Untitled

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5/5/2019

```
##          Year  Month  PERMNO  EXCHCD    lag_Mkt_Cap        RET   Ranking_Ret
## 0        1986      1   10000     3.0            NaN        NaN           NaN
## 1        1986      2   10000     3.0   1.610000e+04  -0.257143           NaN
## 2        1986      3   10000     3.0   1.196000e+04   0.365385           NaN
## 3        1986      4   10000     3.0   1.633000e+04  -0.098592           NaN
## 4        1986      5   10000     3.0   1.517200e+04  -0.222656           NaN
## 5        1986      6   10000     3.0   1.179388e+04  -0.005025           NaN
## 6        1986      7   10000     3.0   1.173459e+04  -0.080808           NaN
## 7        1986      8   10000     3.0   1.078634e+04  -0.615385           NaN
## 8        1986      9   10000     3.0   4.148594e+03  -0.057143           NaN
## 9        1986     10   10000     3.0   3.911531e+03  -0.242424           NaN
## 10       1986     11   10000     3.0   3.002344e+03   0.060000           NaN
## 11       1986     12   10000     3.0   3.182504e+03  -0.377358           NaN
## 12       1987      1   10000     3.0   1.981566e+03  -0.212121           NaN
## 13       1987      2   10000     3.0   1.581531e+03   0.000000     -2.138282
## 14       1987      3   10000     3.0   1.581531e+03  -0.384615     -2.079441
## 15       1987      4   10000     3.0   9.732500e+02  -0.062500     -2.390877
## 16       1987      5   10000     3.0   9.124413e+02  -0.066667     -2.772587
## 17       1987      6   10000     3.0   8.515938e+02   0.000000     -2.585254
## 18       1986      1   10001     3.0            NaN        NaN           NaN
## 19       1986      2   10001     3.0   6.033125e+03   0.020408           NaN
## 20       1986      3   10001     3.0   6.156250e+03   0.025200           NaN
## 21       1986      4   10001     3.0   6.217812e+03   0.009901           NaN
## 22       1986      5   10001     3.0   6.279375e+03  -0.009804           NaN
## 23       1986      6   10001     3.0   6.217812e+03  -0.013069           NaN
## 24       1986      7   10001     3.0   6.033125e+03  -0.010204           NaN
## 25       1986      8   10001     3.0   5.971562e+03   0.072165           NaN
## 26       1986      9   10001     3.0   6.402500e+03  -0.003077           NaN
## 27       1986     10   10001     3.0   6.317625e+03   0.039216           NaN
## 28       1986     11   10001     3.0   6.565375e+03   0.056604           NaN
## 29       1986     12   10001     3.0   6.937000e+03   0.015000           NaN
## ...       ...    ...     ...     ...            ...        ...           ...
## 3545347  2016      7   93436     3.0   3.142062e+07   0.106039     -0.183756
## 3545348  2016      8   93436     3.0   3.491163e+07  -0.097023     -0.226156
## 3545349  2016      9   93436     3.0   3.164016e+07  -0.037640     -0.059004
## 3545350  2016     10   93436     3.0   3.056879e+07  -0.030878     -0.158409
## 3545351  2016     11   93436     3.0   2.963795e+07  -0.042128     -0.014116
## 3545352  2016     12   93436     3.0   2.840318e+07   0.128247     -0.152309
## 3545353  2017      1   93436     3.0   3.452397e+07   0.178951     -0.236822
## 3545354  2017      2   93436     3.0   4.072952e+07  -0.007701      0.111205
## 3545355  2017      3   93436     3.0   4.041588e+07   0.113244      0.272019
## 3545356  2017      4   93436     3.0   4.568684e+07   0.128530      0.084340
## 3545357  2017      5   93436     3.0   5.158914e+07   0.085777      0.144897
## 3545358  2017      6   93436     3.0   5.601430e+07   0.060409      0.341411
## 3545359  2017      7   93436     3.0   6.033933e+07  -0.105473      0.474004
## 3545360  2017      8   93436     3.0   5.398294e+07   0.100257      0.431873
## 3545361  2017      9   93436     3.0   5.939508e+07  -0.041585      0.422471
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## 3545362  2017  10  93436  3.0  5.731060e+07 -0.028056   0.556382
## 3545363  2017  11  93436  3.0  5.571925e+07 -0.068410   0.545272
## 3545364  2017  12  93436  3.0  5.190749e+07  0.008095   0.559856
## 3545365  2018   1  93436  3.0  5.255495e+07  0.137980   0.368329
## 3545366  2018   2  93436  3.0  5.980647e+07 -0.031752   0.211766
## 3545367  2018   3  93436  3.0  5.794970e+07 -0.224246   0.348752
## 3545368  2018   4  93436  3.0  4.517557e+07  0.104347   0.209206
## 3545369  2018   5  93436  3.0  4.990245e+07 -0.031201  -0.165629
## 3545370  2018   6  93436  3.0  4.834545e+07  0.204474  -0.148671
## 3545371  2018   7  93436  3.0  5.847846e+07 -0.130660  -0.239024
## 3545372  2018   8  93436  3.0  5.086060e+07  0.011806   0.058479
## 3545373  2018   9  93436  3.0  5.146108e+07 -0.122290  -0.177086
## 3545374  2018  10  93436  3.0  4.542871e+07  0.274011  -0.122874
## 3545375  2018  11  93436  3.0  5.792898e+07  0.039013  -0.224856
## 3545376  2018  12  93436  3.0  6.018898e+07 -0.050445   0.088176
##
## [3545377 rows x 7 columns]

##          Year  Month  PERMNO   lag_Mkt_Cap        RET  DM_decile  KRF_decile
## 0        1986      1   10000           NaN        NaN        NaN          10
## 1        1986      2   10000  1.610000e+04  -0.257143        NaN          10
## 2        1986      3   10000  1.196000e+04   0.365385        NaN          10
## 3        1986      4   10000  1.633000e+04  -0.098592        NaN          10
## 4        1986      5   10000  1.517200e+04  -0.222656        NaN          10
## 5        1986      6   10000  1.179388e+04  -0.005025        NaN          10
## 6        1986      7   10000  1.173459e+04  -0.080808        NaN          10
## 7        1986      8   10000  1.078634e+04  -0.615385        NaN          10
## 8        1986      9   10000  4.148594e+03  -0.057143        NaN          10
## 9        1986     10   10000  3.911531e+03  -0.242424        NaN          10
## 10       1986     11   10000  3.002344e+03   0.060000        NaN          10
## 11       1986     12   10000  3.182504e+03  -0.377358        NaN          10
## 12       1987      1   10000  1.981566e+03  -0.212121        NaN          10
## 13       1987      2   10000  1.581531e+03   0.000000        1.0           1
## 14       1987      3   10000  1.581531e+03  -0.384615        1.0           1
## 15       1987      4   10000  9.732500e+02  -0.062500        1.0           1
## 16       1987      5   10000  9.124413e+02  -0.066667        1.0           1
## 17       1987      6   10000  8.515938e+02   0.000000        1.0           1
## 18       1986      1   10001           NaN        NaN        NaN          10
## 19       1986      2   10001  6.033125e+03   0.020408        NaN          10
## 20       1986      3   10001  6.156250e+03   0.025200        NaN          10
## 21       1986      4   10001  6.217812e+03   0.009901        NaN          10
## 22       1986      5   10001  6.279375e+03  -0.009804        NaN          10
## 23       1986      6   10001  6.217812e+03  -0.013069        NaN          10
## 24       1986      7   10001  6.033125e+03  -0.010204        NaN          10
## 25       1986      8   10001  5.971562e+03   0.072165        NaN          10
## 26       1986      9   10001  6.402500e+03  -0.003077        NaN          10
## 27       1986     10   10001  6.317625e+03   0.039216        NaN          10
## 28       1986     11   10001  6.565375e+03   0.056604        NaN          10
## 29       1986     12   10001  6.937000e+03   0.015000        NaN          10
## ...       ...    ...     ...           ...        ...        ...         ...
## 3545347  2016      7   93436  3.142062e+07   0.106039        4.0           4
## 3545348  2016      8   93436  3.491163e+07  -0.097023        4.0           3
## 3545349  2016      9   93436  3.164016e+07  -0.037640        4.0           4
## 3545350  2016     10   93436  3.056879e+07  -0.030878        3.0           2
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## 3545351  2016    11  93436  2.963795e+07  -0.042128      5.0      4
## 3545352  2016    12  93436  2.840318e+07   0.128247      4.0      3
## 3545353  2017     1  93436  3.452397e+07   0.178951      2.0      1
## 3545354  2017     2  93436  4.072952e+07  -0.007701      4.0      3
## 3545355  2017     3  93436  4.041588e+07   0.113244      6.0      6
## 3545356  2017     4  93436  4.568684e+07   0.128530      4.0      4
## 3545357  2017     5  93436  5.158914e+07   0.085777      5.0      5
## 3545358  2017     6  93436  5.601430e+07   0.060409      8.0      9
## 3545359  2017     7  93436  6.033933e+07  -0.105473      9.0     10
## 3545360  2017     8  93436  5.398294e+07   0.100257      9.0     10
## 3545361  2017     9  93436  5.939508e+07  -0.041585      9.0     10
## 3545362  2017    10  93436  5.731060e+07  -0.028056     10.0     10
## 3545363  2017    11  93436  5.571925e+07  -0.068410      9.0     10
## 3545364  2017    12  93436  5.190749e+07   0.008095     10.0     10
## 3545365  2018     1  93436  5.255495e+07   0.137980      9.0      9
## 3545366  2018     2  93436  5.980647e+07  -0.031752      7.0      7
## 3545367  2018     3  93436  5.794970e+07  -0.224246      9.0      9
## 3545368  2018     4  93436  4.517557e+07   0.104347      8.0      7
## 3545369  2018     5  93436  4.990245e+07  -0.031201      3.0      2
## 3545370  2018     6  93436  4.834545e+07   0.204474      3.0      2
## 3545371  2018     7  93436  5.847846e+07  -0.130660      2.0      2
## 3545372  2018     8  93436  5.086060e+07   0.011806      5.0      5
## 3545373  2018     9  93436  5.146108e+07  -0.122290      2.0      1
## 3545374  2018    10  93436  4.542871e+07   0.274011      3.0      2
## 3545375  2018    11  93436  5.792898e+07   0.039013      2.0      2
## 3545376  2018    12  93436  6.018898e+07  -0.050445      7.0      8
##
## [3545377 rows x 7 columns]
##         Year  Month     RF  decile     DM_Ret    KRF_Ret
## 0       1927      1   0.25       1  -3.214916  -3.214916
## 1       1927      1   0.25       2  -3.963662  -3.963662
## 2       1927      1   0.25       3   2.658494   2.658494
## 3       1927      1   0.25       4   0.128271   0.128271
## 4       1927      1   0.25       5  -0.585221  -0.495944
## 5       1927      1   0.25       6   0.747025   0.621125
## 6       1927      1   0.25       7   0.693175   0.693175
## 7       1927      1   0.25       8   0.433897   0.433897
## 8       1927      1   0.25       9  -0.411233  -0.411233
## 9       1927      1   0.25      10  -0.276865  -0.276865
## 10      1927      2   0.26       1   6.961729   6.961729
## 11      1927      2   0.26       2   5.877274   5.877274
## 12      1927      2   0.26       3   8.115399   8.115399
## 13      1927      2   0.26       4   7.200649   7.200649
## 14      1927      2   0.26       5   3.387586   3.387586
## 15      1927      2   0.26       6   3.171329   3.171329
## 16      1927      2   0.26       7   4.233883   4.233883
## 17      1927      2   0.26       8   3.097313   3.097313
## 18      1927      2   0.26       9   4.391507   4.391507
## 19      1927      2   0.26      10   6.995980   6.995980
## 20      1927      3   0.30       1  -3.129122  -3.129122
## 21      1927      3   0.30       2  -2.774867  -2.774867
## 22      1927      3   0.30       3  -5.191083  -5.191083
## 23      1927      3   0.30       4  -4.030057  -4.030057
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## 24     1927     3      0.30        5  -0.426631  -0.418203
## 25     1927     3      0.30        6  -2.346554  -2.347613
## 26     1927     3      0.30        7   2.053382   2.053382
## 27     1927     3      0.30        8   0.906958   0.906958
## 28     1927     3      0.30        9  -0.050537  -0.050537
## 29     1927     3      0.30       10   6.065064   6.065064
## ...     ...    ...      ...      ...        ...        ...
## 11010  2018    10      0.19        1 -13.726576  -8.918012
## 11011  2018    10      0.19        2  -7.318432  -6.604580
## 11012  2018    10      0.19        3  -6.388059  -5.229691
## 11013  2018    10      0.19        4  -4.659202  -6.684121
## 11014  2018    10      0.19        5  -6.384396  -4.231195
## 11015  2018    10      0.19        6  -5.900642  -6.395823
## 11016  2018    10      0.19        7  -5.950232  -5.779484
## 11017  2018    10      0.19        8  -7.396885  -7.327564
## 11018  2018    10      0.19        9  -7.766750  -7.335472
## 11019  2018    10      0.19       10 -16.919175 -15.597501
## 11020  2018    11      0.18        1  -8.941438  -0.712207
## 11021  2018    11      0.18        2   1.682567   1.020676
## 11022  2018    11      0.18        3   1.610497   1.586714
## 11023  2018    11      0.18        4   1.608417   3.211291
## 11024  2018    11      0.18        5   4.279228   4.660957
## 11025  2018    11      0.18        6   3.822677   3.739690
## 11026  2018    11      0.18        7   3.652911   3.086184
## 11027  2018    11      0.18        8  -0.892100  -2.562682
## 11028  2018    11      0.18        9  -0.012797   1.416728
## 11029  2018    11      0.18       10   2.524490   1.633086
## 11030  2018    12      0.19        1 -14.306226 -12.071452
## 11031  2018    12      0.19        2 -12.241874 -12.993936
## 11032  2018    12      0.19        3 -10.692153  -9.417506
## 11033  2018    12      0.19        4  -9.935856 -10.998246
## 11034  2018    12      0.19        5 -10.623848  -9.401717
## 11035  2018    12      0.19        6 -10.388885 -10.217334
## 11036  2018    12      0.19        7  -8.548778  -8.743305
## 11037  2018    12      0.19        8  -8.458470  -8.386332
## 11038  2018    12      0.19        9  -8.642274  -8.913204
## 11039  2018    12      0.19       10  -9.671435  -8.273842
##
## [11040 rows x 6 columns]

##           Decile 1   Decile 2   Decile 3   ...   Decile 9  Decile 10        WML
## r-rf     -2.591369   2.983509   3.229266   ...  11.370146  15.411030  18.002398
## sigma    36.294250  29.970158  25.397386   ...  20.006936  23.482116  29.707564
## SR       -0.071399   0.099549   0.127150   ...   0.568310   0.656288   0.605987
## sk(m)     0.090863  -0.112228  -0.161372   ...  -0.753682  -0.809576  -5.044175
##
## [4 rows x 11 columns]

##                   Decile 1  Decile 2  Decile 3  ...  Decile 9  Decile 10       WML
## DM correlation    0.998141  0.998673  0.998708  ...  0.998666   0.998545  0.996443
## KRF correlation   0.997927  0.998435  0.998042  ...  0.998493   0.998994  0.996049
##
## [2 rows x 11 columns]
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