit and Leave (fator=-5.0)	0,999877512	1596,53845
19	Reinforcement Learning (e,f,q,t)	0,999875844	1596,53467
20	Submit and Leave (fator=-4.0)	0,999874175	1596,53235
21	Submit and Leave (fator=-3.0)	0,999865413	1596,51868
22	Reinforcement Learning (c,e,f,t)	0,999861062	1596,51245
23	Submit and Leave (fator=-2.0)	0,999850035	1596,49500
24	Kearns (agressividade =1.0)	0,999829292	1596,46582
25	Kearns (agressividade otimizada)	0,999829292	1596,46582
26	Submit and Leave (fator=-1.0)	0,999828935	1596,46338
27	Submit and Execute	0,999812424	1596,43469
28	Submit and Leave (fator=0.0)	0,999799848	1596,41675
29	Submit and Leave (fator=1.0)	0,999795854	1596,40784
30	Kearns (agressividade =0.75)	0,999540269	1596,00317
31	Submit and Leave (fator=2.0)	0,999528170	1595,97803
32	Aleatória	0,999336720	1595,67517
33	Submit and Leave (fator=3.0)	0,999237716	1595,52100
34	Kearns (agressividade =0.5)	0,999233782	1595,51355
35	Submit and Leave (fator=4.0)	0,998932183	1595,03198
36	Submit and Leave (fator=5.0)	0,998621106	1594,53259
37	Submit and Leave (fator=6.0)	0,998306870	1594,03320
38	Submit and Leave (fator=7.0)	0,997995317	1593,53455
39	Kearns (agressividade =0.25)	0,997995317	1593,53455
40	Submit and Leave (fator=8.0)	0,997682393	1593,03455
41	Submit and Leave (fator=9.0)	0,997368634	1592,53455
42	Submit and Leave (fator=10.0)	0,997056067	1592,03455
43	Submit and Leave (fator=11.0)	0,996742427	1591,53455
Continua na próxima página			

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
44	Submit and Leave (fator=12.0)	0,996429443	1591,03455
45	Submit and Leave (fator=13.0)	0,996116221	1590,53455
46	Submit and Leave (fator=14.0)	0,995802820	1590,03455
47	Kearns (agressividade =0.0)	0,995802820	1590,03455
48	Submit and Leave (fator=15.0)	0,995488763	1589,53455
49	Submit and Leave (fator=16.0)	0,995175898	1589,03455
50	Submit and Leave (fator=17.0)	0,994862020	1588,53455
51	Submit and Leave (fator=18.0)	0,994550407	1588,03455
52	Submit and Leave (fator=19.0)	0,994237721	1587,53455
53	Submit and Leave (fator=20.0)	0,993923962	1587,03455

Tabela A.9: Método *Holdout*,  $R = 60$ , Venda, Dólar

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
1	Ótima	0,999977589	1620,47539
2	Submit and Leave (fator=-16.0)	0,999738693	1620,08623
3	Submit and Leave (fator=-9.0)	0,999738026	1620,08506
4	Submit and Leave (fator=-15.0)	0,999737549	1620,08418
5	Submit and Leave (fator=-14.0)	0,999736309	1620,08232
6	Submit and Leave (fator=-13.0)	0,999735069	1620,08027
7	Submit and Leave (fator=-11.0)	0,999735069	1620,08027
8	Submit and Leave (fator=-18.0)	0,999734592	1620,07949
9	Submit and Leave (fator=-20.0)	0,999734306	1620,07910
10	Submit and Leave (fator=-19.0)	0,999734306	1620,07910
11	Submit and Leave (fator=-17.0)	0,999734020	1620,07861
12	Submit and Leave (fator=-12.0)	0,999733925	1620,07822
13	Submit and Leave (fator=-8.0)	0,999733353	1620,07744
14	Submit and Leave (fator=-10.0)	0,999732685	1620,07617
15	Reinforcement Learning (e,f,q,t)	0,999732304	1620,07510
16	Reinforcement Learning (c,e,f,t)	0,999732304	1620,07520
17	Kearns (agressividade =1.0)	0,999731445	1620,07324
18	Kearns (agressividade otimizada)	0,999731445	1620,07324
19	Submit and Leave (fator=1.0)	0,999729633	1620,07021
20	Submit and Leave (fator=-7.0)	0,999728775	1620,06982
21	Reinforcement Learning (e,f,t)	0,999727631	1620,06738
22	Submit and Leave (fator=-6.0)	0,999724102	1620,06211
Continua na próxima página			

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
23	Submit and Leave (fator=-5.0)	0,999719143	1620,05410
24	Submit and Leave (fator=-4.0)	0,999714279	1620,04600
25	Submit and Leave (fator=-3.0)	0,999712181	1620,04277
26	Submit and Execute	0,999708939	1620,03691
27	Submit and Leave (fator=-2.0)	0,999708271	1620,03613
28	Submit and Leave (fator=-1.0)	0,999699688	1620,02217
29	Submit and Leave (fator=0.0)	0,999692440	1620,01025
30	Submit and Leave (fator=2.0)	0,999489307	1619,68164
31	Aleatória	0,999397850	1619,53301
32	Submit and Leave (fator=3.0)	0,999209213	1619,22744
33	Kearns (agressividade =0.75)	0,999144936	1619,12432
34	Submit and Leave (fator=4.0)	0,998912430	1618,74707
35	Submit and Leave (fator=5.0)	0,998614407	1618,26445
36	Kearns (agressividade =0.5)	0,998343277	1617,82578
37	Submit and Leave (fator=6.0)	0,998316574	1617,78203
38	Submit and Leave (fator=7.0)	0,998019981	1617,30205
39	Kearns (agressividade =0.25)	0,997738457	1616,84150
40	Submit and Leave (fator=8.0)	0,997725487	1616,82500
41	Submit and Leave (fator=9.0)	0,997424316	1616,33730
42	Submit and Leave (fator=10.0)	0,997145748	1615,88721
43	Submit and Leave (fator=11.0)	0,996839809	1615,39170
44	Submit and Leave (fator=12.0)	0,996533966	1614,89629
45	Submit and Leave (fator=13.0)	0,996228123	1614,40068
46	Kearns (agressividade =0.0)	0,996065998	1614,14658
47	Submit and Leave (fator=14.0)	0,995922184	1613,90518
48	Submit and Leave (fator=15.0)	0,995616341	1613,40967
49	Submit and Leave (fator=16.0)	0,995310497	1612,91406
50	Submit and Leave (fator=17.0)	0,995004463	1612,41846
51	Submit and Leave (fator=18.0)	0,994698620	1611,92305
52	Submit and Leave (fator=19.0)	0,994393158	1611,42803
53	Submit and Leave (fator=20.0)	0,994087982	1610,93359

Tabela A.10: 10-Fold Cross Validation,  $R = 10$ , Venda, Dólar

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
1	Ótima	0,999977589	1620,47539
2	Kearns (agressividade =1.0)	0,999749088	1620,10156
3	Kearns (agressividade otimizada)	0,999749088	1620,10156
4	Submit and Leave (fator=-16.0)	0,999738693	1620,08623
Continua na próxima página			

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
5	Submit and Leave (fator=-9.0)	0,999738026	1620,08506
6	Submit and Leave (fator=-15.0)	0,999737549	1620,08418
7	Submit and Leave (fator=-14.0)	0,999736309	1620,08232
8	Submit and Leave (fator=-13.0)	0,999735069	1620,08027
9	Submit and Leave (fator=-11.0)	0,999735069	1620,08027
10	Submit and Leave (fator=-18.0)	0,999734592	1620,07949
11	Submit and Leave (fator=-20.0)	0,999734306	1620,07910
12	Submit and Leave (fator=-19.0)	0,999734306	1620,07910
13	Submit and Leave (fator=-17.0)	0,999734020	1620,07861
14	Submit and Leave (fator=-12.0)	0,999733925	1620,07822
15	Reinforcement Learning (e,f,q,t)	0,999733448	1620,07705
16	Submit and Leave (fator=-8.0)	0,999733353	1620,07744
17	Submit and Leave (fator=-10.0)	0,999732685	1620,07617
18	Reinforcement Learning (c,e,f,t)	0,999731827	1620,07451
19	Submit and Leave (fator=1.0)	0,999729633	1620,07021
20	Submit and Leave (fator=-7.0)	0,999728775	1620,06982
21	Submit and Leave (fator=-6.0)	0,999724102	1620,06211
22	Reinforcement Learning (e,f,t)	0,999720669	1620,05605
23	Submit and Leave (fator=-5.0)	0,999719143	1620,05410
24	Submit and Leave (fator=-4.0)	0,999714279	1620,04600
25	Submit and Leave (fator=-3.0)	0,999712181	1620,04277
26	Submit and Execute	0,999708939	1620,03691
27	Submit and Leave (fator=-2.0)	0,999708271	1620,03613
28	Submit and Leave (fator=-1.0)	0,999699688	1620,02217
29	Submit and Leave (fator=0.0)	0,999692440	1620,01025
30	Submit and Leave (fator=2.0)	0,999489307	1619,68164
31	Aleatória	0,999264526	1619,31680
32	Kearns (agressividade =0.75)	0,999228382	1619,25615
33	Submit and Leave (fator=3.0)	0,999209213	1619,22744
34	Submit and Leave (fator=4.0)	0,998912430	1618,74707
35	Submit and Leave (fator=5.0)	0,998614407	1618,26445
36	Kearns (agressividade =0.5)	0,998469734	1618,03027
37	Submit and Leave (fator=6.0)	0,998316574	1617,78203
38	Submit and Leave (fator=7.0)	0,998019981	1617,30205
39	Kearns (agressividade =0.25)	0,997752857	1616,86562
40	Submit and Leave (fator=8.0)	0,997725487	1616,82500
Continua na próxima página			

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
41	Submit and Leave (fator=9.0)	0,997424316	1616,33730
42	Submit and Leave (fator=10.0)	0,997145748	1615,88721
43	Submit and Leave (fator=11.0)	0,996839809	1615,39170
44	Submit and Leave (fator=12.0)	0,996533966	1614,89629
45	Submit and Leave (fator=13.0)	0,996228123	1614,40068
46	Kearns (agressividade =0.0)	0,996083450	1614,17559
47	Submit and Leave (fator=14.0)	0,995922184	1613,90518
48	Submit and Leave (fator=15.0)	0,995616341	1613,40967
49	Submit and Leave (fator=16.0)	0,995310497	1612,91406
50	Submit and Leave (fator=17.0)	0,995004463	1612,41846
51	Submit and Leave (fator=18.0)	0,994698620	1611,92305
52	Submit and Leave (fator=19.0)	0,994393158	1611,42803
53	Submit and Leave (fator=20.0)	0,994087982	1610,93359

Tabela A.11: 10-Fold Cross Validation,  $R = 30$ , Venda, Dólar

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
1	Ótima	0,999977589	1620,47539
2	Kearns (agressividade =1.0)	0,999746132	1620,09688
3	Kearns (agressividade otimizada)	0,999746132	1620,09688
4	Submit and Leave (fator=-16.0)	0,999738693	1620,08623
5	Submit and Leave (fator=-9.0)	0,999738026	1620,08506
6	Reinforcement Learning (c,e,f,t)	0,999737835	1620,08408
7	Submit and Leave (fator=-15.0)	0,999737549	1620,08418
8	Reinforcement Learning (e,f,t)	0,999736404	1620,08174
9	Submit and Leave (fator=-14.0)	0,999736309	1620,08232
10	Submit and Leave (fator=-13.0)	0,999735069	1620,08027
11	Submit and Leave (fator=-11.0)	0,999735069	1620,08027
12	Submit and Leave (fator=-18.0)	0,999734592	1620,07949
13	Submit and Leave (fator=-20.0)	0,999734306	1620,07910
14	Submit and Leave (fator=-19.0)	0,999734306	1620,07910
15	Submit and Leave (fator=-17.0)	0,999734020	1620,07861
16	Submit and Leave (fator=-12.0)	0,999733925	1620,07822
17	Submit and Leave (fator=-8.0)	0,999733353	1620,07744
18	Submit and Leave (fator=-10.0)	0,999732685	1620,07617
19	Reinforcement Learning (e,f,q,t)	0,999732018	1620,07490
20	Submit and Leave (fator=1.0)	0,999729633	1620,07021
Continua na próxima página			

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
21	Submit and Leave (fator=-7.0)	0,999728775	1620,06982
22	Submit and Leave (fator=-6.0)	0,999724102	1620,06211
23	Submit and Leave (fator=-5.0)	0,999719143	1620,05410
24	Submit and Leave (fator=-4.0)	0,999714279	1620,04600
25	Submit and Leave (fator=-3.0)	0,999712181	1620,04277
26	Submit and Execute	0,999708939	1620,03691
27	Submit and Leave (fator=-2.0)	0,999708271	1620,03613
28	Submit and Leave (fator=-1.0)	0,999699688	1620,02217
29	Submit and Leave (fator=0.0)	0,999692440	1620,01025
30	Submit and Leave (fator=2.0)	0,999489307	1619,68164
31	Aleatória	0,999272251	1619,33018
32	Kearns (agressividade =0.75)	0,999224472	1619,24971
33	Submit and Leave (fator=3.0)	0,999209213	1619,22744
34	Submit and Leave (fator=4.0)	0,998912430	1618,74707
35	Submit and Leave (fator=5.0)	0,998614407	1618,26445
36	Kearns (agressividade =0.5)	0,998503685	1618,08135
37	Submit and Leave (fator=6.0)	0,998316574	1617,78203
38	Submit and Leave (fator=7.0)	0,998019981	1617,30205
39	Kearns (agressividade =0.25)	0,997739124	1616,84307
40	Submit and Leave (fator=8.0)	0,997725487	1616,82500
41	Submit and Leave (fator=9.0)	0,997424316	1616,33730
42	Submit and Leave (fator=10.0)	0,997145748	1615,88721
43	Submit and Leave (fator=11.0)	0,996839809	1615,39170
44	Submit and Leave (fator=12.0)	0,996533966	1614,89629
45	Submit and Leave (fator=13.0)	0,996228123	1614,40068
46	Kearns (agressividade =0.0)	0,996086407	1614,18096
47	Submit and Leave (fator=14.0)	0,995922184	1613,90518
48	Submit and Leave (fator=15.0)	0,995616341	1613,40967
49	Submit and Leave (fator=16.0)	0,995310497	1612,91406
50	Submit and Leave (fator=17.0)	0,995004463	1612,41846
51	Submit and Leave (fator=18.0)	0,994698620	1611,92305
52	Submit and Leave (fator=19.0)	0,994393158	1611,42803
53	Submit and Leave (fator=20.0)	0,994087982	1610,93359

Tabela A.12: 10-Fold Cross Validation,  $R = 60$ , Venda, Dólar

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
1	Ótima	0,996132660	29,87893
2	Submit and Leave (fator=-14.0)	1,000283909	29,99941

Continua na próxima página

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
3	Submit and Leave (fator=-18.0)	1,000305939	29,99966
4	Submit and Leave (fator=-9.0)	1,000307369	30,00060
5	Submit and Leave (fator=-13.0)	1,000308800	30,00024
6	Kearns (agressividade =1.0)	1,000309658	29,99965
7	Submit and Leave (fator=-8.0)	1,000311756	30,00067
8	Submit and Leave (fator=-15.0)	1,000313282	30,00020
9	Submit and Leave (fator=-19.0)	1,000315857	30,00000
10	Kearns (agressividade otimizada)	1,000316334	29,99984
11	Submit and Leave (fator=-7.0)	1,000320721	30,00087
12	Submit and Leave (fator=-11.0)	1,000321293	30,00062
13	Submit and Leave (fator=-17.0)	1,000329876	30,00048
14	Submit and Leave (fator=-16.0)	1,000330257	30,00054
15	Submit and Leave (fator=-12.0)	1,000343609	30,00106
16	Submit and Leave (fator=-20.0)	1,000345135	30,00072
17	Submit and Leave (fator=-10.0)	1,000351238	30,00163
18	Submit and Leave (fator=1.0)	1,000403118	30,00460
19	Submit and Leave (fator=-5.0)	1,000407219	30,00377
20	Submit and Leave (fator=0.0)	1,000418282	30,00453
21	Submit and Leave (fator=-6.0)	1,000419140	30,00395
22	Reinforcement Learning (c,e,f,t)	1,000432873	30,00401
23	Reinforcement Learning (e,f,t)	1,000449467	30,00446
24	Submit and Execute	1,000457668	30,00578
25	Submit and Leave (fator=2.0)	1,000458145	30,00583
26	Kearns (agressividade =0.75)	1,000481319	30,00484
27	Submit and Leave (fator=-4.0)	1,000492668	30,00609
28	Reinforcement Learning (e,f,q,t)	1,000493336	30,00583
29	Submit and Leave (fator=-1.0)	1,000493526	30,00685
30	Submit and Leave (fator=-3.0)	1,000497723	30,00609
31	Submit and Leave (fator=-2.0)	1,000557804	30,00816
32	Kearns (agressividade =0.25)	1,000578308	30,00906
33	Aleatória	1,000592709	30,00924
34	Kearns (agressividade =0.5)	1,000610638	30,00896
35	Submit and Leave (fator=3.0)	1,000701809	30,01317
36	Submit and Leave (fator=4.0)	1,000986385	30,02159
37	Submit and Leave (fator=5.0)	1,001287556	30,03039
38	Submit and Leave (fator=6.0)	1,001585960	30,03904
Continua na próxima página			

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
39	Kearns (agressividade =0.0)	1,001605415	30,03949
40	Submit and Leave (fator=7.0)	1,001926517	30,04905
41	Submit and Leave (fator=8.0)	1,002267170	30,05904
42	Submit and Leave (fator=9.0)	1,002607918	30,06905
43	Submit and Leave (fator=10.0)	1,002948475	30,07905
44	Submit and Leave (fator=11.0)	1,003289127	30,08905
45	Submit and Leave (fator=12.0)	1,003629780	30,09904
46	Submit and Leave (fator=13.0)	1,003970337	30,10905
47	Submit and Leave (fator=14.0)	1,004310894	30,11904
48	Submit and Leave (fator=15.0)	1,004651546	30,12905
49	Submit and Leave (fator=16.0)	1,004992104	30,13905
50	Submit and Leave (fator=17.0)	1,005332565	30,14904
51	Submit and Leave (fator=18.0)	1,005673599	30,15904
52	Submit and Leave (fator=19.0)	1,006013870	30,16904
53	Submit and Leave (fator=20.0)	1,006354332	30,17905

Tabela A.13: 10-Fold Cross Validation,  $R = 10$ , Compra, Petrobras

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
1	Ótima	0,996132660	29,87893
2	Submit and Leave (fator=-14.0)	1,000283909	29,99941
3	Kearns (agressividade otimizada)	1,000283909	29,99954
4	Kearns (agressividade =1.0)	1,000286388	29,99962
5	Submit and Leave (fator=-18.0)	1,000305939	29,99966
6	Submit and Leave (fator=-9.0)	1,000307369	30,00060
7	Submit and Leave (fator=-13.0)	1,000308800	30,00024
8	Submit and Leave (fator=-8.0)	1,000311756	30,00067
9	Submit and Leave (fator=-15.0)	1,000313282	30,00020
10	Submit and Leave (fator=-19.0)	1,000315857	30,00000
11	Submit and Leave (fator=-7.0)	1,000320721	30,00087
12	Submit and Leave (fator=-11.0)	1,000321293	30,00062
13	Kearns (agressividade =0.75)	1,000322723	30,00095
14	Submit and Leave (fator=-17.0)	1,000329876	30,00048
15	Submit and Leave (fator=-16.0)	1,000330257	30,00054
16	Submit and Leave (fator=-12.0)	1,000343609	30,00106
17	Submit and Leave (fator=-20.0)	1,000345135	30,00072
18	Reinforcement Learning (c,e,f,t)	1,000345516	30,00129
Continua na próxima página			

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
19	Submit and Leave (fator=-10.0)	1,000351238	30,00163
20	Reinforcement Learning (e,f,t)	1,000362587	30,00168
21	Submit and Leave (fator=1.0)	1,000403118	30,00460
22	Submit and Leave (fator=-5.0)	1,000407219	30,00377
23	Submit and Leave (fator=0.0)	1,000418282	30,00453
24	Submit and Leave (fator=-6.0)	1,000419140	30,00395
25	Reinforcement Learning (e,f,q,t)	1,000449944	30,00371
26	Submit and Execute	1,000457668	30,00578
27	Submit and Leave (fator=2.0)	1,000458145	30,00583
28	Submit and Leave (fator=-4.0)	1,000492668	30,00609
29	Submit and Leave (fator=-1.0)	1,000493526	30,00685
30	Submit and Leave (fator=-3.0)	1,000497723	30,00609
31	Submit and Leave (fator=-2.0)	1,000557804	30,00816
32	Kearns (agressividade =0.5)	1,000582218	30,00883
33	Kearns (agressividade =0.25)	1,000619984	30,01048
34	Submit and Leave (fator=3.0)	1,000701809	30,01317
35	Aleatória	1,000705433	30,01277
36	Submit and Leave (fator=4.0)	1,000986385	30,02159
37	Submit and Leave (fator=5.0)	1,001287556	30,03039
38	Submit and Leave (fator=6.0)	1,001585960	30,03904
39	Kearns (agressividade =0.0)	1,001633453	30,04024
40	Submit and Leave (fator=7.0)	1,001926517	30,04905
41	Submit and Leave (fator=8.0)	1,002267170	30,05904
42	Submit and Leave (fator=9.0)	1,002607918	30,06905
43	Submit and Leave (fator=10.0)	1,002948475	30,07905
44	Submit and Leave (fator=11.0)	1,003289127	30,08905
45	Submit and Leave (fator=12.0)	1,003629780	30,09904
46	Submit and Leave (fator=13.0)	1,003970337	30,10905
47	Submit and Leave (fator=14.0)	1,004310894	30,11904
48	Submit and Leave (fator=15.0)	1,004651546	30,12905
49	Submit and Leave (fator=16.0)	1,004992104	30,13905
50	Submit and Leave (fator=17.0)	1,005332565	30,14904
51	Submit and Leave (fator=18.0)	1,005673599	30,15904
52	Submit and Leave (fator=19.0)	1,006013870	30,16904
53	Submit and Leave (fator=20.0)	1,006354332	30,17905

Tabela A.14: 10-Fold Cross Validation,  $R = 30$ , Compra, Petrobras

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
1	Ótima	0,996132660	29,87893
2	Reinforcement Learning (c,e,f,t)	1,000126648	29,99508
3	Kearns (agressividade otimizada)	1,000237370	29,99826
4	Kearns (agressividade =1.0)	1,000240135	29,99836
5	Reinforcement Learning (e,f,t)	1,000264549	29,99846
6	Submit and Leave (fator=-14.0)	1,000283909	29,99941
7	Submit and Leave (fator=-18.0)	1,000305939	29,99966
8	Reinforcement Learning (e,f,q,t)	1,000306320	30,00016
9	Submit and Leave (fator=-9.0)	1,000307369	30,00060
10	Submit and Leave (fator=-13.0)	1,000308800	30,00024
11	Submit and Leave (fator=-8.0)	1,000311756	30,00067
12	Submit and Leave (fator=-15.0)	1,000313282	30,00020
13	Submit and Leave (fator=-19.0)	1,000315857	30,00000
14	Submit and Leave (fator=-7.0)	1,000320721	30,00087
15	Submit and Leave (fator=-11.0)	1,000321293	30,00062
16	Submit and Leave (fator=-17.0)	1,000329876	30,00048
17	Submit and Leave (fator=-16.0)	1,000330257	30,00054
18	Submit and Leave (fator=-12.0)	1,000343609	30,00106
19	Submit and Leave (fator=-20.0)	1,000345135	30,00072
20	Submit and Leave (fator=-10.0)	1,000351238	30,00163
21	Submit and Leave (fator=1.0)	1,000403118	30,00460
22	Submit and Leave (fator=-5.0)	1,000407219	30,00377
23	Submit and Leave (fator=0.0)	1,000418282	30,00453
24	Submit and Leave (fator=-6.0)	1,000419140	30,00395
25	Kearns (agressividade =0.75)	1,000433540	30,00432
26	Submit and Execute	1,000457668	30,00578
27	Submit and Leave (fator=2.0)	1,000458145	30,00583
28	Submit and Leave (fator=-4.0)	1,000492668	30,00609
29	Submit and Leave (fator=-1.0)	1,000493526	30,00685
30	Submit and Leave (fator=-3.0)	1,000497723	30,00609
31	Submit and Leave (fator=-2.0)	1,000557804	30,00816
32	Kearns (agressividade =0.5)	1,000571823	30,00844
33	Kearns (agressividade =0.25)	1,000691795	30,01278
Continua na próxima página			

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
34	Submit and Leave (fator=3.0)	1,000701809	30,01317
35	Aleatória	1,000819683	30,01631
36	Submit and Leave (fator=4.0)	1,000986385	30,02159
37	Submit and Leave (fator=5.0)	1,001287556	30,03039
38	Submit and Leave (fator=6.0)	1,001585960	30,03904
39	Kearns (agressividade =0.0)	1,001644421	30,04055
40	Submit and Leave (fator=7.0)	1,001926517	30,04905
41	Submit and Leave (fator=8.0)	1,002267170	30,05904
42	Submit and Leave (fator=9.0)	1,002607918	30,06905
43	Submit and Leave (fator=10.0)	1,002948475	30,07905
44	Submit and Leave (fator=11.0)	1,003289127	30,08905
45	Submit and Leave (fator=12.0)	1,003629780	30,09904
46	Submit and Leave (fator=13.0)	1,003970337	30,10905
47	Submit and Leave (fator=14.0)	1,004310894	30,11904
48	Submit and Leave (fator=15.0)	1,004651546	30,12905
49	Submit and Leave (fator=16.0)	1,004992104	30,13905
50	Submit and Leave (fator=17.0)	1,005332565	30,14904
51	Submit and Leave (fator=18.0)	1,005673599	30,15904
52	Submit and Leave (fator=19.0)	1,006013870	30,16904
53	Submit and Leave (fator=20.0)	1,006354332	30,17905

Tabela A.15: 10-Fold Cross Validation,  $R = 60$ , Compra, Petrobras

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
1	Ótima	1,003756905	30,10050
2	Submit and Leave (fator=-13.0)	0,999568653	29,97736
3	Submit and Leave (fator=1.0)	0,999561977	29,97861
4	Submit and Leave (fator=-6.0)	0,999557686	29,97750
5	Submit and Leave (fator=-5.0)	0,999547291	29,97737
6	Submit and Leave (fator=-11.0)	0,999542236	29,97658
7	Submit and Execute	0,999542236	29,97904
8	Submit and Leave (fator=-7.0)	0,999542046	29,97695
9	Submit and Leave (fator=-9.0)	0,999528980	29,97625
10	Submit and Leave (fator=-14.0)	0,999517918	29,97600
11	Submit and Leave (fator=-12.0)	0,999513912	29,97598
12	Submit and Leave (fator=-10.0)	0,999511051	29,97577
13	Reinforcement Learning (e,f,q,t)	0,999496460	29,97498
14	Submit and Leave (fator=-17.0)	0,999495316	29,97574
Continua na próxima página			

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
15	Submit and Leave (fator=-3.0)	0,999494934	29,97626
16	Submit and Leave (fator=-15.0)	0,999489880	29,97523
17	Reinforcement Learning (e,f,t)	0,999487972	29,97478
18	Submit and Leave (fator=-16.0)	0,999487400	29,97550
19	Submit and Leave (fator=0.0)	0,999480534	29,97673
20	Submit and Leave (fator=-8.0)	0,999476433	29,97473
21	Submit and Leave (fator=-20.0)	0,999464989	29,97502
22	Submit and Leave (fator=-18.0)	0,999455357	29,97474
23	Submit and Leave (fator=-19.0)	0,999452877	29,97470
24	Kearns (agressividade =1.0)	0,999444485	29,97527
25	Submit and Leave (fator=-4.0)	0,999440289	29,97432
26	Kearns (agressividade otimizada)	0,999439716	29,97515
27	Submit and Leave (fator=2.0)	0,999427605	29,97499
28	Submit and Leave (fator=-1.0)	0,999401760	29,97396
29	Submit and Leave (fator=-2.0)	0,999389267	29,97339
30	Reinforcement Learning (c,e,f,t)	0,999368286	29,97189
31	Kearns (agressividade =0.75)	0,999284172	29,97087
32	Aleatória	0,999271679	29,97018
33	Submit and Leave (fator=3.0)	0,999211597	29,96872
34	Kearns (agressividade =0.5)	0,999126148	29,96687
35	Submit and Leave (fator=4.0)	0,998991299	29,96258
36	Kearns (agressividade =0.25)	0,998778725	29,95667
37	Submit and Leave (fator=5.0)	0,998665524	29,95303
38	Submit and Leave (fator=6.0)	0,998396206	29,94525
39	Kearns (agressividade =0.0)	0,998093510	29,93634
40	Submit and Leave (fator=7.0)	0,998073387	29,93578
41	Submit and Leave (fator=8.0)	0,997732830	29,92578
42	Submit and Leave (fator=9.0)	0,997392273	29,91578
43	Submit and Leave (fator=10.0)	0,997051620	29,90578
44	Submit and Leave (fator=11.0)	0,996710968	29,89578
45	Submit and Leave (fator=12.0)	0,996370411	29,88578
46	Submit and Leave (fator=13.0)	0,996029758	29,87578
47	Submit and Leave (fator=14.0)	0,995689106	29,86578
48	Submit and Leave (fator=15.0)	0,995348549	29,85578
49	Submit and Leave (fator=16.0)	0,995007896	29,84578
50	Submit and Leave (fator=17.0)	0,994667339	29,83578
Continua na próxima página			

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
51	Submit and Leave (fator=18.0)	0,994326687	29,82578
52	Submit and Leave (fator=19.0)	0,993986130	29,81578
53	Submit and Leave (fator=20.0)	0,993645382	29,80578

Tabela A.16: 10-Fold Cross Validation,  $R = 10$ , Venda, Petrobras

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
1	Ótima	1,003756905	30,10050
2	Submit and Leave (fator=-13.0)	0,999568653	29,97736
3	Submit and Leave (fator=1.0)	0,999561977	29,97861
4	Submit and Leave (fator=-6.0)	0,999557686	29,97750
5	Submit and Leave (fator=-5.0)	0,999547291	29,97737
6	Submit and Leave (fator=-11.0)	0,999542236	29,97658
7	Submit and Execute	0,999542236	29,97904
8	Submit and Leave (fator=-7.0)	0,999542046	29,97695
9	Submit and Leave (fator=-9.0)	0,999528980	29,97625
10	Submit and Leave (fator=-14.0)	0,999517918	29,97600
11	Submit and Leave (fator=-12.0)	0,999513912	29,97598
12	Submit and Leave (fator=-10.0)	0,999511051	29,97577
13	Submit and Leave (fator=-17.0)	0,999495316	29,97574
14	Submit and Leave (fator=-3.0)	0,999494934	29,97626
15	Submit and Leave (fator=-15.0)	0,999489880	29,97523
16	Submit and Leave (fator=-16.0)	0,999487400	29,97550
17	Submit and Leave (fator=0.0)	0,999480534	29,97673
18	Submit and Leave (fator=-8.0)	0,999476433	29,97473
19	Submit and Leave (fator=-20.0)	0,999464989	29,97502
20	Submit and Leave (fator=-18.0)	0,999455357	29,97474
21	Submit and Leave (fator=-19.0)	0,999452877	29,97470
22	Kearns (agressividade =1.0)	0,999442577	29,97534
23	Kearns (agressividade otimizada)	0,999442387	29,97533
24	Submit and Leave (fator=-4.0)	0,999440289	29,97432
25	Submit and Leave (fator=2.0)	0,999427605	29,97499
26	Kearns (agressividade =0.75)	0,999410820	29,97469
27	Submit and Leave (fator=-1.0)	0,999401760	29,97396
28	Submit and Leave (fator=-2.0)	0,999389267	29,97339
29	Reinforcement Learning (c,e,f,t)	0,999378967	29,97269
Continua na próxima página			

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
30	Reinforcement Learning (e,f,q,t)	0,999338913	29,97211
31	Reinforcement Learning (e,f,t)	0,999327469	29,97189
32	Submit and Leave (fator=3.0)	0,999211597	29,96872
33	Kearns (agressividade =0.5)	0,999171257	29,96831
34	Aleatória	0,999151993	29,96715
35	Submit and Leave (fator=4.0)	0,998991299	29,96258
36	Kearns (agressividade =0.25)	0,998765850	29,95634
37	Submit and Leave (fator=5.0)	0,998665524	29,95303
38	Submit and Leave (fator=6.0)	0,998396206	29,94525
39	Kearns (agressividade =0.0)	0,998085403	29,93609
40	Submit and Leave (fator=7.0)	0,998073387	29,93578
41	Submit and Leave (fator=8.0)	0,997732830	29,92578
42	Submit and Leave (fator=9.0)	0,997392273	29,91578
43	Submit and Leave (fator=10.0)	0,997051620	29,90578
44	Submit and Leave (fator=11.0)	0,996710968	29,89578
45	Submit and Leave (fator=12.0)	0,996370411	29,88578
46	Submit and Leave (fator=13.0)	0,996029758	29,87578
47	Submit and Leave (fator=14.0)	0,995689106	29,86578
48	Submit and Leave (fator=15.0)	0,995348549	29,85578
49	Submit and Leave (fator=16.0)	0,995007896	29,84578
50	Submit and Leave (fator=17.0)	0,994667339	29,83578
51	Submit and Leave (fator=18.0)	0,994326687	29,82578
52	Submit and Leave (fator=19.0)	0,993986130	29,81578
53	Submit and Leave (fator=20.0)	0,993645382	29,80578

Tabela A.17: 10-Fold Cross Validation,  $R = 30$ , Venda, Petrobras

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
1	Ótima	1,003756905	30,10050
2	Submit and Leave (fator=-13.0)	0,999568653	29,97736
3	Submit and Leave (fator=1.0)	0,999561977	29,97861
4	Submit and Leave (fator=-6.0)	0,999557686	29,97750
5	Submit and Leave (fator=-5.0)	0,999547291	29,97737
6	Submit and Leave (fator=-11.0)	0,999542236	29,97658
7	Submit and Execute	0,999542236	29,97904
8	Submit and Leave (fator=-7.0)	0,999542046	29,97695
9	Submit and Leave (fator=-9.0)	0,999528980	29,97625
10	Submit and Leave (fator=-14.0)	0,999517918	29,97600
Continua na próxima página			

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
11	Submit and Leave (fator=-12.0)	0,999513912	29,97598
12	Submit and Leave (fator=-10.0)	0,999511051	29,97577
13	Reinforcement Learning (e,f,q,t)	0,999497890	29,97685
14	Submit and Leave (fator=-17.0)	0,999495316	29,97574
15	Submit and Leave (fator=-3.0)	0,999494934	29,97626
16	Submit and Leave (fator=-15.0)	0,999489880	29,97523
17	Kearns (agressividade =1.0)	0,999489117	29,97701
18	Kearns (agressividade otimizada)	0,999489117	29,97701
19	Submit and Leave (fator=-16.0)	0,999487400	29,97550
20	Submit and Leave (fator=0.0)	0,999480534	29,97673
21	Submit and Leave (fator=-8.0)	0,999476433	29,97473
22	Reinforcement Learning (e,f,t)	0,999466228	29,97531
23	Submit and Leave (fator=-20.0)	0,999464989	29,97502
24	Submit and Leave (fator=-18.0)	0,999455357	29,97474
25	Submit and Leave (fator=-19.0)	0,999452877	29,97470
26	Submit and Leave (fator=-4.0)	0,999440289	29,97432
27	Submit and Leave (fator=2.0)	0,999427605	29,97499
28	Reinforcement Learning (c,e,f,t)	0,999423981	29,97367
29	Kearns (agressividade =0.75)	0,999408913	29,97480
30	Submit and Leave (fator=-1.0)	0,999401760	29,97396
31	Submit and Leave (fator=-2.0)	0,999389267	29,97339
32	Kearns (agressividade =0.5)	0,999239540	29,97035
33	Submit and Leave (fator=3.0)	0,999211597	29,96872
34	Aleatória	0,999188614	29,96838
35	Submit and Leave (fator=4.0)	0,998991299	29,96258
36	Kearns (agressividade =0.25)	0,998760223	29,95610
37	Submit and Leave (fator=5.0)	0,998665524	29,95303
38	Submit and Leave (fator=6.0)	0,998396206	29,94525
39	Kearns (agressividade =0.0)	0,998083401	29,93601
40	Submit and Leave (fator=7.0)	0,998073387	29,93578
41	Submit and Leave (fator=8.0)	0,997732830	29,92578
42	Submit and Leave (fator=9.0)	0,997392273	29,91578
43	Submit and Leave (fator=10.0)	0,997051620	29,90578
44	Submit and Leave (fator=11.0)	0,996710968	29,89578
45	Submit and Leave (fator=12.0)	0,996370411	29,88578
46	Submit and Leave (fator=13.0)	0,996029758	29,87578
Continua na próxima página			

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
47	Submit and Leave (fator=14.0)	0,995689106	29,86578
48	Submit and Leave (fator=15.0)	0,995348549	29,85578
49	Submit and Leave (fator=16.0)	0,995007896	29,84578
50	Submit and Leave (fator=17.0)	0,994667339	29,83578
51	Submit and Leave (fator=18.0)	0,994326687	29,82578
52	Submit and Leave (fator=19.0)	0,993986130	29,81578
53	Submit and Leave (fator=20.0)	0,993645382	29,80578

Tabela A.18: 10-Fold Cross Validation,  $R = 60$ , Venda, Petrobras

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
1	Ótima	0,993438625	32,80205
2	Reinforcement Learning (e,f,q,t)	1,000002003	33,00873
3	Reinforcement Learning (e,f,t)	1,000042915	33,00959
4	Reinforcement Learning (c,e,f,t)	1,000044155	33,00995
5	Submit and Leave (fator=-15.0)	1,000293827	33,01731
6	Submit and Leave (fator=-17.0)	1,000302982	33,01756
7	Submit and Leave (fator=-14.0)	1,000307941	33,01755
8	Submit and Leave (fator=-16.0)	1,000321102	33,01804
9	Submit and Leave (fator=-19.0)	1,000351715	33,01905
10	Submit and Leave (fator=-20.0)	1,000356007	33,01927
11	Kearns (agressividade =1.0)	1,000362015	33,01974
12	Kearns (agressividade otimizada)	1,000362968	33,02002
13	Submit and Leave (fator=-18.0)	1,000369740	33,01961
14	Submit and Leave (fator=-13.0)	1,000373936	33,01985
15	Submit and Leave (fator=-8.0)	1,000383282	33,02106
16	Submit and Leave (fator=-12.0)	1,000390434	33,02052
17	Submit and Leave (fator=-11.0)	1,000392056	33,02084
18	Submit and Leave (fator=-7.0)	1,000408363	33,02205
19	Submit and Leave (fator=-10.0)	1,000419426	33,02173
20	Submit and Leave (fator=-9.0)	1,000423145	33,02192
21	Submit and Leave (fator=-6.0)	1,000463676	33,02403
22	Submit and Leave (fator=-5.0)	1,000474453	33,02391
23	Submit and Leave (fator=-4.0)	1,000584507	33,02741
24	Submit and Leave (fator=-3.0)	1,000609684	33,02842
25	Submit and Leave (fator=0.0)	1,000613403	33,02910
Continua na próxima página			

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
26	Kearns (agressividade =0.75)	1,000654793	33,03011
27	Submit and Leave (fator=-2.0)	1,000656986	33,02982
28	Submit and Leave (fator=1.0)	1,000687504	33,03148
29	Submit and Leave (fator=-1.0)	1,000725937	33,03214
30	Aleatória	1,000755978	33,03209
31	Submit and Leave (fator=2.0)	1,000817680	33,03565
32	Kearns (agressividade =0.5)	1,000986958	33,04136
33	Submit and Leave (fator=3.0)	1,000994205	33,04162
34	Submit and Leave (fator=4.0)	1,001061630	33,04350
35	Submit and Execute	1,001071548	33,04390
36	Submit and Leave (fator=5.0)	1,001237679	33,04888
37	Submit and Leave (fator=6.0)	1,001279926	33,05074
38	Submit and Leave (fator=7.0)	1,001416492	33,05507
39	Submit and Leave (fator=8.0)	1,001643372	33,06221
40	Submit and Leave (fator=9.0)	1,001870155	33,06964
41	Kearns (agressividade =0.25)	1,001880932	33,07013
42	Submit and Leave (fator=10.0)	1,002131557	33,07807
43	Submit and Leave (fator=11.0)	1,002415276	33,08725
44	Submit and Leave (fator=12.0)	1,002714825	33,09689
45	Submit and Leave (fator=13.0)	1,003022385	33,10677
46	Submit and Leave (fator=14.0)	1,003332329	33,11671
47	Kearns (agressividade =0.0)	1,003587723	33,12496
48	Submit and Leave (fator=15.0)	1,003632164	33,12635
49	Submit and Leave (fator=16.0)	1,003942490	33,13630
50	Submit and Leave (fator=17.0)	1,004252529	33,14625
51	Submit and Leave (fator=18.0)	1,004557419	33,15597
52	Submit and Leave (fator=19.0)	1,004848576	33,16526
53	Submit and Leave (fator=20.0)	1,005160141	33,17526

Tabela A.19: *10-Fold Cross Validation*,  $R = 10$ , Compra, Vale

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
1	Ótima	0,993438625	32,80205
2	Reinforcement Learning (e,f,t)	1,000083256	33,00956
3	Reinforcement Learning (c,e,f,t)	1,000123119	33,01166
4	Reinforcement Learning (e,f,q,t)	1,000147343	33,01196
5	Submit and Leave (fator=-15.0)	1,000293827	33,01731
6	Submit and Leave (fator=-17.0)	1,000302982	33,01756
7	Submit and Leave (fator=-14.0)	1,000307941	33,01755
Continua na próxima página			

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
8	Submit and Leave (fator=-16.0)	1,000321102	33,01804
9	Submit and Leave (fator=-19.0)	1,000351715	33,01905
10	Kearns (agressividade =1.0)	1,000355911	33,01891
11	Submit and Leave (fator=-20.0)	1,000356007	33,01927
12	Kearns (agressividade otimizada)	1,000357819	33,01910
13	Submit and Leave (fator=-18.0)	1,000369740	33,01961
14	Submit and Leave (fator=-13.0)	1,000373936	33,01985
15	Submit and Leave (fator=-8.0)	1,000383282	33,02106
16	Submit and Leave (fator=-12.0)	1,000390434	33,02052
17	Submit and Leave (fator=-11.0)	1,000392056	33,02084
18	Submit and Leave (fator=-7.0)	1,000408363	33,02205
19	Submit and Leave (fator=-10.0)	1,000419426	33,02173
20	Submit and Leave (fator=-9.0)	1,000423145	33,02192
21	Submit and Leave (fator=-6.0)	1,000463676	33,02403
22	Submit and Leave (fator=-5.0)	1,000474453	33,02391
23	Submit and Leave (fator=-4.0)	1,000584507	33,02741
24	Submit and Leave (fator=-3.0)	1,000609684	33,02842
25	Submit and Leave (fator=0.0)	1,000613403	33,02910
26	Kearns (agressividade =0.75)	1,000627041	33,02877
27	Aleatória	1,000643349	33,02857
28	Submit and Leave (fator=-2.0)	1,000656986	33,02982
29	Submit and Leave (fator=1.0)	1,000687504	33,03148
30	Submit and Leave (fator=-1.0)	1,000725937	33,03214
31	Submit and Leave (fator=2.0)	1,000817680	33,03565
32	Kearns (agressividade =0.5)	1,000883484	33,03859
33	Submit and Leave (fator=3.0)	1,000994205	33,04162
34	Submit and Leave (fator=4.0)	1,001061630	33,04350
35	Submit and Execute	1,001071548	33,04390
36	Submit and Leave (fator=5.0)	1,001237679	33,04888
37	Submit and Leave (fator=6.0)	1,001279926	33,05074
38	Submit and Leave (fator=7.0)	1,001416492	33,05507
39	Submit and Leave (fator=8.0)	1,001643372	33,06221
40	Submit and Leave (fator=9.0)	1,001870155	33,06964
41	Kearns (agressividade =0.25)	1,001890182	33,07057
42	Submit and Leave (fator=10.0)	1,002131557	33,07807
43	Submit and Leave (fator=11.0)	1,002415276	33,08725
Continua na próxima página			

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
44	Submit and Leave (fator=12.0)	1,002714825	33,09689
45	Submit and Leave (fator=13.0)	1,003022385	33,10677
46	Submit and Leave (fator=14.0)	1,003332329	33,11671
47	Kearns (agressividade =0.0)	1,003591919	33,12513
48	Submit and Leave (fator=15.0)	1,003632164	33,12635
49	Submit and Leave (fator=16.0)	1,003942490	33,13630
50	Submit and Leave (fator=17.0)	1,004252529	33,14625
51	Submit and Leave (fator=18.0)	1,004557419	33,15597
52	Submit and Leave (fator=19.0)	1,004848576	33,16526
53	Submit and Leave (fator=20.0)	1,005160141	33,17526

Tabela A.20: 10-Fold Cross Validation,  $R = 30$ , Compra, Vale

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
1	Ótima	0,993438625	32,80205
2	Reinforcement Learning (e,f,t)	1,000083256	33,00956
3	Reinforcement Learning (c,e,f,t)	1,000123119	33,01166
4	Reinforcement Learning (e,f,q,t)	1,000147343	33,01196
5	Submit and Leave (fator=-15.0)	1,000293827	33,01731
6	Submit and Leave (fator=-17.0)	1,000302982	33,01756
7	Submit and Leave (fator=-14.0)	1,000307941	33,01755
8	Submit and Leave (fator=-16.0)	1,000321102	33,01804
9	Submit and Leave (fator=-19.0)	1,000351715	33,01905
10	Kearns (agressividade =1.0)	1,000355911	33,01891
11	Submit and Leave (fator=-20.0)	1,000356007	33,01927
12	Kearns (agressividade otimizada)	1,000357819	33,01910
13	Submit and Leave (fator=-18.0)	1,000369740	33,01961
14	Submit and Leave (fator=-13.0)	1,000373936	33,01985
15	Submit and Leave (fator=-8.0)	1,000383282	33,02106
16	Submit and Leave (fator=-12.0)	1,000390434	33,02052
17	Submit and Leave (fator=-11.0)	1,000392056	33,02084
18	Submit and Leave (fator=-7.0)	1,000408363	33,02205
19	Submit and Leave (fator=-10.0)	1,000419426	33,02173
20	Submit and Leave (fator=-9.0)	1,000423145	33,02192
21	Submit and Leave (fator=-6.0)	1,000463676	33,02403
22	Submit and Leave (fator=-5.0)	1,000474453	33,02391
Continua na próxima página			

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
23	Submit and Leave (fator=-4.0)	1,000584507	33,02741
24	Submit and Leave (fator=-3.0)	1,000609684	33,02842
25	Submit and Leave (fator=0.0)	1,000613403	33,02910
26	Kearns (agressividade =0.75)	1,000627041	33,02877
27	Aleatória	1,000638199	33,02955
28	Submit and Leave (fator=-2.0)	1,000656986	33,02982
29	Submit and Leave (fator=1.0)	1,000687504	33,03148
30	Submit and Leave (fator=-1.0)	1,000725937	33,03214
31	Submit and Leave (fator=2.0)	1,000817680	33,03565
32	Kearns (agressividade =0.5)	1,000883484	33,03859
33	Submit and Leave (fator=3.0)	1,000994205	33,04162
34	Submit and Leave (fator=4.0)	1,001061630	33,04350
35	Submit and Execute	1,001071548	33,04390
36	Submit and Leave (fator=5.0)	1,001237679	33,04888
37	Submit and Leave (fator=6.0)	1,001279926	33,05074
38	Submit and Leave (fator=7.0)	1,001416492	33,05507
39	Submit and Leave (fator=8.0)	1,001643372	33,06221
40	Submit and Leave (fator=9.0)	1,001870155	33,06964
41	Kearns (agressividade =0.25)	1,001890182	33,07057
42	Submit and Leave (fator=10.0)	1,002131557	33,07807
43	Submit and Leave (fator=11.0)	1,002415276	33,08725
44	Submit and Leave (fator=12.0)	1,002714825	33,09689
45	Submit and Leave (fator=13.0)	1,003022385	33,10677
46	Submit and Leave (fator=14.0)	1,003332329	33,11671
47	Kearns (agressividade =0.0)	1,003591919	33,12513
48	Submit and Leave (fator=15.0)	1,003632164	33,12635
49	Submit and Leave (fator=16.0)	1,003942490	33,13630
50	Submit and Leave (fator=17.0)	1,004252529	33,14625
51	Submit and Leave (fator=18.0)	1,004557419	33,15597
52	Submit and Leave (fator=19.0)	1,004848576	33,16526
53	Submit and Leave (fator=20.0)	1,005160141	33,17526

Tabela A.21: 10-Fold Cross Validation,  $R = 60$ , Compra, Vale

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
1	Ótima	1,003933239	33,13331
2	Submit and Leave (fator=1.0)	0,999070072	32,97483
3	Submit and Leave (fator=0.0)	0,999025822	32,97383
4	Submit and Leave (fator=2.0)	0,999007893	32,97364
Continua na próxima página			

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
5	Submit and Execute	0,998928547	32,97525
6	Reinforcement Learning (e,f,t)	0,998928070	32,97296
7	Reinforcement Learning (c,e,f,t)	0,998912144	32,97246
8	Submit and Leave (fator=-5.0)	0,998883152	32,96999
9	Submit and Leave (fator=3.0)	0,998875332	32,96990
10	Reinforcement Learning (e,f,q,t)	0,998874092	32,97065
11	Submit and Leave (fator=4.0)	0,998850727	32,96976
12	Kearns (agressividade =1.0)	0,998830795	32,96967
13	Submit and Leave (fator=-6.0)	0,998823833	32,96828
14	Kearns (agressividade otimizada)	0,998813820	32,96898
15	Submit and Leave (fator=-1.0)	0,998811722	32,96755
16	Submit and Leave (fator=-4.0)	0,998798084	32,96760
17	Submit and Leave (fator=-2.0)	0,998790646	32,96712
18	Submit and Leave (fator=-7.0)	0,998768997	32,96709
19	Submit and Leave (fator=-3.0)	0,998766804	32,96664
20	Kearns (agressividade =0.75)	0,998766422	32,96911
21	Submit and Leave (fator=5.0)	0,998756695	32,96788
22	Submit and Leave (fator=-9.0)	0,998719120	32,96537
23	Submit and Leave (fator=-10.0)	0,998684120	32,96413
24	Submit and Leave (fator=-8.0)	0,998683739	32,96424
25	Aleatória	0,998663330	32,96465
26	Submit and Leave (fator=-11.0)	0,998658943	32,96350
27	Submit and Leave (fator=-16.0)	0,998641968	32,96319
28	Submit and Leave (fator=-14.0)	0,998634720	32,96264
29	Submit and Leave (fator=-15.0)	0,998633862	32,96276
30	Submit and Leave (fator=6.0)	0,998623085	32,96364
31	Submit and Leave (fator=-13.0)	0,998613262	32,96189
32	Submit and Leave (fator=-12.0)	0,998610878	32,96208
33	Submit and Leave (fator=-17.0)	0,998609734	32,96213
34	Submit and Leave (fator=-18.0)	0,998599529	32,96173
35	Submit and Leave (fator=-19.0)	0,998598576	32,96194
36	Submit and Leave (fator=-20.0)	0,998504829	32,95918
37	Submit and Leave (fator=7.0)	0,998351479	32,95507
38	Submit and Leave (fator=8.0)	0,998174572	32,95002
39	Submit and Leave (fator=9.0)	0,997928143	32,94217
40	Submit and Leave (fator=10.0)	0,997706413	32,93539
Continua na próxima página			

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
41	Kearns (agressividade =0.5)	0,997696972	32,93485
42	Submit and Leave (fator=11.0)	0,997481251	32,92854
43	Submit and Leave (fator=12.0)	0,997175407	32,91873
44	Kearns (agressividade =0.25)	0,997094917	32,91619
45	Submit and Leave (fator=13.0)	0,996925068	32,91098
46	Submit and Leave (fator=14.0)	0,996691322	32,90343
47	Submit and Leave (fator=15.0)	0,996395683	32,89384
48	Kearns (agressividade =0.0)	0,996102238	32,88400
49	Submit and Leave (fator=16.0)	0,996085739	32,88387
50	Submit and Leave (fator=17.0)	0,995774174	32,87388
51	Submit and Leave (fator=18.0)	0,995462608	32,86388
52	Submit and Leave (fator=19.0)	0,995151043	32,85388
53	Submit and Leave (fator=20.0)	0,994839573	32,84388

Tabela A.22: 10-Fold Cross Validation,  $R = 10$ , Venda, Vale

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
1	Ótima	1,003933239	33,13331
2	Kearns (agressividade =1.0)	0,999104404	32,97937
3	Kearns (agressividade otimizada)	0,999099636	32,97920
4	Submit and Leave (fator=1.0)	0,999070072	32,97483
5	Submit and Leave (fator=0.0)	0,999025822	32,97383
6	Submit and Leave (fator=2.0)	0,999007893	32,97364
7	Submit and Execute	0,998928547	32,97525
8	Kearns (agressividade =0.75)	0,998889160	32,97376
9	Submit and Leave (fator=-5.0)	0,998883152	32,96999
10	Submit and Leave (fator=3.0)	0,998875332	32,96990
11	Submit and Leave (fator=4.0)	0,998850727	32,96976
12	Submit and Leave (fator=-6.0)	0,998823833	32,96828
13	Aleatória	0,998822403	32,97066
14	Submit and Leave (fator=-1.0)	0,998811722	32,96755
15	Submit and Leave (fator=-4.0)	0,998798084	32,96760
16	Submit and Leave (fator=-2.0)	0,998790646	32,96712
17	Reinforcement Learning (e,f,t)	0,998788071	32,96904
18	Reinforcement Learning (c,e,f,t)	0,998781586	32,96747
19	Submit and Leave (fator=-7.0)	0,998768997	32,96709
20	Submit and Leave (fator=-3.0)	0,998766804	32,96664
Continua na próxima página			

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
21	Submit and Leave (fator=5.0)	0,998756695	32,96788
22	Submit and Leave (fator=-9.0)	0,998719120	32,96537
23	Reinforcement Learning (e,f,q,t)	0,998699284	32,96551
24	Submit and Leave (fator=-10.0)	0,998684120	32,96413
25	Submit and Leave (fator=-8.0)	0,998683739	32,96424
26	Submit and Leave (fator=-11.0)	0,998658943	32,96350
27	Submit and Leave (fator=-16.0)	0,998641968	32,96319
28	Submit and Leave (fator=-14.0)	0,998634720	32,96264
29	Submit and Leave (fator=-15.0)	0,998633862	32,96276
30	Submit and Leave (fator=6.0)	0,998623085	32,96364
31	Submit and Leave (fator=-13.0)	0,998613262	32,96189
32	Submit and Leave (fator=-12.0)	0,998610878	32,96208
33	Submit and Leave (fator=-17.0)	0,998609734	32,96213
34	Submit and Leave (fator=-18.0)	0,998599529	32,96173
35	Submit and Leave (fator=-19.0)	0,998598576	32,96194
36	Submit and Leave (fator=-20.0)	0,998504829	32,95918
37	Submit and Leave (fator=7.0)	0,998351479	32,95507
38	Submit and Leave (fator=8.0)	0,998174572	32,95002
39	Submit and Leave (fator=9.0)	0,997928143	32,94217
40	Kearns (agressividade =0.5)	0,997863007	32,94055
41	Submit and Leave (fator=10.0)	0,997706413	32,93539
42	Submit and Leave (fator=11.0)	0,997481251	32,92854
43	Submit and Leave (fator=12.0)	0,997175407	32,91873
44	Kearns (agressividade =0.25)	0,997131824	32,91742
45	Submit and Leave (fator=13.0)	0,996925068	32,91098
46	Submit and Leave (fator=14.0)	0,996691322	32,90343
47	Submit and Leave (fator=15.0)	0,996395683	32,89384
48	Kearns (agressividade =0.0)	0,996130657	32,88484
49	Submit and Leave (fator=16.0)	0,996085739	32,88387
50	Submit and Leave (fator=17.0)	0,995774174	32,87388
51	Submit and Leave (fator=18.0)	0,995462608	32,86388
52	Submit and Leave (fator=19.0)	0,995151043	32,85388
53	Submit and Leave (fator=20.0)	0,994839573	32,84388

Tabela A.23: 10-Fold Cross Validation,  $R = 30$ , Venda, Vale

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
1	Ótima	1,003933239	33,13331
2	Kearns (agressividade =1.0)	0,999104404	32,97937
Continua na próxima página			

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
3	Kearns (agressividade otimizada)	0,999099636	32,97920
4	Submit and Leave (fator=1.0)	0,999070072	32,97483
5	Submit and Leave (fator=0.0)	0,999025822	32,97383
6	Aleatória	0,999019814	32,97646
7	Submit and Leave (fator=2.0)	0,999007893	32,97364
8	Submit and Execute	0,998928547	32,97525
9	Kearns (agressividade =0.75)	0,998889160	32,97376
10	Submit and Leave (fator=-5.0)	0,998883152	32,96999
11	Submit and Leave (fator=3.0)	0,998875332	32,96990
12	Submit and Leave (fator=4.0)	0,998850727	32,96976
13	Submit and Leave (fator=-6.0)	0,998823833	32,96828
14	Submit and Leave (fator=-1.0)	0,998811722	32,96755
15	Submit and Leave (fator=-4.0)	0,998798084	32,96760
16	Submit and Leave (fator=-2.0)	0,998790646	32,96712
17	Reinforcement Learning (e,f,t)	0,998788071	32,96904
18	Reinforcement Learning (c,e,f,t)	0,998781586	32,96747
19	Submit and Leave (fator=-7.0)	0,998768997	32,96709
20	Submit and Leave (fator=-3.0)	0,998766804	32,96664
21	Submit and Leave (fator=5.0)	0,998756695	32,96788
22	Submit and Leave (fator=-9.0)	0,998719120	32,96537
23	Reinforcement Learning (e,f,q,t)	0,998699284	32,96551
24	Submit and Leave (fator=-10.0)	0,998684120	32,96413
25	Submit and Leave (fator=-8.0)	0,998683739	32,96424
26	Submit and Leave (fator=-11.0)	0,998658943	32,96350
27	Submit and Leave (fator=-16.0)	0,998641968	32,96319
28	Submit and Leave (fator=-14.0)	0,998634720	32,96264
29	Submit and Leave (fator=-15.0)	0,998633862	32,96276
30	Submit and Leave (fator=6.0)	0,998623085	32,96364
31	Submit and Leave (fator=-13.0)	0,998613262	32,96189
32	Submit and Leave (fator=-12.0)	0,998610878	32,96208
33	Submit and Leave (fator=-17.0)	0,998609734	32,96213
34	Submit and Leave (fator=-18.0)	0,998599529	32,96173
35	Submit and Leave (fator=-19.0)	0,998598576	32,96194
36	Submit and Leave (fator=-20.0)	0,998504829	32,95918
37	Submit and Leave (fator=7.0)	0,998351479	32,95507
38	Submit and Leave (fator=8.0)	0,998174572	32,95002
Continua na próxima página			

Posição	Estratégia	$\Gamma_{medio}$	Média de Capital
39	Submit and Leave (fator=9.0)	0,997928143	32,94217
40	Kearns (agressividade =0.5)	0,997863007	32,94055
41	Submit and Leave (fator=10.0)	0,997706413	32,93539
42	Submit and Leave (fator=11.0)	0,997481251	32,92854
43	Submit and Leave (fator=12.0)	0,997175407	32,91873
44	Kearns (agressividade =0.25)	0,997131824	32,91742
45	Submit and Leave (fator=13.0)	0,996925068	32,91098
46	Submit and Leave (fator=14.0)	0,996691322	32,90343
47	Submit and Leave (fator=15.0)	0,996395683	32,89384
48	Kearns (agressividade =0.0)	0,996130657	32,88484
49	Submit and Leave (fator=16.0)	0,996085739	32,88387
50	Submit and Leave (fator=17.0)	0,995774174	32,87388
51	Submit and Leave (fator=18.0)	0,995462608	32,86388
52	Submit and Leave (fator=19.0)	0,995151043	32,85388
53	Submit and Leave (fator=20.0)	0,994839573	32,84388

Tabela A.24: 10-Fold Cross Validation,  $R = 60$ , Venda, Vale