A Critique of Market (In)Efficiency: The Return Performance of the

Marketocracy Masters 100 Stock Fund

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Abstract

**A Critique of Market (In)Efficiency: The Return Performance of the
Marketocracy Masters 100 Stock Fund**

In November 2001, a new stock fund concept was brought to market under the
guidance of Ken Kam, fund manager for the United States (U.S.) listed Marketocracy
Masters 100 Stock fund. Marketocracy is unique in that its portfolio holdings are
based on a system whereby members of the public manage portfolios with fictitious
money from Marketocracy's website.   Kam has enticed thousands of aspiring
portfolio managers to vie for a spot on his team of 100 that actively manage
Marketocracy's holdings.   Based on past performance updated monthly, real and
fictitious, portfolio managers engage in a real life game of "trading places." Kam
periodically replaces active portfolio managers with more successful fictitious
portfolio managers.   Compensations is exclusively reserved for active portfolio
managers.   Since the fund's inception, the Marketocracy Masters 100 Stock fund has
generated a popular following in the financial press.   Additions and deletions to the
Marketocracy Masters 100 portfolio are regularly reported in the financial press.

The idea underlying Marketocracy's creation is that competition among
competing portfolio managers will yield superior performance on a risk-adjusted
basis, a view recently expressed by Klein (2004) in an article entitled "Ken Kam and
Market Efficiency." Klein claims that Marketocracy defies market efficiency, being
"an investment opportunity that offers above average returns and lower-than-average-
risk." Klein notes that since Marketocracy's inception in November 2001 it has
achieved a return in excess of returns to three popular stocks indices, the Standard &
Poor's (S&P) 500, NASDAQ Composite and Dow Jones Industrial Average (DJJIA).
In addition, Marketocracy's beta of 0.48 indicates low risk while holding around one
thousand stocks at a given time.

This paper presents evidence that Klein's (2004) claim that Marketocracy
defies market efficiency is misguided. Evidence of market inefficiencies should be
rigorously examined, and this is the primary objective of the current study.
Foremost, the benchmarks (stock indexes) used to compare Marketocracy's

performance against are questioned. Since similar benchmarks appear in Marketocracy's advertisements, it appears that the investing public is being misinformed, and this should be an issue of interest to stock market regulators.

In this paper, we find no support for the claim that Marketocracy defies market efficiency. In particular, the metrics of risk and return used to analyse Marketocracy performance are challenged. The S&P 500, along with the NASDAQ Composite and DJIA are used as benchmarks to compare Marketocracy's performance. According to Morningstar's report dated June 2004, Marketocracy is a small blend fund with half of its funds in companies that made up less than 3 percent of the capitalisation of stocks in the blend category, and an average market capitalisation of $594 million. Portfolios should be compared against benchmarks that reflect the profile of the portfolio. Klein's (2004) practice of benchmarking a fund that invests in small firms against the largest firms in the market violates this principle. This study proposes that the Russell 2000 index, which is the standard small company index, should be used as a benchmark instead of the S&P 500 index. The standard deviation of the tracking error of Marketocracy against the Russell 2000 is shown to be less than the tracking error against the S&P 500, which indicates that the Russell 2000 is a more suitable benchmark.

This studies empirical evidence does not support the argument that Marketocracy defies market efficiency. The Jenson's alpha for Marketocracy against the S&P 500 from the funds inception in November 2001 through April 2004 is positive, but not significantly positive at the 5 percent level of significance for daily, weekly or monthly series. [April 2004 is selected as the ending date as this corresponds to the date of Kein (2004) publication arguing that Marketocracy's performance is evidence of market inefficiencies.] This is also the result for the Russell 2000's Jenson's alpha against the S&P 500, and the Russell 2000's alpha is more significant than Marketocracy's.

 Klein (2004) writes "Here I propose to anyone who can read this little article an investment opportunity that offers above average returns and lower-than-average risks." This statement can be interpreted as a prediction that an investment in Marketocracy will defy market efficiency going forward. Given the empirical evidence that Marketocracy does not defy market efficiency and mixed evidence regarding persistence of mutual fund performance it would have been reasonable to

question Klein's statement ex-ante. Ex-post, Marketocracy's cumulative return for the six months from April 2004 until October 2004 is -16.0 percent compared to the Russell 2000's -2.0 percent and the S&P 500's 0.1 percent, and all of this before fees and taxes. Analysis of Jenson's alpha for Marketocracy and the Russell 2000 for the period November 2001 until October 2004 show the same results as for the Jenson's alpha for the period November 2001 until April 2004.

Klein's (2004) measure of return does not take into account the tax implications of Marketocracy's extremely high holding turnover ratio. According to Yahoo's finance site, Marketocracy's annual holding turnover is 504 percent, a very high number. This means that returns are taxed at the investor's marginal rate, which is higher than the long term holding period capital gains tax. Since Marketocracy invests in very small capitalization stocks it may be possible that its buying into small companies has a positive pressure on the firms' share price, especially as the size of Marketocracy's funds under management has increased, meaning more buy than sell transactions. In the short-run, Marketocracy is creating it own performance.

Arnott (2003) in "What risk matters? A call for papers" lists multiple qualitative and quantitative metrics of risk that an investment manager faces. Klein (2004) chooses to use one measure of risk and that is Marketocracy's beta. Empirical testing from Banz (1981) shows firm size to be statistically significant and the beta on market risk premium to be statistically insignificant from 1936 to 1975 in a two factor version of the CAPM model with firm size and market risk premium as factors. Banz's conclusions are supported by research conducted by Fama and French (1992) who examined returns from 1963 to 1990. Kim and Burnie's (2002) empirical research finds that the size effect holds only in expansionary stages of the business cycle in series from 1976 to 1995. The United States economy has been in an expansionary phase since Marketocracy's inception, so this may suggest that the size effect may have been present which would mean that firm size is a risk factor that is missed by the one factor CAPM. Small companies tend to have higher operating leverage than large companies, which makes them more exposed to fluctuations in the business cycle. Marketocracy's performance going forward is reliant on its managers ability to predict the business cycle.

The effect of Marketocracy's system of choosing portfolios and portfolio managers adds another layer of information asymmetry in the relationship between

and within principal and agent. Within the traditional fund manager framework there is a tendency for investors to focus on short-term measures of performance. Portfolio managers' profit maximising strategy is to maximise the value of assets that they manage, which often means focusing more on short term performance measures in order to satisfy investors. The standard contract between portfolio manager and a mutual fund firm has more commitment than the relationship between Marketocracy's portfolio managers and Marketocracy. The standard contract better facilitates the portfolio manager having a longer investment horizon. Marketocracy's high turnover ratio may be explained by this, and also by an investment team change precipitating the portfolio to be changed. Barber and Odean (2000) argue that active trading negatively hampers investor performance. Marketocracy has only been in existence as a fund for three years, and the effects of its high turnover may add up in the long run. The competition amongst those operating the portfolios who are not on the team have an increased incentive to take risks that that may be hard to identify ex-post in order to make it into the team.

Summary of Empirical Results:

Table 1
Betas For Marketocracy & Russell 2000: November 2001 until April 2004

	Daily Beta	Weekly Beta	Monthly Beta
MOFQX against SXP	0.5262	0.5752	0.6140
MOFQX against RUT	0.6048	0.6834	0.7136
RUT against SPX	0.9144	0.9287	1.0050

MOFQX represents Marketocracy.
RUT represents Russell 2000.
SPX represents S&P 500.

Table 2
Betas For Marketocracy & Russell 2000: November 2001 - October 2004

	Daily Beta	Weekly Beta	Monthly Beta
MOFQX against SXP	0.5531	0.6449	0.6732
MOFQX against RUT	0.6170	0.7271	0.7775
RUT against SPX	0.9443	0.9852	1.0468

Table 3
Jenson's Alphas For Marketocracy & Russell 2000:
November 2001 - April 2004

	Daily		Weekly		Monthly	
	Alpha	p-value	Alpha	p-value	Alpha	p-value
MOFQX against SXP	0.00050	0.113	0.00250	0.141	0.01011	0.233
MOFQX against RUT	0.00023	0.366	0.00096	0.457	0.00364	0.549
RUT against SPX	0.00046	0.103	0.00227	0.094	0.00927	0.163

Jenson's alpha calculations in Table 3 and Table 4 are taken by performing OLS regression of excess returns over the respective periods.
The proxy for the risk free rate for Table 3 through to Table 10 is the secondary yield of three month treasury bills sourced from the Federal Reserve of St Louis.
For daily data where the stockmarket was open but the money market was closed (four such occurrences in the daily series) the average yields last trading day before and the first trading day after are used for the daily yield.

Table 4
Jenson's Alphas For Marketocracy & Russell 2000:
November 2001 - October 2004

	Daily		Weekly		Monthly	
	Alpha	p-value	Alpha	p-value	Alpha	p-value
MOFQX against SXP	0.00020	0.493	0.00094	0.552	0.00413	0.596
MOFQX against RUT	-0.00003	0.910	-0.00031	0.793	-0.00098	0.858
RUT against SPX	0.00036	0.156	0.00174	0.156	0.00693	0.219

Table 5
Summary Statistics Daily Data: November 2001 - April 2004

	R-free	R-RUT	R-SPX	RMOFQX
Average daily return	0.004%	0.043%	-0.004%	0.050%
Average excess returns	0.000%	0.039%	-0.007%	0.046%
Standard deviation	0.001%	1.377%	1.316%	1.023%
Tracking error std. dev.		0.834%	0.998%	
Beta		0.91439	1.0000	0.526239
Treynor Ratio		0.0004	-0.0001	0.0009
Sharpe Ratio	0.0000	0.0285	-0.0055	0.0452
Information ratio				0.0083
Kurtosis	-1.64456	-0.01091	1.39938	4.34023

Tracking error std. dev. for Table 5 through to Table 10 refers to the standard deviation of tracking error of Marketocracy's return against the return of index in the respective column.
The beta given in Table 5 through to Table 10 is against the S&P 500.
The benchmark used for the information ratio in Table 5 through to Table 10 is the Russell 2000

Table 6
Summary Statistics Daily Data: November 2001 - October 2004

	R-free	R-RUT	R-SPX	RMOFQX
Average daily return	0.004%	0.034%	-0.002%	0.020%
Average excess returns	0.000%	0.030%	-0.006%	0.016%
Standard deviation	0.001%	1.347%	1.230%	1.024%
Tracking error std. dev.		0.790%	0.943%	
Beta		0.94431	1.00000	0.55309
Treynor Ratio		0.00032	-0.00006	0.00029
Sharpe Ratio	0.00000	0.02265	-0.00482	0.01590
Information ratio				-0.01798
Kurtosis	-1.56900	-0.03713	1.80349	3.53030

Table 7
Summary Statistics Weekly Data: November 2001 - April 2004

	R-free	R-RUT	R-SPX	RMOFQX
Average weekly return	0.02%	0.22%	-0.01%	0.26%
Average excess returns	0.00%	0.20%	-0.03%	0.23%
Standard deviation	0.01%	2.67%	2.39%	2.31%
Tracking error std. dev.		1.17%	1.30%	
Beta		0.9287	1.0000	0.5752
Treynor Ratio		0.0021	-0.0003	0.0040
Sharpe Ratio	0.0000	0.0743	-0.0130	0.1002
Information ratio				0.0284
Kurtosis	-1.66418	0.00527	1.38914	0.71519

Table 8
Summary Statistics Weekly Data: November 2001 - October 2004

	R-free	R-RUT	R-SPX	RMOFQX
Average weekly return	0.02%	0.16%	-0.01%	0.10%
Average excess returns	0.00%	0.14%	-0.04%	0.07%
Standard deviation	0.01%	2.67%	2.25%	2.40%
Tracking error std. dev.		1.59%	2.07%	
Beta		0.9852	1.0000	0.6449
Treynor Ratio		0.0014	-0.0004	0.0011
Sharpe Ratio	0.0000	0.0520	-0.0160	0.0293
Information ratio				-0.0431
Kurtosis	-1.56408	-0.00493	1.65751	0.94335

Table 9
Summary Statistics Monthly Data:
November 2001 - April 2004

	R-free	R-RUT	R-SPX	RMOFQX
Average weekly return	0.02%	0.22%	-0.01%	0.26%
Average excess returns	0.00%	0.20%	-0.03%	0.23%
Standard deviation	0.01%	2.67%	2.39%	2.31%
Tracking error std. dev.		1.17%	1.30%	
Beta		0.9287	1.0000	0.5752
Treynor Ratio		0.0021	-0.0003	0.0040
Sharpe Ratio	0.0000	0.0743	-0.0130	0.1002
Information ratio				0.0284
Kurtosis	-1.77069	1.33740	0.14852	1.17031

Table 10
Summary Statistics Monthly Data:
November 2001- October 2004

	R-free	R-RUT	R-SPX	RMOFQX
Average weekly return	0.02%	0.16%	-0.01%	0.10%
Average excess returns	0.00%	0.14%	-0.04%	0.07%
Standard deviation	0.01%	2.67%	2.25%	2.40%
Tracking error std. dev.		1.59%	2.07%	
Beta		0.9852	1.0000	0.6449
Treynor Ratio		0.0014	-0.0004	0.0011
Sharpe Ratio	0.0000	0.0520	-0.0160	0.0293
Information ratio				-0.0431
Kurtosis	-1.63197	1.12468	0.65650	0.36704

References

Arnott, Robert D. (2003). What risk matters? A call for papers!, *Financial Analysts Journal,* 59(3), pp 6-7.

Basak, Suleyman, Alex Shapiro, Lucie Tepla (2003). Risk Management with Benchmarking, *AFA 2003 Washington, DC Meetings*; *NYU Finance Working Paper.*

Burmeister, Edwin, Richard Roll, and Stephen A. Ross, (1994). "A Practitioner's Guide to Arbitrage Pricing Theory" *A Practitioner's Guide to Factor Models,* Charlottesville: *The Research Foundation of the Institute of Chartered Financial Analysts.*

Cohen, Randolph, Joshua Cova, Lubos Pastor, (2002). Judging Fund Managers by the Company They Keep, *The Centre for Research in Security Prices* Working Paper No. 545; *EFA 2003 Annual Conference* Paper No. 884.

Irvine, Paul J. (2003) Jeff Vinik at Fidelity Magellan, *CASE SETTING: 1996, Investment Management, USA*

Jagannathan, Ravi Ellen R. McGrattan, The CAPM Debate, *Federal Reserve Bank of Minneapolis Quarterly Review* 19(4), pp 2-17.

Kim, Moon K., David Burnie, (2002). The firm size effect and the economic cycle, *Journal of Financial Research* 25(1), pp 111.

Pastor, Lubos, Robert F. Stambaugh, (2000). Evaluating and Investing in Equity Mutual Funds, *The Centre for Research in Security Prices*, Working Paper No. 516.

Pastor, Lubos, Robert F. Stambaugh, (2001). Investing in Equity Mutual Funds, *The Centre for Research in Security Prices*, Working Paper No. 532.

Plantinga, Auke (2004). "Performance attribution and the accuracy of detecting timing and selection skills," Working Paper.

Barber, B.M. & Odean, T. (2000). Trading is hazardous to your wealth: The common stock investment performance of individual investors, *Journal of Finance, 55,* pp. 773-806.